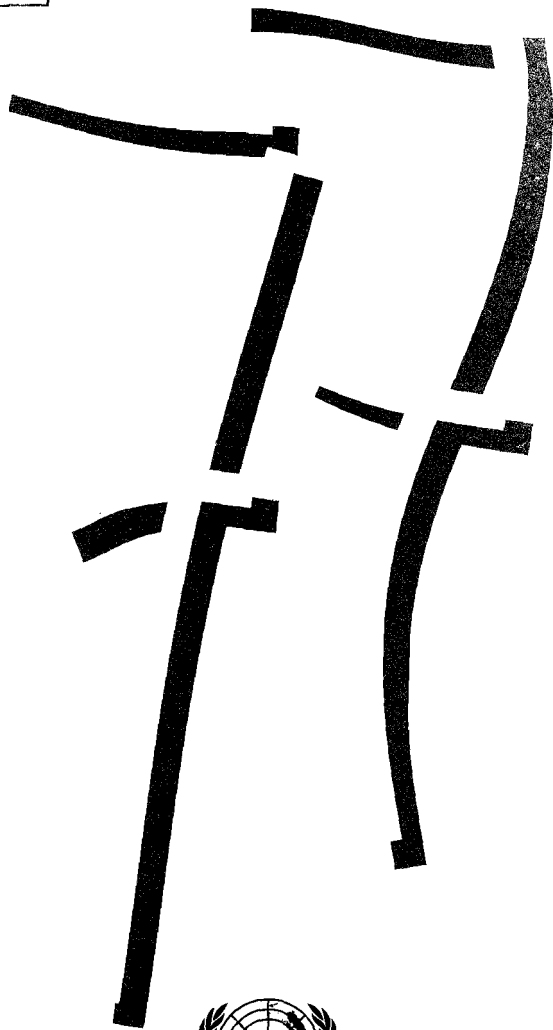


X
C 22
C.2

ECONOMIC
COMMISSION FOR
LATIN AMERICA
AND
THE CARIBBEAN



UNITED NATIONS

LC/G.2180-P — August 2002

United Nations Publication

ISSN printed version 0251 - 2920 / ISBN 92-1-121408-4
ISSN online version 1684-0348

CEPAL Review is prepared by the Secretariat of the Economic Commission for Latin America and the Caribbean. The views expressed in the signed articles, including the contributions of Secretariat staff members, however, represent the personal opinion of the authors and do not necessarily reflect the views of the Organization. The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

CEPAL Review is published in Spanish and English versions three times a year.

Annual subscription costs for 2002 are US\$ 30 for the Spanish version and US\$ 35 for the English version.

The price of single issues is US\$ 15 in both cases, plus postage and packing.

The cost of a two-year subscription (2002-2003) is US\$ 50 for the Spanish-language version and US\$ 60 for English.

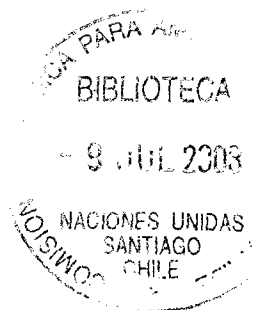
A subscription application form may be found just before the section "Recent ECLAC Publications".

Applications for the right to reproduce this work or parts thereof are welcomed and should be sent to the Secretary of the Publications Board, United Nations Headquarters, New York, N.Y. 10017, U.S.A. Member States and their governmental institutions may reproduce this work without application, but are requested to mention the source and inform the United Nations of such reproduction.

Copyright © United Nations 2003

All rights reserved

Printed in Chile



UNITED NATIONS



JOSE ANTONIO OCAMPO
Executive Secretary

REYNALDO BAJRAJ
Deputy Executive Secretary

**ECONOMIC COMMISSION FOR
LATIN AMERICA AND THE CARIBBEAN**



236500078

CEPAL Review, N° 77 August 2002
C.2



C E P A L

REVIEW

NUMBER 77
AUGUST 2002
SANTIAGO, CHILE

OSCAR ALTIMIR
Director of the Review



UNITED NATIONS

ECLAC

Notes and explanation of symbols
The following symbols are used in tables in the Review:

(...)	Three dots indicate that data are not available or are not separately reported.
(—)	A dash indicates that the amount is nil or negligible.
	A blank space in a table means that the item in question is not applicable.
(-)	A minus sign indicates a deficit or decrease, unless otherwise specified.
(.)	A point is used to indicate decimals.
(/)	A slash indicates a crop year or fiscal year, e.g., 2001/2002.
(-)	Use of a hyphen between years, e.g., 2001-2002, indicates reference to the complete number of calendar years involved, including the beginning and end years.

References to “tons” mean metric tons, and to “dollars”, United States dollars, unless otherwise stated. Unless otherwise stated, references to annual rates of growth or variation signify compound annual rates. Individual figures and percentages in tables do not necessarily add up to the corresponding totals, because of rounding.

Guidelines for contributors to *CEPAL Review*

The editorial board of the *Review* are always interested in encouraging the publication of articles which analyse the economic and social development of Latin America and the Caribbean. With this in mind, and in order to facilitate the presentation, consideration and publication of papers, they have prepared the following information and suggestions to serve as a guide to future contributors.

—The submission of an article assumes an undertaking by the author not to submit it simultaneously to other periodical publications.

—Papers should be submitted in Spanish, English, French or Portuguese. They will be translated into the appropriate language by ECLAC.

—Every article must be accompanied by a short summary (of about 150 words) giving a brief description of its subject matter and main conclusions. This summary will also be published on the ECLAC Home Page on the Internet.

—Papers should not be longer than 10 000 words, including the summary, notes and bibliography, if applicable, but shorter articles will also be considered.

—One copy of the original text should be submitted, accompanied by a copy on diskette (Word for Windows 95 or 98 format), to *CEPAL Review*, casilla 179-D, Santiago, Chile. In the absence of the copy on diskette, two printed or typed copies should be provided. Texts may also be sent by e-mail to: edesolminihac@eclac.cl.

—All contributions should be accompanied by a note clearly indicating the title of the paper, the name of the author, the institution he belongs to, his nationality, his address, fax and telephone numbers, and his e-mail address.

—**Footnotes should be kept to the minimum**, as should the number of tables and figures, which should not duplicate information given in the text. When preparing figures it should be borne in mind that they will be printed in black and white. Finally, the location of tables and figures should be indicated at the appropriate point in the text, but they should be included separately at the end of the article.

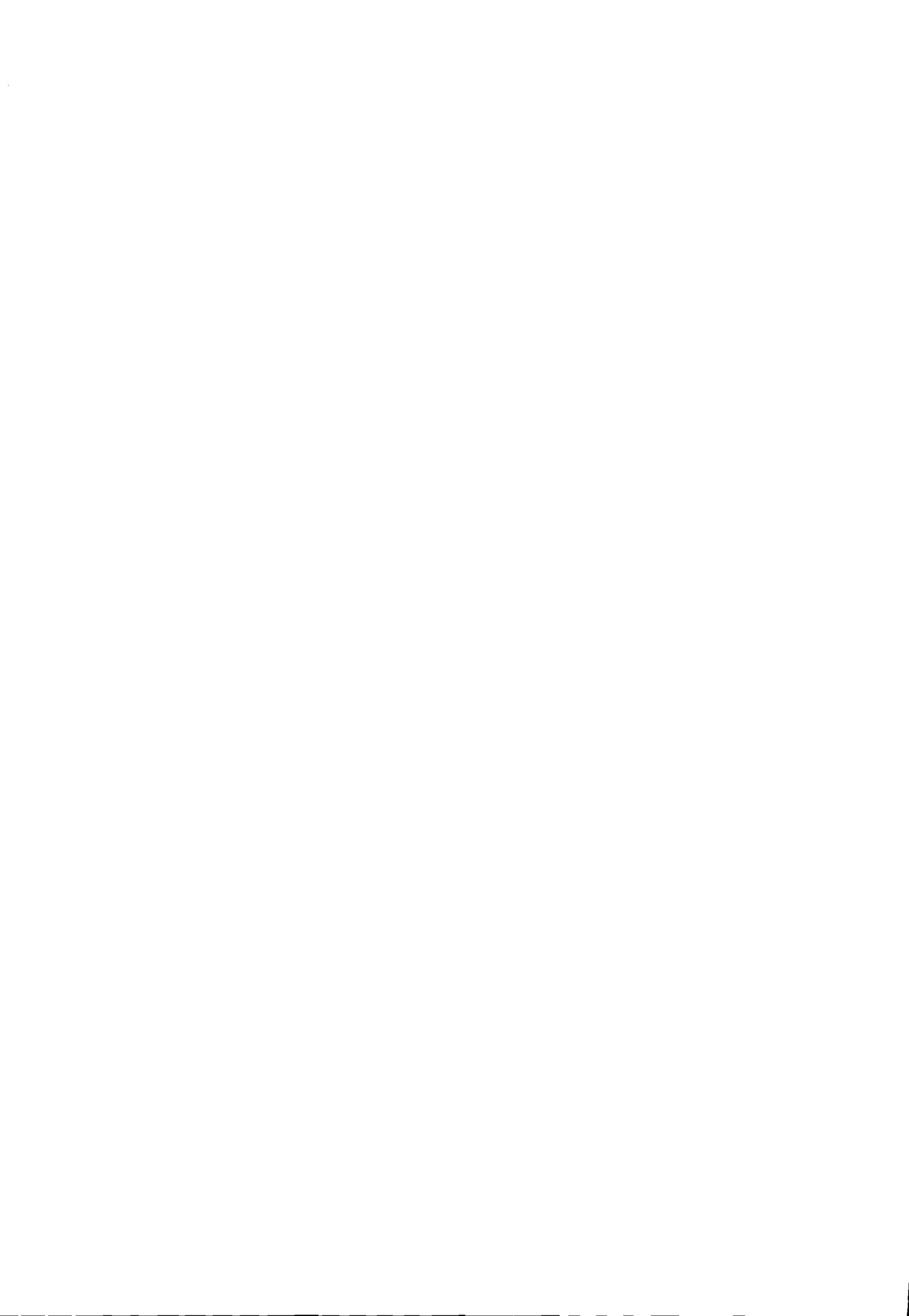
—Special attention should be paid to the bibliography, which should not be excessively long. All the necessary information must be correctly stated in each case (name of the author or authors, complete title (including any subtitle), publisher, city, month and year of publication and, in the case of a series, the title and corresponding volume number or part, etc.).

—The editorial board of the *Review* reserve the right to make any necessary revision or editorial changes in the articles, including their titles.

—Authors will receive a one-year courtesy subscription to the *Review*, plus 30 offprints of their article, both in Spanish and in English, at the time of publication in each language.

C O N T E N T S

Institutional reform and government coordination in Brazil's social protection policy	7
<i>Vilmar E. Faria</i>	
Growth, instability and the convertibility crisis in Argentina	25
<i>José María Fanelli</i>	
Investment and financial volatility in Latin America	45
<i>Graciela Moguillansky</i>	
International tax cooperation and capital mobility	65
<i>Valpy FitzGerald</i>	
Reforms and growth in Latin America	79
<i>Andrea C. Bandeira and Fernando Garcia</i>	
EMBRAER: From national champion to global player	97
<i>Andrea Goldstein</i>	
Education and the labor market in Latin America: confronting globalization	117
<i>Beverley Carlson</i>	
Changes and inequality in Latin American families	135
<i>Irma Arriagada</i>	
Infrastructure to support the digital economy in Chile	155
<i>Rossella Cominetti</i>	
Cepal Review on the Internet	169
Recent ECLAC publications	171



Institutional reform *and government coordination* **in Brazil's social protection** *policy*

Vilmar E. Faria

Doctor of Sociology

This study, now being published posthumously, examines Brazil's recent experience in formulating and implementing government social policies and assesses the prospects for establishing a "social authority" for centralizing and coordinating such policies. It describes the complex pattern of exclusion and vulnerability against which social reforms must be instituted in Brazil. It then goes on to review the social development strategy adopted as part of the Plano Real in 1994, which seeks to restructure the financing, outlays and benefits of the social protection system in order to increase its effectiveness, coverage and redistributive impact. Finally, it analyses the coordination of federal social policies, especially at the macropolitical and intergovernmental level, drawing special attention to the creation of sectoral chambers and policy integration mechanisms to replace former bureaucratic coordination structures.

I

Introduction

Over the last fifteen years, the challenges arising in different sectors and resulting from various crises have led to profound structural transformations in Brazil, which have had significant repercussions at the institutional level.

These changes were triggered by a number of factors. Foremost among them were the redemocratization process, which speeded up during the 1980s, and the structural limits encountered by State-promoted industrialization under an umbrella of protectionism. A series of elements contributed to the deterioration of the situation: technological change and the reorganization of capitalism at the international level; the political, economic and social collapse of "real socialism" as implemented under the hegemony of the Soviet Union; the crisis of the Welfare State originally inspired by the social democratic movement and the resultant wave of reforms in this system; the intensification of globalization, above all at the financial level and in terms of real-time access to global flows of information and images; and the growing importance of knowledge as a strategic factor of production.

As a timely –or untimely– reaction to these tremendous challenges, the country had to embark on a wide range of reforms, including the adoption of a new Constitution in 1988 and its partial amendment in 1994; the adoption of various economic adjustment plans, culminating in the successful Plano Real in 1994, which set the seal on a period of far-reaching economic reforms in the areas of monetary stabilization, fiscal adjustment, greater openness of the economy and an ambitious privatization programme; reform of the State, and last but not least, changes in the institutions and programmes for the implementation of social protection policies.

Among the main economic reforms were trade and financial liberalization, exchange-rate modification, deregulation, the elimination of foreign investment barriers, privatization and fiscal discipline –all prerequisites for the future expansion of foreign investment. In the social sphere, the main efforts were aimed at concentrating public expenditure in the health, education and infrastructure sectors, although distortions persisted in the social security system. The main lessons to be drawn from the Brazilian reform experience include the net benefit of containing inflation and increasing trade surpluses and the importance of adjusting the financial sector at low cost in terms of GDP and attracting external savings for reinitiating the growth cycle. Since Brazil did not follow the exact sequence prescribed by international financial institutions, the reforms will imply new and important challenges for the country in the near future (Baumann, 1999).

In order to grasp the scope and significance of the social protection policy reforms, it is necessary to take account, on the one hand, of the broader structural context in which those reforms are being applied and, on the other, of the most important features of the Brazilian social situation and the country's social protection system. Mention should also be made of the main dimensions of the social development project adopted under the Plano Real, and the institutional problems associated with coordination of the Federal Government's social policies should be analysed. A brief assessment should also be made of the main results obtained and the considerable amount of work still to be done under the public programme. In the following pages, we will attempt to analyse each of these aspects.

□ Vilmar E. Faria, Doctor of Sociology (Harvard University), held the post of full professor at the State University at Campinas (Unicamp) and also worked as an assistant professor at the universities of São Paulo and Brasília, visiting professor at various universities in the United States, and Director of the Brazilian Centre for Analysis and Planning (CEBRAP) and of the Foundation for Administrative Development (FUNDAP) at São Paulo. He occupied the post of Executive Secretary of the Social Policy Department of

the Office of the President of the Republic from 1996 to 1999, where he contributed to the formulation of the Alvorada project (for poverty reduction in less developed cities), the development of the Community Solidarity Programme, and the incorporation of the Bolsa-Escola bursary project in federal programmes. Subsequently, and until his death on 27 November 2001, he acted as Chief of the Special Team of Advisors to President Fernando Henrique Cardoso.

II

Social protection problems and policies in present-day Brazil: a paradox

At the dawn of the 1990s, Brazil's social situation was somewhat paradoxical.

On the one hand, after at least 50 years of rapid economic growth based on import substitution industrialization and an aggressive role by the State as an economic stakeholder, the country had become one of the most dynamic and complex urban/industrial societies on the capitalist periphery, and one of the ten leading economies in the world. It had a large business sector consisting of a wide range of national business entrepreneurs as well as industrialists from the most dynamic economies of the First World (Germany, United States, United Kingdom, France and Sweden, among others). It had already succeeded in developing a modern, large-scale and diversified commercial agricultural system, and although it remained a relatively closed economy, it had managed to establish a pattern of differentiated exports ranging from traditional primary products to consumer durables, automobiles, and even aircraft. It had one of the largest advertising markets in the world and a relatively comprehensive and diversified system of postgraduate education and science and technology studies. Its differentiated occupational and class structure was characterized by high geographic and social mobility and by the existence of an occupationally diversified middle class and quite a significant industrial working class, located especially in the central and southern regions of the country (Faria, 1986).

At the same time, however, the overall picture in the country was still one of serious inequality, exclusion and social backwardness, due to its past as a colonial and slave-based society and the exclusive pattern of protected industrialization. Consequently, it still had a large, poor rural sector, made up of owners of small, extremely unproductive family properties and masses of landless labourers. The cities harboured droves of unskilled manual and non-manual workers, who constituted a large excluded and marginalized sector. Education and health services were backward in terms of both access and quality. Adult illiteracy was close to 20% and as much as 37% in the Northeast; average schooling amounted to only 4.9 years and 11% of

children between 7 and 14 years of age did not attend school. Undesirable patterns of social discrimination persisted, based mainly on race, gender and geographic origin. The illiteracy rate was 9% among whites but 22% among blacks and persons of mixed race. The white population had 6.2 years of schooling on average, whereas those of African origin had only 4.2 years. Infant mortality, unemployment and lack of access to health services were also disproportionately high among the black and mixed population compared with the white population. When they did have employment, blacks were paid only half as much as whites.

Paradoxically, alongside this complex structure of exclusion, backwardness, inequality, discrimination and vulnerability, by the end of the 1980s Brazil already had quite an extensive State system of social protection, especially compared with the other countries of Latin America and Asia. As one of the pioneers of this system in Latin America—along with Argentina, Uruguay, Chile and Cuba—it already had a broad, complex and costly system of protection. Strongly Bismarckian in inspiration and with a deep influence of the State/corporatist pattern characteristic of countries where Catholicism exercised a major political and ideological influence, the Brazilian system was, and still is, characterized by uneven and fragmentary benefits linked to the different occupational sectors and elite groups. Because of its markedly State character, it favoured groups with links to the public sector: members of the armed forces, government employees (particularly those of State-owned enterprises), officials of the legislative and judicial corps and of typical State activities such as the diplomatic service, and to a lesser degree industrial workers from the most strategic sectors.

The gradual incorporation of other sectors took place in an uneven manner, and the pattern of organization of the publicly-run social services continued to show limitations in terms of access and quality, and—in the case of education, for example—gave the upper middle classes privileged access to higher education. Taking all three levels of government (federal, state and municipal), the investment and public

expenditure required by this system represented a little less than 20% of GDP, the bulk of this expenditure being related to the pay-as-you-go retirement and pension systems and other benefits associated with the corporative system.

The 1988 Constitution, which was the fruit of the struggle against the authoritarian regime, simply confirmed and expanded the foundations of this system, without taking full account of the need for its actuarial restructuring, its fiscal impact or redistributive role, or the challenges that it would have to face in the future, especially those arising from the new population dynamics. Innumerable diagnostic studies made on this system in the 1980s revealed its incomplete, corporatist, regressive and fragmentary nature.¹

The crisis of the 1980s and early 1990s simply exacerbated this social situation, disrupted the existing social protection system and heightened the paradoxes in a country marked by deep inequities and injustice. Thus, when the growth based on State-led import substitution industrialization had run its course, as reflected first in the debt crisis and, subsequently, in the worsening hyperinflation, Brazil went through a relatively long period of sharp fluctuations in growth rates reflected in over ten years of economic stagnation. Indexed hyperinflation severely penalized the poorest segments, which were unable to protect themselves, and threw the public sector into disarray. Consequently, the quality of the already precarious public services declined still further, State investment slumped, and some important public-service sectors, such as housing, collapsed entirely.

Thus, at the start of the 1990s the country was sunk in an unprecedented crisis. Between the end of the 1970s and the early 1990s, per capita family income was below 250 reales most of the time, and in the period from 1990 to 1994 it stood at practically the same level as in 1977-1979 (figure 1). The proportion of poor people in the population was over 50% during the 1982-1983 crisis, and it remained at around 43% in the late 1980s and early 1990s (figure 2); in the first half of 1994, immediately after the adoption of the Plano Real, the absolute number of poor people reached a peak of over 67 million persons. The same occurred with the proportion and number of indigents. At the beginning of the 1990s, indigents accounted for more than 20% of the population (20.4% in 1992) and numbered more

than 30 million, with the proportion rising to 29.8% in 1993-1994 (figures 3 and 4).

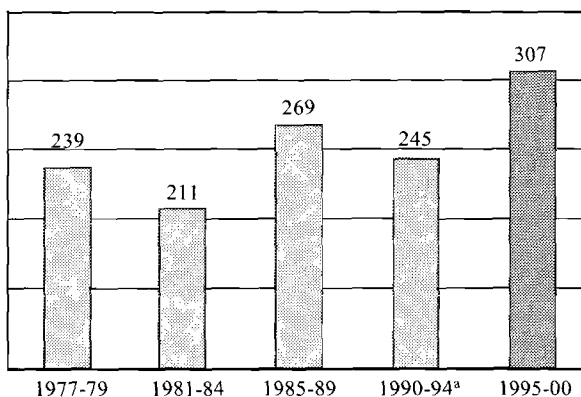
At the beginning of the decade, life expectancy at birth was below 65 years, while infant mortality (43 per thousand for the country as a whole) still varied significantly between urban and rural zones and between regions, ranging from 28 per thousand in urban areas of the south to over 84 per thousand in the rural Northeast. Adult illiteracy and basic schooling rates were incongruous with the degree of wealth and development that the country had attained: 17% of illiteracy among the adult population and little more than four years of schooling.

Income distribution in Brazil reflects the gravity of the social panorama. Despite fifty years of rapid growth, the Gini coefficient was still around 0.600 at the end of the 1970s and remained at this same level for the following twenty years, with a slight worsening of the situation at the beginning of the 1990s (figure 5).

Paradoxically, however, the country's social spending represented close to 19% of GDP, including pensions, health, education, labour, housing and basic sanitation, social welfare, programmes to support peasant agriculture, agrarian reform and rural social development. These investments and expenditures, together with the associated direct income transfers, had little distributive impact. Existing estimates – which it should be emphasized are only tentative – show that government transfers at this time did very little to change the appalling income distribution situation in the country.

FIGURE 1

Brazil: Monthly per capita household income
(Average for the periods, in 1999 reales)



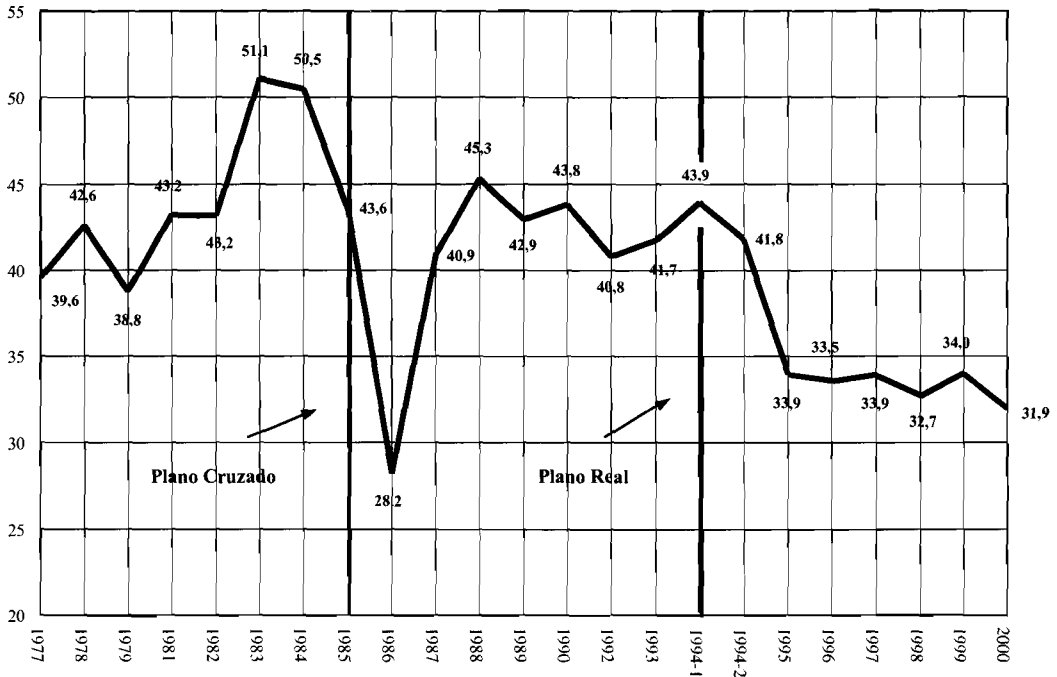
Source: Brazilian Geographical and Statistical Institute (IBGE), national household surveys.

^a Does not include data for 1991.

¹ See in particular the studies by Draibe, Guimarães de Castro and Azeredo (1995) and Faria (1991 a and b).

FIGURE 2

Brazil: Percentage of poor persons in each year,^a 1977-2000
(Percentage of total population)

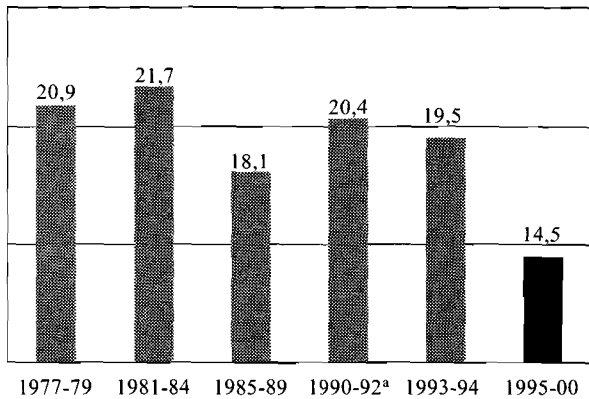


Source: Institute for Applied Economic and Social Research (IPEA) on the basis of IBGE national household surveys.

^a The values shown for 1994 to 2000 are estimates.

FIGURE 3

Brazil: Percentage of indigents, 1977-1999
(Averages for periods, as percentages of the population)

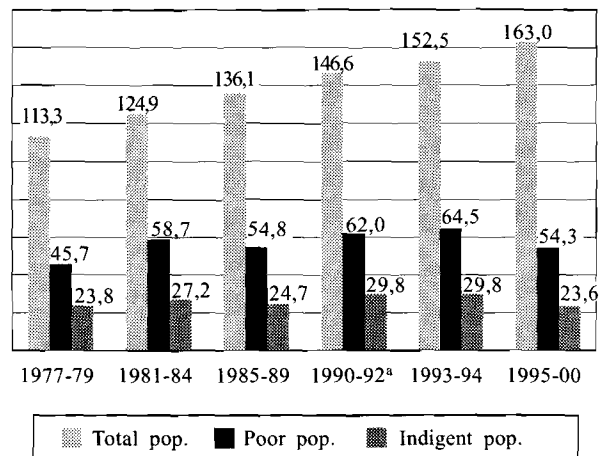


Source: IPEA, on the basis of IBGE national household surveys.

^a Not including 1991.

FIGURE 4

Brazil: Total population, poor population and indigent population, between 1977 and 2000
(Averages for periods, in millions)



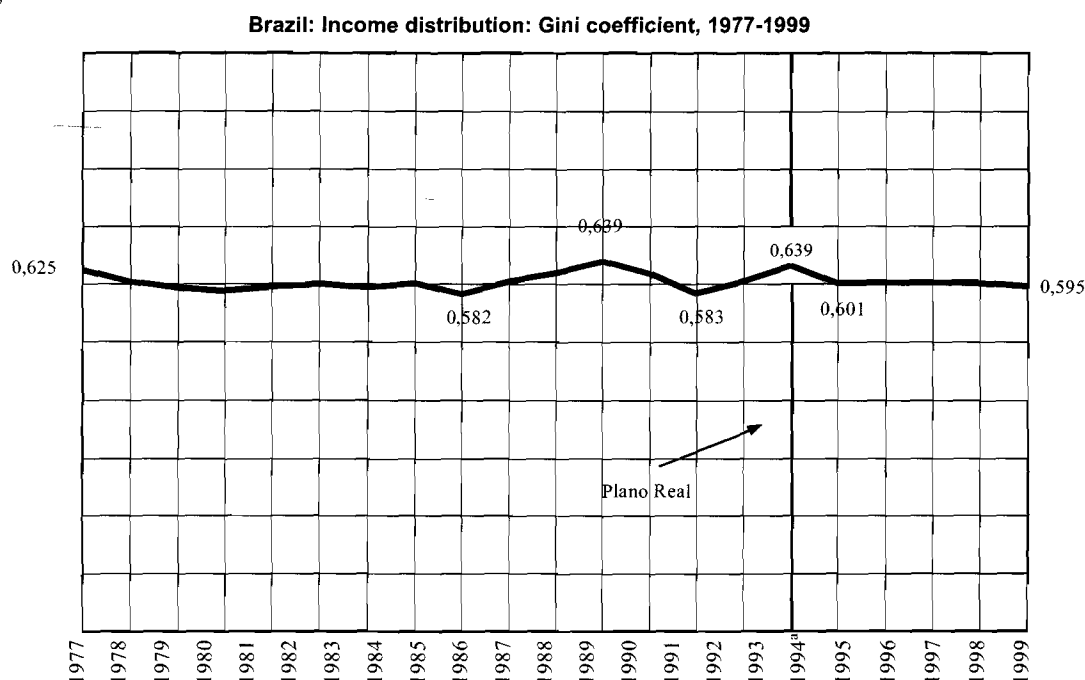
Source: IPEA, on the basis of IBGE national household surveys and censuses.

^a Not including 1991.

The social development of Brazil—including the advances and necessary modifications in the social protection systems, the necessary institutional reforms and, above all, the coordination of government social policies—should be examined against the background of this social legacy, the grave

economic and social crisis, the far-reaching transformations in the pattern of growth and State organization, and the urgent need to resolve the acute problems of fiscal adjustment and to confront the recurrent threats posed by the unstable international financial situation.

FIGURE 5



Source: IPEA, on the basis of IBGE national household surveys.

^a 1994: estimated value.

III

The Plano Real and its social development strategy

After countless unsuccessful attempts at structural adjustment of the Brazilian economy, the Brazilian authorities set about the design, preparation and progressive application of the Plano Real, as a response to the challenges posed by the new forms of the international division of labour deriving from the evolution of world capitalism and the aftermath of the disastrous political experience of the Collor

administration (1990-1992), which culminated in the impeachment of the President of the Republic. This plan, which was conceived under the direction of Fernando Henrique Cardoso in the Ministry of Finance during the government of President Itamar Franco (1993-1994), has been applied since then and was further consolidated during President Cardoso's two terms of office (1995-2002).

Better known for its economic aspects, especially as regards the effort to control hyperinflation and stabilize the currency, the Plano Real has been gradually improved over time. First, it was expanded to encompass not only different aspects of monetary, fiscal and foreign exchange policy, but also measures aimed at greater economic openness and at achieving advances in the privatization process and strengthening the banking system. Subsequently, efforts were made to cover issues relating to reform of the State, investments for bringing the country's physical and social infrastructure in line with the new capital accumulation requirements – in a multiyear investment plan known as *Avança Brasil* – and the strengthening of regional integration through Mercosur. Last but not least, a comprehensive strategy for social development was included.

This social development strategy, which was conceived and applied in the years of the Cardoso Government, highlights some conditions deemed necessary, albeit not of themselves sufficient, for promoting sustained social development, as may be observed in the successive documents in which it is embodied². It outlines strategic principles to serve as guidelines for the measures to be applied and lists six main points around which the institutional and programme initiatives are to be organized in order to implement the proposed strategy. Finally, in due course, it develops constitutional, institutional, legal and programmatic actions for achieving the desired objectives.

From the programme point of view, the Government adopted some fifty major programmes which eventually enabled it to implement the social development strategy to a greater or lesser extent. This less familiar aspect of the Plano Real is summed up below.

The four **fundamental conditions** to be simultaneously achieved through the application of the social policies are:

(i) *Macroeconomic stability*. As recent Brazilian experience has shown, the control of inflation and stability of the currency have an important redistributive effect, quite apart from their contribution to financial and administrative stability.

(ii) *Fiscal austerity*. Structural adjustment of the public accounts is the indispensable complement to price stabilization, industrial modernization,

privatization or reduction of the size of the State and restructuring of the financial system to release and support the Brazilian economy's growth potential. Without the consolidation of a new fiscal regime, the scarcity of domestic saving would ultimately inhibit the growth of production and domestic consumption.

(iii) *Reform of the State*. This functional reform is designed to reorient the role of the State towards the activities where it is really essential, together with administrative reform measures for staff training, reforming the career structure and motivating civil servants in order to increase public-sector efficiency, especially in social services.

(iv) *Sustained economic development*. Growth rates of at least 5% are necessary in order to cope with the titanic task of creating enough new jobs over the next fifteen years and achieving the higher GDP growth rates essential for improving income distribution.

The **guiding principles** of the social development strategy are listed below:

(i) *Universality, solidarity and equality of opportunity*. Social policies must be based on these principles, without losing sight of the cost-efficiency ratio of each of the programmes.

(ii) *Participation*. In the design, implementation and evaluation of social policies, it is of fundamental importance to expand the areas of public participation by increasing and diversifying the forms of social participation and public control.

(iii) *Decentralization*. Decentralization is crucial for public social policy implementation in a country which is as large and heterogeneous as Brazil and which has a strong federal structure. Direct state and municipal participation is essential in sectors such as education and health, although the strategic role of the central authorities in social and regional redistribution must not be overlooked.

(iv) *Partnership*. Since the Government alone cannot take on the huge number of tasks necessary for carrying out a coherent social policy, it will need to enter into agreements with civil society, as represented by companies, trade unions, universities and non-governmental organizations. Such agreements could be the basis for developing new public – not necessarily State – ways of tackling problems (for example, in health-related areas).

The Brazilian social strategy is **structured** along the following lines:

(i) *Thorough-going reform of basic social services provided by the public sector*, through universal

² Cardoso, 1994, 1998 and 2001; Brazil, Office of the President of the Republic, 1996 and 2001.

coverage in respect of education, health, basic social security and urban infrastructure; improvement of the quality of services; greater efficiency, and the greater redistributive impact of social spending.

(ii) *Improving the quantity and quality of opportunities for work and income.* This includes greater support for labour-intensive sectors, professional training and retraining, and amendment of the laws governing labour relationships through the expansion of collective labour contracts.

(iii) *Application of specific policies for rural areas.* Despite the growing urbanization of Brazil, close to 25% of the economically active population is still employed in agriculture, and many rural migrants to the cities have not managed to integrate adequately into urban production structures. Support for peasant agriculture and the stimulation of new forms of survival through agro-urban companies are therefore essential tasks.

(iv) *Increasing opportunities for access to productive assets such as land, credit and know-how.*

(v) *Development of initiatives and programmes specifically designed to alleviate the most acute forms of poverty in the short term.* In Brazil, targeted programmes mean flexibility, because it would not be appropriate to apply the same policies in the periphery of a big city like São Paulo and in the interior of the Northeast region. The Community Solidarity Programme was conceived as a means of coordinating

programmes for combating dire poverty and hunger in the poorest regions of the country and trying out new social initiatives in conjunction with civil society.

(vi) *Establishment and improvement of direct income transfer programmes.* These programmes are a kind of social protection system for situations of need and risk. The main programmes in this respect are: monthly old-age and disability benefits, which guarantee a minimum monthly income for more than one million elderly and poor disabled persons at an annual cost of 3,500 million reales; rural social security, providing benefits to more than six million agricultural workers at a cost of 12 billion reales per year; unemployment insurance and wage supplement benefits, involving annual outlays of 5 billion reales and the *Bolsa-Escola* school bursary programme, with funding of some 2.5 billion reales transferred from the Federal Government to the municipalities. In total, the cost of federal direct transfer programmes in 2001 was estimated at close to 20 billion reales, or more than 2.5% of GDP.

This comprehensive and ambitious strategy has become more clear-cut over time, but there are still important deficiencies in its application. It has not been very successful in some of its programme objectives, and above all it is still facing serious fiscal bottlenecks and various constitutional, legal and institutional challenges.

IV

Institutional aspects of the social development strategy

Numerous obstacles and bottlenecks persist and must be overcome before the social development strategy outlined above can be properly implemented in Brazil, where it is so urgently needed.

At the fiscal level, there are limitations in at least two respects. On the one hand, a fiscal austerity policy needs to be applied as a necessary but not of itself sufficient condition for achieving sustained social development. This implies severe restrictions on federal, state and municipal public expenditure, further strengthened by the adoption of the tough but indispensable Fiscal Accountability Act. The significant expenditure already incurred and the almost unavoidable

natural increase caused by the population dynamics also represent limiting factors, especially in the areas of social insurance and welfare, and health. From the macroeconomic point of view, it would be very difficult to increase the amount of social investment and expenditure, which already stands at about 22% of GDP, since it is a well-known fact that the higher the level of this effort, the more difficult it is to increase it. The above-mentioned restrictions significantly limit the leeway for improving social protection policies.

The main obstacles to be overcome are at the institutional level, however, and are of a legal, political and organizational nature.

As already indicated, the Brazilian social protection system inherited from the past is part of the problem, not the solution. Its corporatist and fragmentary structure, together with its high cost and operational inefficiency, the host of interests developed around it (politicians, bureaucrats, suppliers and clients) and its regressive structure of benefits has given rise to a set of acquired rights and privileges, especially by segments of the middle class well placed in the judicial, political, bureaucratic and military structures of the country.

Secondly, the poor quality, inadequate performance, restricted access and deterioration of the public social services associated with the worsening crisis of the late 1970s helped to trigger a process of redemocratization under which the new Brazilian Constitution enhanced the legal foundations of the social protection system by spelling out in detail specific requirements for protection which are difficult to fulfill under the new demands of greater competitiveness, the changing population dynamics, and fiscal austerity.

Thirdly, the very consolidation of democracy and the resultant healthy dynamism and combativeness of the different sectors of Brazilian society have transformed the multiple demands arising from the unjust social situation into organized and legitimate pressures, particularly with respect to the fight against hunger, exclusion, discrimination and poverty, calling for well-targeted policies and affirmative action.

Lastly, and to sum up the foregoing, when there is no scope for increasing expenditure or for expansion through upward equalization mechanisms, which would permit the expansion to take place as part of a positive-sum game, the only path left for social policy is to restructure financing, expenditure and benefits in order to increase the effectiveness, coverage and redistributive coverage of the system. In other words, the only option is to introduce sweeping institutional changes which imply major conflicts of interest.

Rather than dwelling at length on the details of this vast institutional reform being implemented through dialogue, debate and democratic struggle, we will merely point out its main dimensions and areas of action.

Firstly, it was and still is necessary to change the social policy financing system and the mechanisms for the distribution of resources and allocations among the different spheres of government. Thus, important initiatives were taken with respect to the social security of private-sector workers; the forms of financing and redistribution of federal resources for states and

municipalities in the education and health sectors, such as the creation of the Fund for the Maintenance and Development of Primary Education and Teacher Upgrading, and the Minimum Basic Welfare Standards (PAB); the procurement of new sources of funding for health expenditure, such as the establishment of the Provisional Levy on Financial Movements (CPMF), and the establishment of a fund for the special programmes for combating poverty (Poverty Alleviation Programme).

Secondly, it was, and once again still is, necessary to undertake an in-depth reform of the social security institutions, both those that serve private-sector workers and, above all, those serving the different segments of the public sector. Here, because of the extent and scope of the reform and the conflicts of interests that it implies, some progress has been made with respect to social security for private-sector workers, through the modification of criteria relating to age, period of contribution and length of service needed to obtain benefits, but little has been achieved so far with regard to public-sector employees.

Thirdly, for many of these reforms it was necessary to modify the text of the Constitution, which demanded a three-fifths majority vote in both chambers and the approval of the top levels of the judiciary. In a political system with more than thirty parties where all—even the six or seven leading ones—are characterized by personalism and absence of party discipline, and where parliamentary support for the government is organized on flimsy and unsubstantial bases, reforms of this kind always call for a great effort and are a source of constant political wear and tear. Some of these measures affect the interests of the legislative and judicial branches, which makes it difficult to secure their acceptance in these circles of the State. The administration of Fernando Henrique Cardoso, although fairly successful in implementing these reforms—which were also necessary in other spheres implicit in the implementation of the Plano Real—could not avoid this wastage and suffered more than one major defeat, as for example over the contribution of idle public-sector balances.

Lastly, it is important to note that the implementation of a social development strategy like that which took shape in the second half of the 1990s in Brazil calls for redoubled efforts of intra- and inter-governmental liaison and coordination. We will therefore examine this issue, which is the main subject of this article, in greater depth below.

V

Harmonization and coordination of social protection policies. Is a social authority enough?

The importance of policy harmonization and coordination mechanisms cannot be overstressed. This importance increases still further with some factors, however, especially: the size and heterogeneity of the country; the complexity and institutional differentiation of the State or public policy-making apparatus; the volume and complexity of the financial resources involved; the form of State organization (unitary, federated or confederated States); the systems or regimes of government (democracies or dictatorships, constitutional monarchies, coalition-based presidential systems, parliamentary regimes, two-party presidential systems, etc.), and the prevailing modalities of supply of public services (centralized State, decentralized State, decentralized public, philanthropic liberal, market-based liberal, etc.). These factors, in turn, affect the definition of the main problems of policy harmonization and coordination and, consequently, the possible solutions.

Our own experience in the management and evaluation of social policies in Brazil enables us to shed some light on their recent development.

Brazil is a country of continental dimensions with a strong and unique federal system: the federative entities, apart from the Union, consist of 27 states, a federal district and almost 6,000 municipalities. It has an incipient but vigorous democracy with an active National Congress (Senate and Federal Chamber) in which more than twenty parties are represented, a complex and differentiated judicial system, a free and aggressive press, and a system of government based on free and competitive elections, where the representatives of the Union, the states and the larger municipalities are chosen in periodic elections held in two rounds. At the federal level, the system of government may be defined as a "coalition-based presidential regime", which involves the formation of complex and unstable political alliances both in order to be elected and, even more so, for governing.

The responsibilities for executing the different elements of Brazilian social policy –which involves annual resources in excess of 300 billion reales– are divided up among the Union, the states and the

municipalities. At the federal level, the social budget, which represents about 80% of the total budget of the Union (170 billion reales out of a total of 210 billion in the year 2000), is distributed among some ten ministries. Five of them –Social Security and Welfare, Health, Education, Peasant Agriculture and Agrarian Reform, and Labour and Employment– are large bureaucratic structures with tradition and influence, which handle enormous resources and are responsible for the financing and regulatory control of policies and programmes which, together, serve more than 150 million people.

Implementing the more than fifty programmes through which the social protection measures are expressed involves complex intergovernmental relationships at the federal level and no less complex intergovernmental relationships with other entities of the federation. In addition, many of these programmes also have normative or regulatory councils, made up, in varying proportions depending on the council, of representatives of the Federal Government, the states, the municipalities, specific social segments –such as employers and workers– and of civil society as a whole. These councils are often split up into federal, state and municipal councils.

These characteristics, which are of course not peculiar to Brazil, pose considerable harmonization problems for budget design and preparation, and for the regulation, implementation and evaluation of social policies. These are exacerbated by the demands of the reforms now being made in the social protection system under the Plano Real.

Four aspects of this problem, as reflected in Brazil's recent experience, are highlighted below together with a brief account of the initiatives taken and an initial evaluation of their successes and failures.

The first, most general and most decisive aspect is that of the problems of macropolitical harmonization and coordination, especially as regards financing and budgeting, on the one hand, and political coordination for carrying through the desired reforms, on the other.

In Brazil, the entities responsible for these functions either come under the Office of the President

of the Republic and receive an explicit mandate, together with the support and direct participation of the President, or else they are divided up among the Civil Department, the General Secretariat of the Office of the President of the Republic, the Office of the Attorney General of the Union and the Office of the Special Advisor in the President's cabinet. The Minister in charge of the General Secretariat of the Office of the President is responsible for liaison and coordination between the Executive and Congress, state Governors and political parties. In addition to their specific functions, the Office of the Attorney General of the Union and the Office of the Special Advisor assist the President and ministers in fulfilling these tasks of coordination and liaison.

In this respect, the most important initiative undertaken to improve the federal administration's performance was the creation of sectoral chambers, which bring together ministers by subject areas or macro-problems, under the operational direction of the Minister in charge of the Civil Department. The following sectoral chambers were created from the start: the Economic Policies Chamber, the Infrastructure Chamber, the Social Policy Chamber, the State Reform Chamber and the Security and Justice Chamber. They meet regularly –weekly or fortnightly– and are made up of the Minister in charge of the Civil Department –who coordinates them– the Secretary General, the Minister of Finance, the Minister of the Budget, Planning and Management, the sectoral ministers and the presidents of decentralized agencies and state banks, where appropriate. Some of these chambers also have an executive secretary, who is responsible for putting into effect any decisions that may be adopted. The President of the Republic participates actively in these meetings as often as deemed necessary by the Minister in charge of the Civil Department and the Executive Secretary of the Chamber. At first, the composition of these chambers was fixed, but experience has shown that it is more appropriate that it should vary depending on the problems of harmonization and coordination to be addressed.

These chambers have had varying degrees of success; among the most successful are the Economic Policy Chamber (which meets once a week and is almost invariably attended by the President of the Republic), the Infrastructure Chamber and the Social Policy Chamber.

The Social Policy Chamber has acted as the coordination mechanism for the social development strategy being applied in Brazil. Its relative success

(especially in the first years of its existence and of the application of the strategy) is attributable to four factors, all of a political nature: the active commitment of the central government authorities, especially the Office of the President of the Republic; the general coincidence of views, although not without conflicts and arduous negotiations, among the ministers of the main social areas (social security, health, education, labour, and peasant agriculture and agrarian reform); the fact that the majority of its members are highly skilled technical staff and persons enjoying the highest trust by the President of the Republic; and the sensitivity and discipline shown by the economic authorities –although once again not without conflicts and disagreements– with respect to the decisions taken in the Chamber and endorsed by the President of the Republic, although the point of view of the social areas has not always prevailed.

From this point of view, recent Brazilian experience does not confirm that it is necessary or even desirable to set up a "social authority" in the sense of a bureaucratic superstructure under the control of a ministry which has operational powers in some or all of the sectoral areas of social policy. An initiative of this type would not be politically viable and would be operationally ineffective. In contrast with the situation in the economic area, where the operational mechanisms are relatively few and highly efficient –the budget, the interest rate, the exchange rate and the control of income, among others– in the social area there are many more instruments albeit of more limited effectiveness. Moreover, a considerable number of the operational technical staff work in sectoral ministries, and no matter how deficient they are now, centralizing them in a single superstructure would only add to their inefficiency. The Brazilian experience points rather to the need to reform and strengthen the sectoral structures from the functional and technical viewpoint, increasing their strength, prestige and political power and developing effective mechanisms rather than bureaucratic coordination structures.

A second important aspect of the problem of coordination refers to social protection activities which involve conflicts and which require collaboration between different sectors of the social area of the Federal Government for the implementation of a programme or project. A significant number of such programmes and projects, above all the most innovative ones, which seek to reform the profile of Brazilian social policy, call for such collaboration. Thus, for example, the *Bolsa-Escola* scholarship programme requires close

operational collaboration between the Ministries of Education, Social Security and Welfare, and Justice, as well as the Federal Economic Fund.

The mechanism developed by the Federal Government for dealing with problems of coordination arose originally within the Social Policy Chamber. It was created by an executive committee of the Chamber and coordinated by its secretary, and it was given a flexible format in order to help resolve the problems of the executive secretaries of the respective ministries, whose basic function is to put the policies, programmes and projects into practice. Problems of integration, liaison and operational coordination for which no solution is found at this stage are brought before the ministerial level of the Chamber.

Although the success of this initiative was greater than that of macropolitical coordination, it likewise varied from one programme to another, due more to political and administrative factors than to problems of bureaucratic centralization. These factors include the technical and managerial capacity of the sectoral executive secretaries, relatively long administrative continuity, convergence of views on the main lines of the social development strategy, the degree of political support received by executive secretaries from their respective ministries, and the legitimacy that they manage to achieve together with their respective administrative apparatus.

A third aspect of the coordination of social policies at the federal level refers to problems relating to the regional and social orientation of programmes and their convergence. Critical diagnostic studies of Brazilian social policy have always underscored two major problems: the lack of targeting of some programmes for combating poverty and regional inequality, on the one hand, and the lack of synergy and convergence of the programmes on the other. The most underprivileged sectors of the Brazilian population did not have access to social safety nets, lacked targeted programmes, and many programmes converged only in a few areas and sectors, excluding many others, especially the poorest and most underprivileged. Reform of the Brazilian social protection system called for an effort to target some programmes and ensure their synergy and convergence in areas given priority because of the deficiencies involved. It should be mentioned that many of these programmes are of a sectoral nature and the technical and operational capacity for implementing them therefore lies in the sectoral administrative structures. Furthermore, intergovernmental linkages and

coordination are crucial for carrying them through, in addition to inter-ministerial coordination

On the basis of their own experience—especially regarding the unsuccessful initiatives of this type taken within the framework of the Community Action Secretariat in the early days of democratization—and other experience with the many social funds established in the 1980s, the Brazilian decision-makers had dismissed the idea of concentrating these targeted programmes and convergence mechanisms within a single agency, since the clientage frequent in this type of agency, the widespread discredit of sectoral bodies, the neglect of the technical, political and administrative capacity accumulated at the sectoral level, and the bureaucratic conflicts implicit in a solution of this kind made it advisable to seek new alternatives.

Over time, the Brazilian Federal Government developed a set of procedures, mechanisms and structures for dealing with this difficult issue. The starting point was the creation of a programme under the Civil Department of the Office of the President of the Republic, known as the Solidarity Action Programme, which, after passing through various stages, has split up into three or four mechanisms and structures.

On the one hand, the Federal Government set up and provided logistical and administrative support for a Council made up at present of four ministers (of the Civil Department, Finance, Planning and Justice), twenty persons from different segments of civil society with a recognized record of participation in initiatives for combating exclusion and poverty, and Ruth Cardoso, an anthropologist and university professor with a long career as a militant in social movements and also First Lady of the nation. Through this Council, partnerships are being formed between the government (federal, state and municipal) programmes, sectoral programmes and different sectors of civil society (firms, universities, trade unions, churches, etc.), in order to develop innovative social policy activities in conjunction with segments and regions selected for their needs and deficiencies. Some of the most successful initiatives in this area are: the literacy programmes for young people, financed by private firms with support from the Ministry of Education; the professional training programmes for young people, developed by non-governmental organizations, prefectures and trade unions, with the support of private firms and the Ministry of Labour; the incentive programmes for voluntary action, with support from the Ministry of Justice, and a programme for mobilizing the university community for the

execution of community development projects with support from the Ministry of Health and Education, the armed forces and private companies. These initiatives, which in general began on an experimental basis and on a small scale, spread once they were successful and took in different segments of both the public and the private sectors as well as the tertiary sector.

After a few failed experiments, the Federal Government is now pushing forward two initiatives, both coordinated by the Office of the President of the Republic, under the operational responsibility of an executive appointed by the President; the objective of these initiatives is to carry out in a coordinated and synergetic way a subset of programmes for the poorest areas in the country, selected according to social indicators such as those included in the UNDP Human Development Index and available to all municipalities in the country.

The first of these, referred to as the Alvorada Project, consists of a set of twelve programmes prepared within the framework of the ministries of education, health, social security and welfare, and sports and tourism, among others. It is being supported by a Poverty Alleviation Fund, set up by the National Congress, whose purpose is to provide Brazilian municipalities where the human development index is very low (under 0.500) with the basic infrastructure necessary for social and human development activities. The programmes are still being conducted on a sectoral basis. The objective of the initiative is to ensure that these sectoral programmes reach those municipalities on a priority basis and that they are executed jointly by the authorities and local civil society. Their problems of intersectoral coordination are dealt with and resolved within the ambit of the Office of the Executive Secretary of the Social Policy Chamber.

The second initiative, which is part of a programme called the "Active Community", is of more limited coverage and scope and is oriented towards supporting community activities for integrated local development. In each state, the poorest municipalities whose inhabitants have shown some capacity for mobilization, organization and action are selected with a view to helping them to find new ways of boosting and developing their respective regions. On the basis of the organization and micro-entrepreneurial training ("thrust") of these communities, needs and demands are identified and the Federal Government seeks to mobilize its programmes in support of such local development efforts.

As is evident, rather than establishing centralized bureaucratic structures, these initiatives are aimed at

creating inter- and intra-governmental coordination with political support from the central government authorities.

A fourth aspect of social policy coordination refers to the continuity and administrative effectiveness of social programmes. From the budgetary standpoint, the aim is to set up mechanisms to protect the main social programmes from the cyclical variations and expenditure cuts imposed from time to time by the exigencies of fiscal balance. Two initiatives have been taken in this area, both within the framework of the Ministry of Planning, the Budget and Management.

The first of these initiatives, the "Avança Brasil" programme, embraces a selected subset of programmes—fifty programmes in the different areas considered to have priority by the Government and comprising infrastructure, social development and the generation of knowledge—which have budgetary priority and for which special management, follow-up and evaluation mechanisms have been developed. This initiative also includes another group of twelve programmes whose budgetary items were maintained even in various circumstances which made necessary cuts in expenditure.

The second initiative, referred to as the Social Safety Net, was developed in the context of the negotiations conducted by Brazil in 1998 with the International Monetary Fund (IMF), the World Bank and the Inter-American Development Bank (IDB) with a view to obtaining the support of these organizations in order to protect the Brazilian economy from the speculative attacks and financial crises that periodically threaten emerging economies. In addition to targets for controlling inflation and reducing the public deficit, commitments and physical and financial targets were assumed by the government in respect of twenty-two programmes considered essential for protecting various of the poorest segments of the population in such crisis situations (for example, maintaining the necessary resources for the payment of unemployment insurance and monthly old-age and disability pensions for poor disabled persons, together with the resources for financing primary education).

Here, once again, the idea was to create operational mechanisms with political backing, rather than centralized bureaucratic structures.

Finally, mention should be made of another aspect of the harmonization and coordination of social policies: the relationships between the different levels of government. In Brazil, although the Federal Government has always played a strategic role—and

should continue to do so— in the financing and establishment of guidelines for social protection programmes, their operational execution is becoming increasingly decentralized and is left to the states and municipalities. This need for decentralization —since citizens do not live in the Union as such but in one of the municipalities— poses enormous problems of coordination and articulation in a country as large as Brazil and with its very special federal system. Although numerous initiatives are underway for addressing these problems, they are so highly dispersed and persistent that it is unlikely that the Brazilian experience can serve as an example for a large-scale project that could be successful in this respect, except for the examples given earlier.

Our personal and pragmatic conclusion, based on the problems of a country like Brazil, is that setting up a centralized “social authority” is neither necessary nor even advisable, if by such an authority we mean a new bureaucratic structure that concentrates and centralizes social policy initiatives. What is needed —apart from the political thrust of the central authorities— is the creation of coordination and liaison mechanisms that have legitimacy, political support and technical capacity.

VI

Conclusion: an overview of the results obtained

It would be beyond the scope of this study to make a detailed evaluation of the results of Brazilian social policy over the last ten years. Attention may be drawn to three aspects in this respect by way of conclusion, however.

Firstly, there are still major challenges to be confronted in terms of improving the various social indicators, in terms of the coverage, effectiveness and quality of publicly provided social services, especially health, education and public security, and in terms of policy coordination and liaison mechanisms or even the reform of the Brazilian social protection system, especially as regards its redistributive role.

Secondly, while it must be recognized that much remains to be done, the objective results of the Plano Real in the social area are unquestionable. In spite of budgetary constraints, federal social expenditure reached a record level between 1993 and 1999, both in

Our experience also suggests that the recovery and functional, technical and administrative enhancement of the sectoral organs is a fundamental requirement for improving the performance of governments in the social sphere. In this respect, some of the activities relating to reform of the State and improvement of State management should be aimed at the upgrading of public employees involved in end activities (teachers, doctors, social assistants, etc.) as well as more thorough professional training for staff engaged in instrumental activities in these sectors (managers, business agents, human resources staff, computer staff, etc.), by stimulating and rewarding healthy competition, good working performance and career advancement. In our view, as long as the difficulties arising from the existence of old, outworn bureaucracies, which lead to the devaluation of the public service, continue to have their adverse effects, strategies based on the idea of creating new structures while allowing the old ones to gradually waste away will be doomed to failure.

Lastly, we wish to emphasize how important it is, for the success of coordination and liaison mechanisms, to form a politically cohesive social team which can identify with the social development strategy proposed by the head of the executive power and which is technically competent.

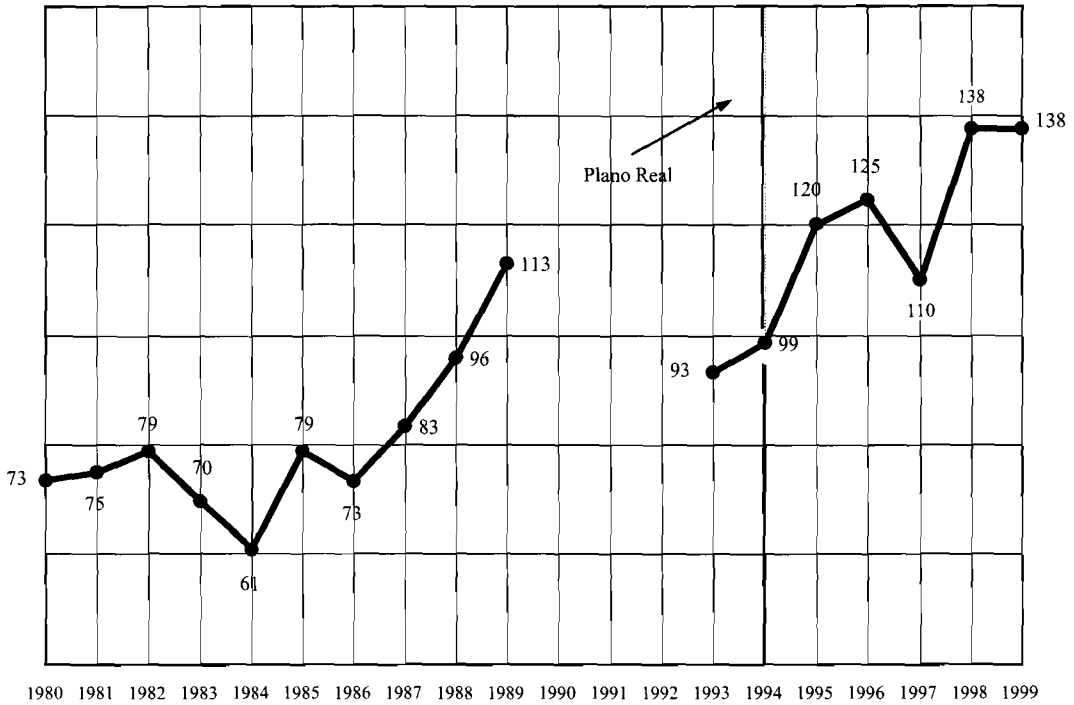
absolute amounts and in terms of per capita expenditure (figures 6 and 7).

Profound and far-reaching transformations were achieved in education, especially at the primary level: by 1999, adult illiteracy had fallen to 13.3% (figure 8); the rate of school enrollment of children between 7 and 14 years had risen to 95.7% (figure 9); secondary school enrollment had grown by close to 68% in six years; the rates of school desertion and grade repetition were lower, and there are quite a substantial number of projects for taking children out of the labour market and putting them all in school. The *Bolsa-Escola* school bursary programme will serve 10 million children in the next year, including practically all the children of the six million poorest families (Brazil, Office of the President of the Republic, 2001).

In the field of health, the Brazilian programme to combat AIDS has become a model for the entire world.

FIGURE 6

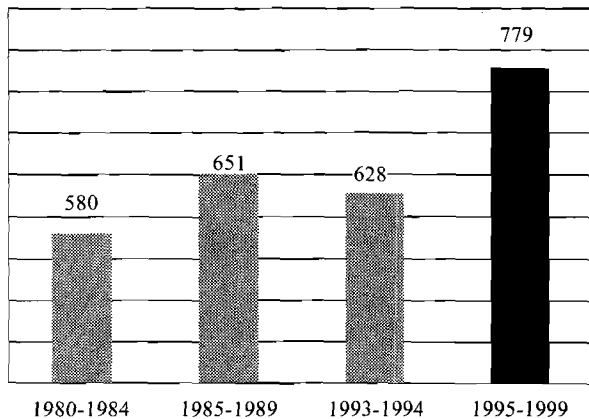
Brazil: Federal social expenditure, 1980-1999
(In billions of 1999 reales)



Source: IPEA/DISOC, on the basis of monthly statistics from the SIAFI/SIDOR systems.

FIGURE 7

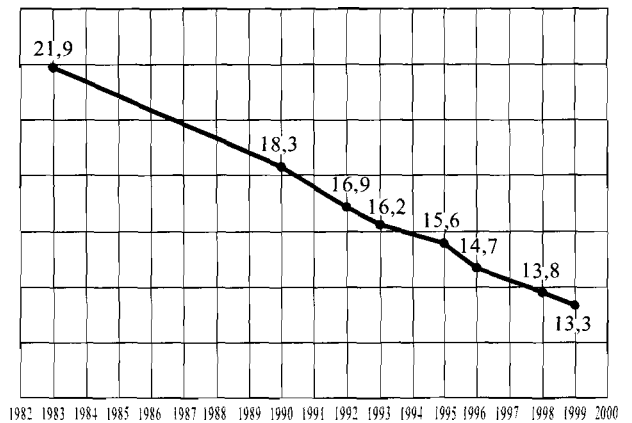
Brazil: Per capita federal social spending
(Annual averages, by period, in 1999 reales)



Source: IPEA/DISOC, on the basis of monthly statistics from the SIAFI/SIDOR systems.

FIGURE 8

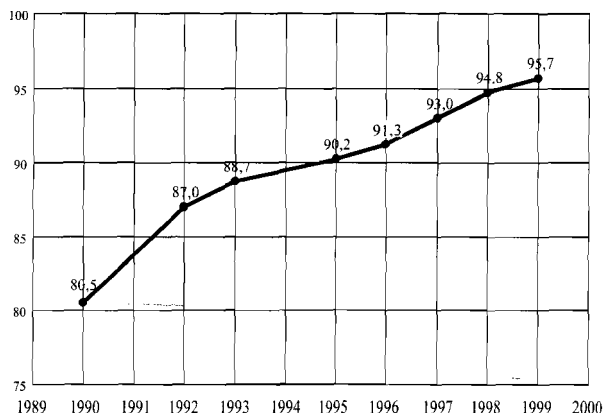
Brazil: Illiteracy rates among the population aged 15 years and over, 1983-1999



Source: IPEA, on the basis of IBGE household surveys.

FIGURE 9

**Brazil: Enrollment rate in the population
7-14 years of age, 1990-1999**
(Percentage attending school)



Source: IPEA, on the basis of IBGE household surveys.

Important innovations are being introduced, such as support for generic drugs and the establishment of a basic supply of medicines. The Family Doctors Programme now serves 3,230 municipalities with an estimated population of 38 million. The Community Health Agents Programme, which supplements the former, has 144,199 agents in 4,562 municipalities and serves 82 million persons. The national immunization campaigns are permanently in operation, and in the year 2000 child mortality fell to 35.3 per 1000 live births (figure 10). Federal financing for health increased from 14,800 million reals in 1995 to 26,000 million in 2001.

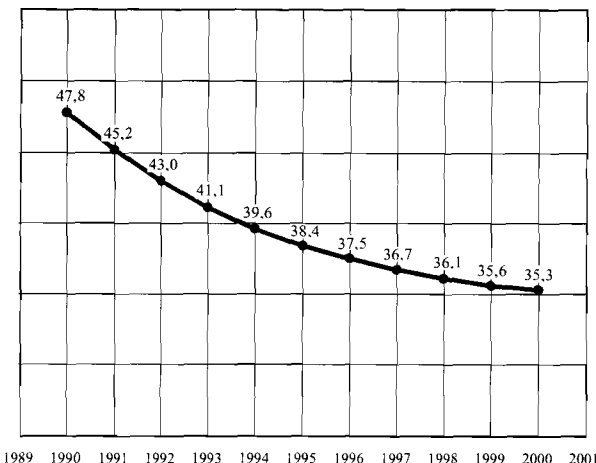
With regard to agrarian reform, 465,000 families received land in 1995, which is double the number of families benefited in the 30 years between 1964 and 1994. Almost 18 million hectares were expropriated for agrarian reform, and in six years loans in excess of 7 billion reals were granted to peasant farmers (figure 11).

The efforts to eradicate child labour which were begun in 1996 have given good results, guaranteeing attendance at school for almost 400,000 children and adolescents who previously worked in menial or degrading jobs (figure 12).

In the labour field, the programme to upgrade the professional qualifications of workers (PLANFOR) helped to increase the beneficiaries' employment and income possibilities, to raise productivity and competitiveness, and to give greater employment stability. Training was provided to 11.3 million workers between 1995 and 2000; more than 3 million received

FIGURE 10

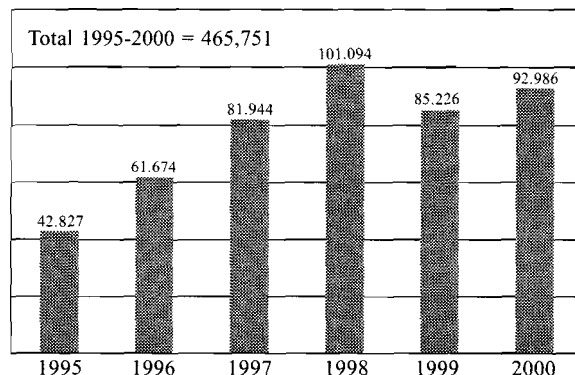
Brazil: Infant mortality, 1990-2000
(Per thousand live births)



Source: IBGE and Ministry of Health.

FIGURE 11

**Brazil: Annual settlement of landless families,
1995-2000**
(Total number of families settled)



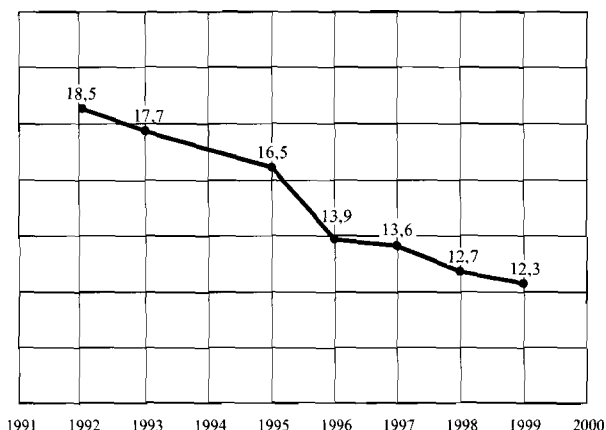
Source: Ministry of Agrarian Development.

training in 2000 and another 4 million are estimated to have been trained or retrained in 2001. The Employment and Income Generation Programme (urban and rural PROGER) is another important initiative which provides financing for training activities as well as technological assistance to workers. More than 1 billion reals have been allocated annually to this programme (Cardoso, 2001).

Substantial progress has been made in direct income transfers to individuals and families; federal programmes of this kind (such as the rural pensions programme, unemployment insurance, and benefits

FIGURE 12

Brazil: Incidence of child labour (10-14 age group), 1992-1999
(Percentage of children economically active in this age group)



Source: IPEA, on the basis of IBGE national household surveys.

under the Welfare Organization Act (LOAS), the *Bolsa-Escola* school bursary programme and the *Bolsa-Alimentação* food allowance programme) account for outlays of more than 20 billion reals per year.

In the seven years during which the Plano Real has been in operation, with all its various repercussions, the percentage of poor persons has gone down from 43.9% to 31.9% and the percentage of indigents from 19.5% to 14.5%. All social indicators, except unemployment and underemployment, show significant improvements.

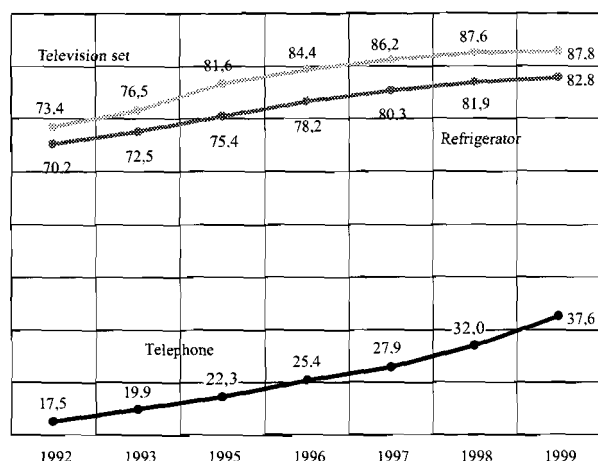
An indicator which reflects the increase in purchasing power resulting from the fall in inflation is the access to consumer durables. Between 1992 and 1999, the percentage of households with television increased from 73.4% to 87.8%; those with a refrigerator, from 70.2% to 82.8%, and those with a telephone from 17.5% to 37.6% (figure 13).

Although income inequality, which has been intractable for more than thirty years, is still very high, it has nevertheless shown a slight decrease.

Thirdly, it should be noted that Brazilian public opinion, and especially the opposition, nevertheless find little cause for complacency in these results, however objective and significant they may be. The social question continues to be a source of discontent and dissatisfaction for large segments of the population.

FIGURE 13

Access to durable goods, 1992-1999
(Percentage of households owning such goods)



Source: IPEA, on the basis of IBGE national household surveys.

Particularly significant in this regard is the appraisal of the situation made by some specific segments of the Brazilian middle class, especially those that depend on the State and who benefited from the corporatist pattern of social policy that prevailed in the past. These people are highly dissatisfied, and there are clear signs that their quality of life has not benefited from the reforms to the same extent as other sectors. Developing social protection activities for these segments has become a growing challenge, bearing in mind the heightened competition, changes in professional requirements and lack of security characteristic of the working world and urban life in general today.

In view of this wide disparity between the objective development of social indicators and the perception that part of the population has of its situation, together with the many other social lags that persist in Brazil, it is imperative that further advances be made in the area of social policies. It is therefore of crucial importance, given the budgetary constraints and the restrictions arising from the need to guarantee fiscal and macroeconomic balance, that every effort should be made to find new and more efficient mechanisms for liaison and coordination.

(Original: Portuguese)

Bibliography

- Amadeo, E. and others (2000): *Orçamento social da União*, Brasília, Secretaria de Política Econômica (SPE), Ministério de Fazenda.
- Arretche, M. and V. Rodríguez (orgs.) (1999): *Descentralização das políticas sociais no Brasil*, São Paulo, Brazil, Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP)/Institute for Applied Economic and Social Research (IPEA).
- Baumann, R. (1999): *O Brasil nos anos 1990: uma economia em transição, Brasil: uma década em transição*, Rio de Janeiro, Campus.
- Brazil, Office of the President of the Republic (1996): *Uma estratégia de desenvolvimento social*, Brasília.
- _____ (2001): *Agenda de Governo: biênio 2001-2002*, Brasília.
- Cardoso, F. H. (1994): *Mãos à obra Brasil. Proposta de Governo*, Brasília.
- _____ (1998): *Avança Brasil: mais 4 anos de desenvolvimento para todos. Proposta de Governo*, Brasília.
- _____ (2001): *Mensagem ao Congresso Nacional: abertura da 3ª Sessão legislativa ordinária da 51ª legislatura*, Brasília, Secretaria de Comunicação, Office of the President.
- Draibe, S., M. H. Guimarães de Castro and B. Azeredo (1995): *The System of Social Protection in Brazil*, Democracy and social policy series, Working paper, No. 3, Notre Dame, Indiana, University of Notre Dame, The Helen Kellogg Institute for International Studies.
- Faria, V. E. (1986): Mudanças na composição do emprego e na estrutura de ocupações, in E. Bacha and H. Klein (eds.), *A transição incompleta: Brasil desde 1945*, Rio de Janeiro, Paz e Terra.
- _____ (1991a): A montanha e a pedra: os limites da política social brasileira e os problemas de infância e de juventude, in A. Fausto and R. Cervini (orgs.), *O trabalho e a rua: crianças e adolescentes no Brasil urbano dos anos 80*, São Paulo, United Nations Children's Fund (UNICEF)/Latin American Faculty of Social Sciences (FLACSO).
- _____ (1991b): Cinquenta anos de urbanização no Brasil, *Novos estudos CEBRAP*, No. 29, São Paulo, Brazilian Centre for Analysis and Planning (CEBRAP), March.
- _____ (1994): *The Current Social Situation in Brazil: Dilemmas and Perspectives*, Democracy and social policy series, Working paper, No. 1, Notre Dame, Indiana, University of Notre Dame, The Helen Kellogg Institute for International Studies.
- _____ (1999): La política social en Brasil: una mirada comparativa, in J. Carpio and I. Novacovsky (comps.), *De igual a igual: el desafío del Estado ante los nuevos problemas sociales*, Buenos Aires, Fondo de Cultura Económica/Social Programme Information, Monitoring and Evaluation System (SIEMPRO)/FLACSO.
- _____ (2000): Brasil: compatibilidade entre a estabilização e o resgate da dívida social, *Pobreza e política social*, Cadernos Adenauer, No. 1, São Paulo, Konrad Adenauer Foundation.
- _____ (2001): A política social no Brasil: uma perspectiva comparada, in A. Vogel and S. C. Yannoulas (coords.), *Políticas públicas de trabalho e renda e controle democrático: a qualificação dos conselheiros estaduais de trabalho no Brasil*, São Paulo, Julio de Mesquita Filho State University of São Paulo (UNESP).
- Faria, V. E. and M. H. Guimarães de Castro (1989): Política social e consolidação democrática no Brasil, in Alexandrina Sobreira de Moura (ed.), *O Estado e as políticas públicas na transição democrática*, São Paulo, Editora Revista dos Tribunais, Ltd.
- Faria, V. E. and E. Graeff (2000): Preparando o Brasil para o século XXI: uma experiência de governo para a mudança, in Vilmar Faria and Eduardo Graeff, (comps.), *Globalização e governo progressista: novos caminhos, Reunião de Florença, 1999*, Brasília, Instituto Teotônio Vilela.
- Giambiagi, F. and M. M. Moreira (1999): *A economia brasileira nos anos 90*, Rio de Janeiro, National Bank for Economic and Social Development.
- Henriques, R. (org.) (2000): *Desigualdade e pobreza no Brasil*, Rio de Janeiro, Institute for Applied Economic and Social Research (IPEA).

Growth, *instability and* the convertibility *crisis in Argentina*

José María Fanelli

*Centro de Estudios de Estado
y Sociedad (CEDES),
Buenos Aires
josefan@ceDES.org*

The Argentine economy is currently going through the deepest and most prolonged recession of the postwar period: a devastating panorama that contrasts vividly with its significant growth in 1991-1998. In this article we will analyse the macroeconomic dimensions of the crisis which led to the abandonment of convertibility. Firstly, we will identify some structural weaknesses of the Argentine economy that are a source of macroeconomic instability. In particular, we will study the role of the imperfect access to international capital markets, the limited openness, the lack of financial depth and the nominal and policy rigidities, as well as the role of the errors in expectations and volatility. Secondly, we will examine the sequence of disturbances (shocks) in 1998-1999, concluding that the simultaneity of many of them aggravated their effects and that, under the convertibility régime, the economy was not prepared to face such consequences. Finally, we will briefly outline the policies that the country should apply in order to restore macroeconomic and financial stability.

I

Introduction

The Argentine economy is currently undergoing the deepest and longest recessionary process of the postwar period. This process began in late 1998 and, as time passed and the successive stabilization attempts failed, the agents increasingly perceived that the country was entering the obscure realm of economic depression. The consequences of this process are proving to be devastating. In December 2001 the democratically elected President was forced to resign and the convertibility regime that had been introduced in 1991 was abandoned. The expected growth rate for 2002 is -15% and inflation is on the rise. The peso has lost two-thirds of its value against the dollar since the replacement of the currency board regime with a floating system. Almost half of the population is now living under the poverty line (in 1998 the proportion of poor was 28%), and the country has defaulted on its debt.

This dismal picture contrasts sharply and strikingly with the 1991-1998 period, when the economy grew by more than 41% and there was a substantial privatization-led process to modernize the infrastructure in the context of a programme of structural reforms. In 1991-1998 Argentina was considered to be one of the most successful emerging economies, and the favourable investor sentiment permitted the country to place a significant amount of bonds in foreign capital markets. In 2001, Argentine bonds accounted for as much as a quarter of J.P. Morgan's benchmark index of emerging-market bonds.

The contrast between the 1991-1998 and 1999-2002 periods has created a bizarre situation that is difficult for the population to grasp: real GDP in 2002 will be 30% lower than in 1998, but the productive

capacity is roughly the same as in late 1998, when the recession began. We frequently hear people saying "How can this be happening if there was no war that destroyed our productive capacity!"

In a nutshell, if we were to assume that per capita GDP can be explained by the level of per capita physical and human capital accumulated, we would not be able to explain the situation in Argentina. It is therefore obvious that explaining the present situation implies explaining why valuable resources are not being fully employed. But not only this. In the case of Argentina it is also crucial to explain why the rate of utilization of these resources is so low and why the situation has lasted so long. In other words, the problem is not only recession but depression. We cannot ignore the fact that the unemployment rate is approaching a quarter of the labour force and that between the third quarter of 1998 and the second of 2002, the quarterly GDP series registers thirteen quarters with no growth.

In this paper we will argue that the rate of utilization of resources is currently so low because the institutional and contractual infrastructure of the economy collapsed as a result of the abandonment of the currency board. Under such circumstances, it is very difficult to define property rights properly and precisely. Hence, a considerable proportion of agents have no incentive to put the available resources to their best use.

Three factors are key to understanding why the disorganization of economic institutions was so widespread. The first has to do with the characteristics and time-sequence of the shocks that hit the economy in 1998-1999. From 1998 on, Argentina was hit by a series of shocks which severely affected its competitiveness and financial position. These shocks include a fall in the prices of its exports and in the terms of trade, a tightening of external credit markets, the appreciation of the U.S. dollar, and the devaluation of real in Brazil. In addition, a fiscal shock occurred because of the political cycle. The second factor has to do with the particular features of the Argentine fiscal, monetary and financial regimes, which helped to amplify the consequences of the shocks. Under convertibility, the available set of counter-cyclical instruments was extremely limited. Prices and wages were not sufficiently flexible, and the fiscal regime was

□ This study was prepared for the conference on Financial Stability and Development in Emerging Economies, organized by the Forum on Debt and Development (FONDAD) as part of the Initiative on International Financial Governance, jointly sponsored by the Ministry of Foreign Affairs of the Netherlands, the Nederlandsche Bank, the International Development Research Centre (IDRC), the Economic Commission for Latin America and the Caribbean (ECLAC), the International Monetary Fund (IMF) and the United Nations Conference on Trade and Development (UNCTAD).

rigid (especially in terms of the relations between the Federal Government and the provinces) and subject to political influences. The third factor is that the currency board had been in force for more than ten years and had gained credibility after having passed the test of the Tequila Effect in 1995. Hence, private contractual relations had to adapt largely to the rules of the currency board. This was especially so with regard to dollar-denominated contracts. The dollarization of financial instruments introduced additional constraints, in so far as real depreciation would increase the financial vulnerability of firms and make the financial position of banks more fragile.

But even if we successfully explain why and how convertibility and the shocks that occurred resulted in the present crisis, we must still wonder why Argentina adopted such a system and why the country was so exposed to the specific configuration of shocks that occurred. These questions trigger an array of others: Why did Argentina choose a system as rigid as a currency board in the first place? Why were contracts dollarized? Why were foreign investors so foolish as to buy long-term bonds from a country that would default a few years later? Why was the IMF so involved with and supportive of the country's policies under convertibility? In order to answer these questions it is necessary to examine some specific characteristics of the Argentine economy that played a critical role in generating the macroeconomic disequilibria and adjustment dynamics that are typically observed. We consider that the following characteristics are of crucial importance in this respect.

First, "very big" errors in expectations seem to be more frequent in Argentina than in many similar countries. Several examples corresponding to the current crisis and involving the presumably best-informed agents may be given in this respect: Argentine bonds accounted for a quarter of the J. P. Morgan index and the country defaulted on its obligations; a significant proportion of foreign-owned banks' credit portfolios were allocated to producers of non-tradeables who were unable to honour their obligations after the devaluation; a significant part of foreign direct investment in the non-tradeable sector proved *ex post* to be excessive; the newly-privatized firms agreed on contracts which were impossible to meet if convertibility were abandoned; and the IMF supported stabilization programmes whose goals were almost impossible to meet.

Second, the interactions between the Argentine economic structure and the shocks to which the country is exposed frequently give rise to "perverse" effects. Specifically, such interactions result in stochastic data-generating processes that are unstable (i.e., subject to frequent and unexpected structural changes) and volatile. This means that the potential for inconsistent expectations and the occurrence of "big errors" does not arise from agents' lack of sophistication, but from the inherent complexity and instability of the processes that the agents must "model" in order to forecast the future evolution of the variables of interest to them,¹ all of which facts have consequences on the agents' economic behaviour. Among the most important factors for understanding the Argentine experience are the shortening of contracts' maturities and the incompleteness of financial markets.

Third, some features of the economic structure help to amplify the consequences of shocks. Three features may be emphasized in this respect: the type of international integration, the rigidities affecting nominal variables and the policies followed, and the lack of financial depth. Indeed, the absence of fluctuation-dampening factors is particularly apparent in the present circumstances. The financial crisis, the fall in national income and political uncertainty gave rise to powerful destabilizing forces. Without significant offsetting mechanisms other than those of the market, the economy is now in a state of depression.

This paper analyses the macroeconomic dimensions of the Argentine crisis. Our discussion above suggests that structural features play an important role. Consequently, section II studies the problem of structural breaks and high volatility, as well as their relationship with errors of expectations and the characteristics of contracts in Argentina, while section III examines the disturbances of 1998-1999 and their interactions with the country's economic structure, with special emphasis on the role of international integration, nominal and policy rigidities, and financial effects. Finally, section IV contains some concluding observations.

¹ See Heymann, Kaufman and Sanguinetti (2001) and Fanelli and Heymann (2002) for a discussion of these issues in the context of Latin American countries.

II

Structural breaks, volatility and the macroeconomy

The literature on macroeconomic fluctuations in developing countries increasingly shows that such fluctuations display properties that differ from those observed in OECD countries (Agénor, McDermott and Prasad, 2000; Easterly, Islam and Stiglitz, 2000; Fanelli, 2000). This fact is often attributed to differences in economic structures. One point that is repeatedly emphasized is the higher volatility observed in the macroeconomic series corresponding to less developed economies. A second point is the incidence of structural reforms. In the case of Argentina, we believe that both factors are relevant. From our point of view, it is the very presence of high volatility and structural breaks that complicates the process of formation of expectations and makes the macroeconomy unstable.

Of course, it is a very well-known fact that fluctuations in aggregate variables can always be interpreted as a result of plans deliberately chosen by agents holding accurate expectations. Under such a hypothesis, the present Argentine recession would be an "equilibrium" phenomenon. But, in contrast to this view, we suggest that in the case of Argentina, agents made important mistakes and that, as a consequence, they are currently making large revisions of their perceived permanent income and are immersed in a generalized process of reformulation of contracts. Two facts support a "disequilibrium" approach. First, it seems very difficult to account for the current deep and long-lasting recession without referring to some sort of disappointed expectations. Besides, Argentina is not only experiencing a strong fall in its activity level, but is also undergoing what we usually call a "crisis": a situation in which a large proportion of agents fail to comply with the terms of their contracts. Many firms and financial intermediaries are facing bankruptcy and, as a consequence, the basic fiscal, financial and even political institutions are under strong pressure. Second, the difference between a "crisis" and the isolated non-fulfillment of a contract is that the former implies the threat of an across-the-board failure to respect contracts and property rights. Hence, if we were to assume the absence of errors, we would have to assume that when adopting decisions, agents have already anticipated and

internalized the huge transaction costs that they would incur if a "bad" situation (namely, a state of crisis characterized by the generalized redefinition of contracts and property rights) occurred. We would have to assume that, when agreeing on the terms of a contract, the private sector has fully internalized the costs of the negative externalities that a systemic crisis would generate.

One point that is sometimes less emphasized, yet is important for understanding the Argentine experience, is that macroeconomic instability and big errors of expectations may also provoke "mutations" in the economic structure. This may occur as a result of the fact that economic agents take into account that they live in an unstable economy and change their behaviour accordingly. A typical example of this kind of phenomenon is the shortening of contracts in contexts of high uncertainty, which may have permanent effects on the economy. It can affect financial depth and, in turn, investment and risk management. In this way, instability can in itself induce structural breaks. It is therefore necessary to consider the possible interactions between macroeconomic disequilibria and dynamics and the microeconomic structure (Fanelli, 2000).

In this section we discuss these issues in more detail and present empirical evidence that we deem valuable for understanding the current Argentine crisis. Before embarking on the analysis of the data, we will make a small digression in the following paragraphs on the relations between expectations, structural breaks and volatility, which we feel may be useful for a clearer interpretation of the time series data on Argentina.

1. Volatility, structural breaks and expectations

There is no doubt that Argentina is a highly volatile economy, as the data that we present below show. Two typical features of instability are structural breaks and volatility. With regard to volatility, the conditional variance of the stochastic processes may show heteroskedasticity. Thus, in the case of Argentina, periods of turbulence alternate with periods of tranquility, suggesting that it would be advisable to

assume changing conditional variance when modelling the stochastic processes. It should be noted that highly changeable conditional variance has economic consequences, because it influences the risk premium (Enders, 1995).²

Structural change matters in the case of Argentina because the “deep parameters” defining the economic structure³ tend to change unexpectedly and more frequently than in, say, the OECD countries. This has a bearing on stability because, on the one hand, if the structural break is “unique”, it cannot be known beforehand (in the sense that agents do not know the probability distribution of these kinds of shocks in advance). On the other hand, if a sizeable break occurs, agents must learn how the economy works under the new circumstances. This creates “model uncertainty” and makes the formation of expectations difficult. This phenomenon tends to generate “pure” uncertainty because the agent knows that “something” may occur but cannot calculate the probabilities of this or describe exactly how the event will impact the economy.

Obviously, not all structural changes have the same potential to induce instability and problems of learning. If the structural change is fully anticipated by the economic agents, it will be included in their relevant information set and taken into consideration when negotiating the terms of a contract. This is not likely to be the kind of structural change that generates instability and big errors of expectations. Instability-inducing structural disruptions are typically associated with the occurrence of events that not only have permanent effects on the economy but are also “unique” or “really new.” If even the best-informed agents find it difficult to anticipate the shock and/or to determine its consequences, however, it is reasonable to expect it to affect their behaviour.

² Periods of turbulence and tranquility could also be associated with a time-dependent non-stationary variance, that is, with permanent rather than temporary changes in volatility, although I am not aware of any study on this matter in Argentina.

³ By economic structure we mean the set of exogenous variables and parameters that represents the agents’ behaviour, the policy regime, and the probability distributions governing stochastic processes. Hence, if we assume that the economic structure can be represented in terms of the reduced form of the model (i.e., in terms of exogenous variables and parameters), we are saying that the parameters and variables plugged into the reduced form change unexpectedly, following a stochastic pattern that the agent cannot disentangle properly when forming expectations. Of course, agents can learn, but in the meanwhile, their errors of expectations will be important for macroeconomic equilibrium.

Two observable consequences are likely to result from these kinds of events. The first is that the corresponding series should present some discrete jumps and show no tendency to return to the pre-break level. Consider, for example, a one-time permanent change in the mean of an otherwise stationary sequence, or a single “pulse” that has a permanent effect on the mean value of a unit root sequence. Second, variations in the level of volatility should be observed in the vicinity of the points at which the process takes a sizeable discrete jump. This would result from changes in the incidence of forecasting errors. Immediately after the shock takes place, plans will prove to be wrong and mutually inconsistent in the aggregate. But, as learning reduces errors of expectations and contracts are renegotiated, the conditional variance should tend towards the unconditional one after a period. Likewise, there could be permanent changes in the value of the unconditional variance. This would be the case, for example, if a stabilization programme succeeded in reducing the variability of relative prices by deflating the economy. It is a well-established fact that there is a positive association between inflation and the variability of relative prices.

Some specific phenomena associated with structural breaks and volatility are worth highlighting because they will play a role in our analysis of Argentina. First, as Heymann, Kaufman and Sanguinetti (2001) emphasize, after the occurrence of a positive or negative shock that produces a break, agents will find it very difficult to assess what the “true” growth trend of the economy is and, hence, to decide what their level of expenditure and financial exposure should be. If agents mistakenly assess their true wealth, the allocation of resources across time and states of nature will not be efficient and will generate aggregate inconsistency of plans.

Second, in so far as the real value of assets used as collateral depends on the state of the economy, the change in perceptions about future prospects will influence the conditions of credit markets. Likewise, if the level of volatility changes, the perception of risk will change, as will asset prices, in that they will be negatively related to their conditional volatility. This is especially important if markets are incomplete. Under such conditions risk is difficult to diversify and hedging possibilities are reduced. Hence, if producers are risk-averse, conditional price variability will affect product supply and producers may reduce their exposure by withdrawing from the market in periods of substantial risk. At the aggregate level, if national risk is difficult

to diversify and hedge in international financial markets, higher volatility means higher risk premiums, which in turn affects the allocation of resources and hence growth.

Third, in conditions of volatility and structural breaks, bygones may not be bygones. Past expectations will affect the present to the extent that they are built into the terms of contracts signed in the past which are still in force. If past expectations subsequently prove to be "very" wrong, one of the parties may be unable to meet the terms of the contracts and it will be necessary to redraft them. Hence, when making decisions agents will bear in mind that the probability of being "very" wrong is not nil and also that other agents' perceptions about the future may change suddenly. *Ceteris paribus*, one would expect that the higher the uncertainty about the "true" shape of the multivariate distribution generating the data in the relevant information set, the shorter contracts will be. In economies subject to pure uncertainty, we should observe a lower average duration of contracts as agents try to hedge against unique "bad jumps" in the economy's stochastic trend. We should also observe situations of systemic crash in which contracts are violated across the board because of the occurrence of unexpected changes in the economy's stochastic trend and hence in cash flows and collaterals.

Fourth, liquidity has a premium in conditions of uncertainty because recontracting is costly and the need to recontract is higher as the probability of having wrong expectations rises. We think that this is one reason why, under the highly uncertain circumstances which precede a permanent shock like the launching of a stabilization programme, whose consequences are difficult to disentangle, the "wait and see" or "be flexible and liquid" attitudes will be highly profitable, in so far as the value of the waiting option has higher value. An increase in the preference for liquidity will be the norm.

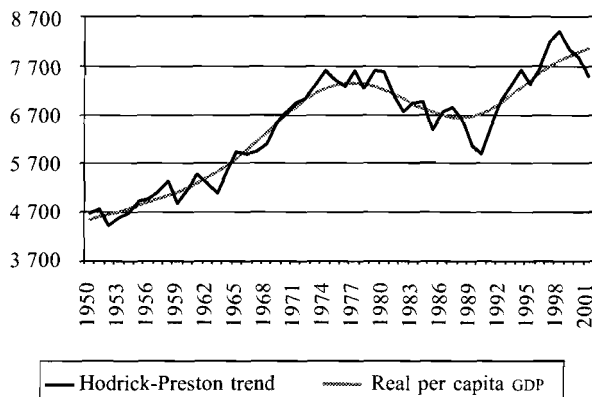
2. Trends and macroeconomic instability

Do the time series for Argentina indicate the existence of volatility and structural breaks that could give rise to the kind of instability discussed above? In other words, are there sudden changes in the growth trend and outbreaks of volatility? Is the average duration of contracts affected by macroeconomic instability? Are there interactions between credit conditions, shocks, and aggregate fluctuations? Are there sudden changes in the preference for liquidity?

Figure 1 shows the evolution of the Argentine per capita GDP over the last fifty years and the

FIGURE 1

Argentina: Real per capita gross domestic product (In constant 2000 pesos)



corresponding Hodrick-Preston trend. As can be seen, the average growth rate is low and the trend shows marked changes associated with macroeconomic and financial crises and/or regime changes (1975-1976; 1980-1981; 1988-1989; 1991; 1999-2001). Likewise, major events inducing sharp "kinks" in the activity level and discontinuous jumps in the growth rate are frequent. If we compared this time series with that of a typical OECD country, we see that Argentina shows more ups and downs and that major events are more frequent. In fact, this stylized fact is not peculiar to Argentina. Easterly, Islam and Stiglitz (2000), show that non-OECD countries are far more likely to experience GDP growth downturns than industrial economies. They maintain that non-OECD countries experience a downturn 22% of the time, while OECD countries are in a downturn just over 9% of the time. The frequency of downturns in Argentina (36%), however, is well above the average for the developing countries.

It is interesting to note that the 1975 crisis represents a key breaking point concerning instability and economic policy. From that year on, Argentina definitively abandoned its rather fruitless import substitution strategy and its economic policy approach became much more market-friendly. The level of volatility is very different before and after this point (table 1). Between 1950 and 1974 the probability of a downturn was more or less in line with that corresponding to developing countries in general (21%). In the 1975-2001 period, however, this probability increased to 52%, which means that per capita GDP fell in more years than it grew. As a consequence, the average per capita GDP growth rate is

TABLE 1

Argentina: Inflation and growth instability, 1950-2000

	1950-1974	1975-2000	1950-2000
Average inflation rate (CPI) ^a (%)	24.30	94.70	60.90
Coeff. of variation of relative prices (WPI/CPI) ^b	0.08	0.34	0.27
Average growth rate of per capita GDP (%)	2.02	0.13	1.04
Frequency of downturns (%)	21.00	52.00	36.00
Coeff. of variation of per capita GDP growth rate	2.08	37.27	4.55

Source: Based on data from ECLAC, 1998 and 2002.

^a CPI: consumer price index.

^b WPI: wholesale price index.

much lower, while the coefficient of variation has skyrocketed. Likewise, even though the second period includes the 10 years of convertibility, during which inflation was very low, the inflation rate and relative price variability were significantly higher in this second period. Very large downturns and steep accelerations of inflation, however, are to be observed in both periods.

Owing to the abundance of jumps and major events, this dynamic behaviour has been called a “stop-and-go” pattern of growth. One characteristic of the stop-and-go pattern is that all macroeconomic aggregates tend to show marked variability; the volatility of Argentine investment, consumption and GDP growth is high even if we take developing countries as the standard of comparison. Table 2 shows the volatility of these variables in Argentina and in similar Latin American countries.⁴

Notice that consumption growth is more volatile than GDP growth. This suggests the existence of important failures in capital markets which obstruct consumption smoothing, and that the welfare costs induced by market failures in financial markets may be significant. It also indicates that Argentina faces severe constraints as regards diversifying national risk.

Periods of tranquility and turbulence can also be identified in the Argentine economy. Outbreaks of volatility are especially apparent in the relative price series. To illustrate this point, figure 2 shows the evolution of the real exchange rate (RER) over the last 25 years.⁵ Note, first, the relationship between breaks and volatility: sharp upward jumps in the real exchange rate are followed by variations in the volatility level. In

⁴ For more evidence on this issue, see IDB (1995)

⁵ RER is defined as the US wholesale price index times the nominal exchange rate over the Argentine wholesale price index.

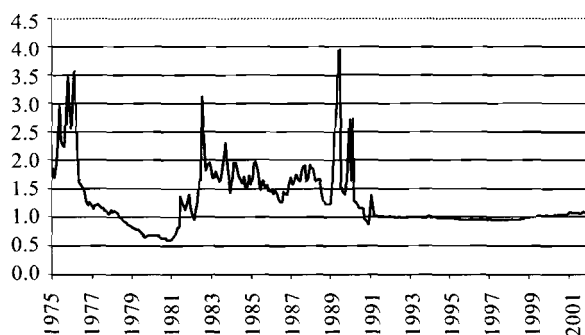
TABLE 2

Argentina: Volatility of macroeconomic aggregates

Country	Coefficient of variation		
	Investment growth	Consumption growth	GDP growth
Argentina	7.1	2.4	1.8
Brazil	2.4	0.9	0.9
Chile	2.6	2.3	1.1
Mexico	3.5	1.0	0.9

Source: Based on data from World Bank, 1999.

FIGURE 2

United States and Argentina: Real exchange rate (WPI) in January of each year
(Index, 1993 = 1)

a more formal analysis using ARCH and GARCH models,⁶ Fanelli and Rozada (1998) showed that the variance of the real exchange rate presents conditional heteroskedasticity: that is, the conditional variance depends on the past realizations of the error process

⁶ ARCH = Autoregressive Conditional Heteroskedasticity. GARCH = Generalized Autoregressive Conditional Heteroskedasticity.

and hence “big” errors induce “big” variance in the neighbouring observations. A second characteristic is that jumps in the real exchange rate and radical changes in volatility tend to be associated with regime changes. The more marked jumps tend to coincide with the sudden end of currency pegs of some type or other after balance of payments crises with significant capital flight. Such regime changes (in 1975, 1981, 1989 and 2001) were associated with major swings in economic policies. The two periods of lowest volatility in the series correspond to systems where the exchange rate was used as the nominal anchor: the “tablita” of 1978-1981 and the decade of convertibility (1991-2001). We interpret this as evidence that the monetary and exchange rate regime may not be neutral: different regimes will have dissimilar effects on the real side (Fanelli and Heymann, 2002).

The importance of regime changes is also suggested by the studies on Mercosur. During the 1990s, the transmission of macroeconomic impulses between the Mercosur countries grew more important as the volume of trade expanded, starting from quite low levels. Thus, the bilateral real exchange rate with Brazil became an increasingly significant variable for Argentina. Chudnovsky and Fanelli (2001) examined the properties of the series, using GARCH models, and found significant volatility in the variable, with strong effects of regime changes such as the launching of the Argentine convertibility system in 1991 and the flotation (cum devaluation) of the Brazilian currency in 1999.

Instability of the real exchange rate compounds with variations in real GDP to determine wide fluctuations in the dollar value of GDP. The coefficient of variation of the Argentine real GDP in constant dollars is almost twice the coefficient corresponding to the real GDP in constant pesos (0.66 and 0.36, respectively). The contribution of the tradeable and non-tradeable sectors to the variance, however, is very different, the fluctuation in the dollar value of the non-tradeable sector being much higher. Figures 3 and 4 show the evolution of total output, tradeables and non-tradeables in constant dollars and pesos. Note the sizeable and increasing gap between the dollar value of tradeables and non-tradeables under convertibility (1991-2000) and also under the “tablita” (1978-1981). It would appear that the dollar value of non-tradeables tends to inflate under systems that peg the nominal exchange rate. The appreciation in the dollar value of non-tradeables, however, disappears together with the peg systems. This may be a source of financial fragility if,

FIGURE 3

Argentina: GDP and tradeable and non-tradeable goods
(In millions of constant 2000 dollars)

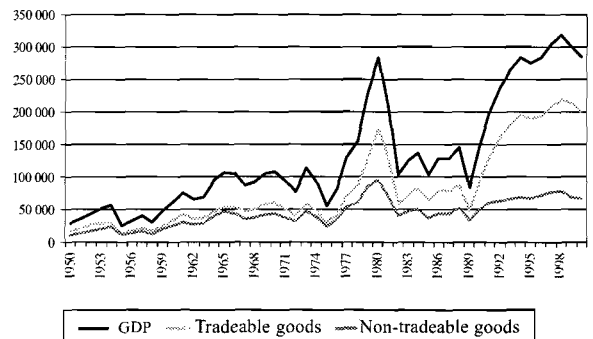
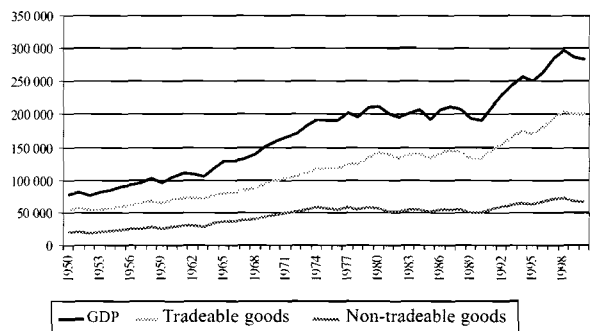


FIGURE 4

Argentina: GDP and tradeable and non-tradeable goods
(In millions of constant 2000 pesos)



under a peg system, inflated non-tradeable productive assets are used as collateral by firms to demand dollarized credit in the domestic banking system and/or in foreign credit markets.

We have already pointed out the higher macroeconomic instability of the 1975-2001 period. Figure 3 clearly shows that the fluctuation in the dollar value of GDP, and particularly in the dollar value of non-tradeables, is wider in this period. This fact may also have a bearing on the recurrence of financial crises in the last twenty-five years. For one thing, unlike the 1950-1975 period, when capital flows were not very significant and dollarization unknown, from the late 1970s on capital movements became increasingly important as Argentina began to open its capital account. At the same time, there was a persistent tendency for the domestic financial instruments to be denominated in dollars. Consequently, firms producing products with highly volatile dollar prices faced a

gradual disappearance of peso-denominated credit instruments. We are not implying by this that a simple causal relationship exists between capital account liberalization, dollarization, and instability. Rather, we wish to stress the perverse interactions that may take place in such a context.

Fanelli and Heymann (2002) stress that, in a highly dollarized economy such as Argentina, this fact may severely affect financial stability. The difficulty in determining sustainable levels of spending can lead to a deterioration in the quality of decisions (Heymann, Kaufman and Sanguinetti, 2001): with a shifting trend, agents may realize at some point that their expenditures have been in fact highly pro-cyclical and that they had been "living beyond their means". The problem of identifying permanent incomes cannot be bypassed when making decisions dealing with production, spending, and asset holding. In post-1998 Argentina, the realization that wealth estimates had been exaggerated caused an extremely traumatic adjustment which culminated in the current crisis. The system of mostly dollarized financial contracts that developed under the convertibility monetary regime was highly vulnerable to fluctuations in the dollar value of incomes. This resulted in the breakdown of contracts, which was itself a source of economic disorganization to the extent that it triggered a financial crisis. Likewise, we must consider that, for an indebted country with a dollar-denominated debt, the dollar value of its GDP is relevant because it is utilized in the assessment of the country's ability to pay, generally in the light of the debt/GDP ratio. To the extent that the dollar value of GDP directly affects creditworthiness, there is a linkage between the expected trend of a country's income expressed in dollars and the evolution of the country risk premium. The abandonment of convertibility in December 2001 and the ensuing steep depreciation of the peso revealed that dollar incomes were going to be much lower than expected.

3. Contract maturities and financial deepening

According to the hypothesis on micro-macro interactions that we discussed above, the stop-and-go pattern and the changing level of volatility should have permanently affected the agents' behaviour and, hence, should have induced structural innovations in the economic system. In this respect, an important effect of the macroeconomic instability was that it induced changes in key aspects of the terms of contracts. During the long period of high instability which began in 1975,

it is possible to detect substantial changes in the maturities, currency denomination and risk characteristics of contracts. This has had permanent and non-neutral effects on the economy, which are vital for understanding the current situation.

In the case of Argentina, it is a very well documented fact that the maturity of contracts is affected by changes in inflation and volatility, as well as by changes in the monetary regime. Specifically, after the inflationary spurts in 1975 and 1989, there were significant across-the-board permanent shrinkages in contract duration in the goods, labour and financial markets. Although maturity length increased somewhat in the period of low inflation under convertibility, the phenomenon of contract shrinkage has proved to be very persistent.

Some of the evidence of the preference for flexible short-term contracts has to do with studies on purchasing power parity. In the case of developed countries, the purchasing power parity property does not hold in the short run but seems to apply after a long adjustment period; there is no evidence of this behaviour for developing countries due to lack of data (Froot and Rogoff, 1995; Edwards and Savastano, 1999). In the case of Argentina and Brazil (perhaps because of the comparatively weaker price inertia in economies with inflationary experience) the variance around the mean is larger than for other economies, but the deviations have smaller mean durations. In fact, the presence of a unit root is rejected more easily for the Argentina-Brazil bilateral real exchange rate than it is for the exchange rates of developed countries (Chudnovsky and Fanelli, 2001). In other words, the historical experience shows a bilateral exchange rate that has varied a great deal, but does not seem to have a "permanent" drift. This suggests that contracts are shorter in conditions of high volatility.

The relationship between macroeconomic instability and contract duration can also be detected by examining financial intermediation. After years of very high inflation, in 1990 the M3/GDP ratio was around 5% and the maturity of credits and deposits was extremely short. The fall in inflation and volatility under convertibility stimulated financial depth and the lengthening of contracts, although the process was slow. In 2000, after nine years of convertibility, the average maturity of 70% of the banks' assets and 82% of their liabilities was less than 90 days. These developments were not firmly rooted, however: the current financial crisis is completely erasing the positive financial developments of the 1990s, and indeed the run on the banks was facilitated by the short duration of deposits.

In fact, low financial depth has been a permanent problem in Argentina, and the history of macroeconomic instability and repeated financial crises has greatly contributed to this result. Lack of financial depth is a source of inefficiency and a deterrent to growth, as some firms may forgo profitable opportunities because they do not have fluent access to credit markets and because of financial market failures. Likewise, when financial failures are pervasive, macroeconomic fluctuations affect the financial position of the firms, making it very difficult to manage risk and the consequences of cyclical downturns.

The results given in Fanelli, Bebczuk and Pradelli (2001) support this hypothesis. They used a panel of Argentine limited companies and GMM estimations⁷ to trace the effects of financial market imperfections and the macroeconomic variables on the investment process and the firm's financial structure. To examine the importance of macroeconomic disequilibria and financial deepening they introduced the country risk premium and the private credit/GDP ratio, respectively. They estimated two financial structure equations in which the dependent variables were the proportion of long-run debt and the proportion of dollar-denominated debt, respectively. Regarding financial development, the hypothesis states that increasing financial deepening and capital inflows increased the credit supply in the 1990s, thus allowing firms to increase their leverage after a long period of tight rationing. They found that both the macroeconomy and financial deepening are important for debt composition in terms of the maturities and currency denomination of contracts. Specifically, the country risk coefficient is significant and negative (implying a negative association between the proportion of long-term debt or dollar denominated debt and the country risk), while the influence of the credit/GDP ratio is significant and positive. In these two financial structure regressions, the variables that reflect information and agency problems, such as firm size and tangibility, also have a significant effect. With regard to the investment equation, cash flow and the country risk are also significant. In sum, this suggests that financial imperfections matter and that there is a direct link between aggregate variables and decisions at the micro level.

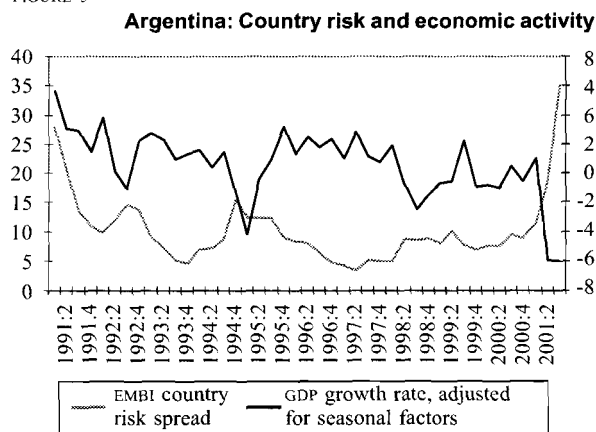
The coexistence of free capital mobility and lack of financial deepening may be a source of macroeconomic and financial uncertainty, as

international capital flows into "emerging" countries are far from stable. At the same time, the tools available to the authorities for smoothing the consequences of sudden changes in the intensity and direction of flows are rather limited. In the case of Argentina, under convertibility and free capital movement, there was a close association between capital flows, the generation of credit, and the activity level. After late 1998 this association resulted in a perverse macroeconomic dynamic that ultimately led to external and domestic default.

Under convertibility, external shocks, both positive and negative, influenced the cost of domestic credit. In this regard, the main link between external and domestic credit markets was the country risk premium. Changes in the conditions in emerging countries' capital markets and/or in the domestic macroeconomic scenario were reflected immediately in changes in the country risk premium. The volatility of domestic and external conditions thus affected the cost of credit and aggregate demand. Figure 5 shows the evolution of the country risk premium as measured by the EMBI spread and compares it with the economy's quarterly rate of growth. Both variables show high volatility, and there is a marked and negative relation between changes in the country risk premium and changes in the quarterly GDP growth rate.

Another important feature is the close association between the supply of credit and the activity level. Indeed, given the capital market imperfections, it seems plausible that changes in the availability of credit do matter for the level of activity. Using an error correction model, Fanelli and Keifman (2002) found results that are consistent with the hypotheses of a relevant positive association between credit and output in the short run and a negative correlation between the country risk premium and the evolution of the macroeconomy.

FIGURE 5



⁷ GMM: Generalized Method of Moments.

III

Asymmetries, rigidities and dynamic effects as sources of instability

Developing countries tend to be volatile, but the evidence analysed suggests that Argentina is more volatile than one would expect on the basis of its per capita GDP. We do not have any a priori elements for assuming that the shocks hitting the Argentine economy are inherently more volatile than those hitting similar developing countries (although it could be maintained that the specific sequence of shocks in 1998-1999 made this period particularly tense). This means that we should look for internal sources of instability. The best candidates are, on the one hand, features of the economic structure (rigidities, asymmetries) that may amplify the impact of shocks and, on the other, dynamic and feedback effects that may leverage shocks such as fluctuations in terms of trade, fiscal impulses, or sudden reversals in capital flows.

In this paper we will concentrate on two issues. Firstly, we will analyse a number of structural aspects which have played a crucial role in amplifying the shocks that preceded the fall of the convertibility regime and helped to generate the current state of economic disorganization: i) the asymmetries in Argentina's integration with world trade and financial markets; ii) the constraints imposed by nominal and fiscal rigidities and differences in the speed of adjustment of key variables, and iii) the lack of financial depth and the phenomenon of dollarization. Secondly, we will analyse the sequence of shocks in 1998-1999.

1. Asymmetrical international integration

Argentina's integration with the world economy shows two fundamental asymmetries between the real and the financial side. First, while the economy's degree of trade openness is very low, its openness to capital flows is much higher. Second, trade flows between Argentina and the United States are very low, but the bulk of Argentina's external debt is denominated in dollars and domestic financial intermediation is largely dollarized. An additional asymmetry and possible source of instability is that the public sector is heavily indebted, while the private sector holds substantial amounts of foreign assets.

FIGURE 6

Openness: Latin America, Argentina, Brazil, Chile and Mexico
(Exports and imports as a percentage of GDP, at market prices)

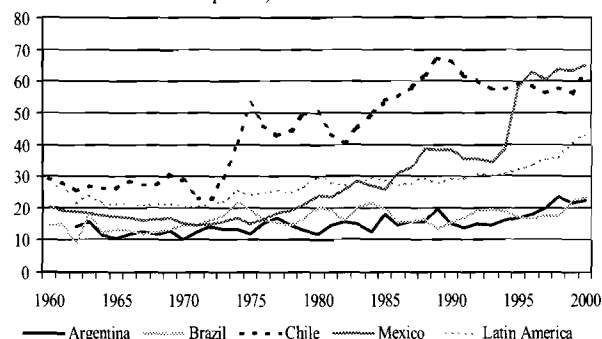


Figure 6 shows the openness of Argentina, other selected Latin American countries, and the region as a whole. Argentina's coefficient of openness, as measured by the relationship between exports and imports and GDP, is one of the lowest in Latin America. This can be partially explained by the fact that the country followed a strategy of import substitution industrialization for a long period. However, it is also true that the structural reforms of the 1990s aimed at opening up the economy, including participation in a regional agreement (Mercosur), did not have much success either. An important fact connected with Argentina's low degree of openness is that the country's relative factor proportions determine that the country's comparative advantages are in the "wrong sectors". In other words, the possibility of fully exploiting its "natural" comparative advantages in agricultural products is severely limited by the mercantilist agricultural policies implemented in the developed world. Another factor that is not favourable to openness is that its most important neighbour and partner, Brazil, is a rather closed economy while Latin America as a whole is also a relatively closed region.

The picture is completely different if we look at capital movements in terms of both stocks and flows. In the 1990s, when the capital markets were open to

the country, Argentina was a privileged recipient of foreign direct investment and capital inflows (see table 3). As a reflection of this access, the external debt/GDP ratio is one of the highest in the region. In a sense, one could say that the developed countries acted irrationally: they lent heavily to a country whose products they did not want to buy. It was only to be expected that a country facing severe protectionism should have problems in meeting its financial obligations.

This asymmetry between the real and the financial side is a source of financial instability because the economy is highly leveraged in terms of tradeables. If we use the foreign debt/exports ratio as a proxy of this leverage, it is clear that Argentina is overly leveraged. Table 4 shows the ratios corresponding to Argentina, Brazil, Chile, and Mexico. The Argentine ratio is the highest of all and showed an upward trend in the 1990s, in spite of the privatization process which helped to finance the external disequilibrium without augmenting the external debt. Note the highly positive evolution of this indicator in the case of Mexico after the signing of the North American Free Trade Agreement (NAFTA). Regional integration with the US resulted in a much higher coefficient of openness, and the agreement also helped to increase FDI flows. Hence, Mexico's external debt did not increase after the "Tequila Effect" and the country financed its current account deficit from FDI flows. This suggests a secure and sustainable way of reducing external overexposure and financial instability.

Although Argentina's degree of integration with capital markets was much higher in the 1990s, it was also highly imperfect. One important characteristic was the instability of the flows, which were affected by contagion and sudden stops. The incidence of these factors was critical during the "Tequila effect" and after the Russian crisis. Another flaw of the Argentine integration is that the country did not substantially improve its capacity to diversify the national risk. We have already called attention to the high volatility of aggregate consumption. Fanelli (2000) also gives evidence on the lack of correlation between Argentina's and the world's consumption (as proxied by United States consumption).

Difficulties in managing national risk create a link between macroeconomic uncertainty and the demand for foreign exchange. In the case of Argentina, "bad" macroeconomic states of nature are typically characterized by a steep depreciation of the currency and recession. Low consumption situations correlate positively with high real exchange rates. Hence, under

TABLE 3

Argentina: Financial flows in the 1990s
(Annual averages, as a percentage of GDP)

	1991-1995	1996-2000	1990-2000
Foreign direct investment	2.4	3.1	2.8
Increase in foreign liabilities	3.6	4.2	3.9
Increase in foreign assets	3.2	2.8	3.0
Current account deficit	2.5	3.9	3.0
Accumulation of reserves	0.3	0.8	0.6

Source: Prepared by the author on the basis of data from ECLAC, 2002.

TABLE 4

Latin America (four countries): External debt/exports ratio

	1980	1985	1990	1995	2000
Argentina	3.4	5.9	5.1	4.7	5.5
Brazil	3.2	4.1	3.9	3.4	4.3
Chile	2.4	5.4	2.2	1.4	2.1
Mexico	2.8	3.7	2.6	2.1	0.9

Source: Based on data from ECLAC, 2002.

incomplete markets, agents demand foreign assets as a hedge against this "bad" situation. It follows that the desire to cover open foreign exchange positions augments, especially when "pure" uncertainty increases.

The role of the foreign assets held as a hedge by residents can be traced in the balance of payments and the country's net financial position. The attempt to obtain hedging cover is reflected in the fact that Argentina's net external indebtedness is very low. Argentina, as a whole, is not a heavily indebted country: foreign assets in the hands of the private sector represent around 75% of the stock of external debt, which is largely held by the government. This relationship between the stocks of assets and liabilities is consistent with the evolution of the balance of payments capital account in the 1990s. Table 3 shows that in this period the flows of financial assets and liabilities were very similar, which means that FDI flows would almost have been sufficient to finance the disequilibria in the current account. This suggests that there is a purely financial dimension in the "debt problem" that has more to do with risk hedging and moral hazard (see below) than with the demand for foreign savings to finance domestic investment. In net terms, the increase in foreign debt

went to finance asset accumulation and not real investment.⁸

This picture of stocks and flows seems to be at odds with the picture of the present financial crisis. One main cause of the crisis was the existence of large positions in foreign exchange that were not effectively covered. This is true. But there are several factors that must also be considered. First, it must be taken into account that it was not the private sector but the government that had the largest uncovered position. Second, there may have been a moral hazard problem. Many firms that were heavily indebted in dollars may have assumed that in the event of a generalized crisis originating in an abandonment of the currency board system the government would implement a "pesification" of dollar liabilities. Indeed, *ex post* they were right. Third, mismanagement of risks may have played a role. Specifically, bank managers may have ignored the phenomenon of risk migration from currency risk toward credit risk.

2. Rigidities and dynamic and financial effects

It seems that open economies are more volatile but grow faster (Easterly, Islam and Stiglitz, 2000). Argentina, however, is rather closed, grows little, and is volatile. We will now briefly examine some rigidities and dynamic and financial effects that may have had a bearing on this and played an important role under convertibility.

Typically, the market imperfection that breaks neutrality and incorporates monetary problems into the analysis is some kind of rigidity in the adjustment of nominal prices. When these are inflexible, monetary policy can have a real impact not only on aggregate demand but also on the real exchange rate⁹. We have already noted that price rigidities certainly help to explain the high volatility of the observed real exchange rate (see figure 2).

Easterly, Islam and Stiglitz (2000), however, call attention to two points that have not been sufficiently emphasized. First, there are the differences in adjustment speeds, as well as the distributive effects that arise from price changes, especially those against which individuals cannot be insured (reflecting

incomplete markets). Under these circumstances, the income effects can overwhelm the substitution effects arising from price changes. Second, there are the dynamic effects arising from firms' and financial institutions' wealth and cash flow constraints.

Income and financial effects are relevant in the Argentine case. This was especially evident in the interactions between fiscal adjustment, tax collection, and the activity level from 1998 on. At the beginning of 2000, when the economic recession was well under way, the new administration made important efforts to reduce the fiscal deficit. They assumed that reducing the deficit would restore confidence and foreign investors would bring the much-needed funds. However, the results tended to be just the opposite. Tax collection did not increase and the economy went into an even deeper recession. This kind of destabilizing effect is typical of the Argentine economy and is generated by the conjunction of strong income effects and the procyclical behaviour of capital markets. Everyone would agree that it is not very wise to increase taxes during a downturn and that the income effects of tax increases should be avoided. In order to avoid adjustment during a downturn, however, the government must be able to finance the deficit, and this was not the case in Argentina in 2000. Obviously, the best way out is to maintain prudential fiscal policies. For example, one of the main sources of the budget disequilibrium was the poorly-designed reform of the social security system, which generated a sizeable deficit. The excesses committed during the electoral process in 1998-1999 were also important. In this regard, one negative feature of the convertibility system was the assumption that a currency board would automatically discipline the government: the government could not print money, and the markets would not lend to governments with soft fiscal policies. These arguments, however, ignored the possibility of errors of expectations by those participating in the markets, and this does not seem prudent in the context of a volatile economy.

Concern with firms' and financial institutions' balance sheets is also warranted in the Argentine case. Credit conditions can react quickly to changes in investors' perceptions, and the way overall volatility and national risk evolve is therefore highly relevant. The evidence in Fanelli, Bebczuk and Pradelli (2001) shows that when the macroeconomic setting worsens there is simultaneously a shift toward demand for foreign exchange and a mounting demand for short-term financing. Hence, economic downturns create pressures on foreign exchange and

⁸ Note that the same happened in Chile, a country whose economic policy is of much better quality than Argentina's.

⁹ In the literature on developed countries this imperfection is supposed to be the most relevant empirically (Basu and Taylor, 1999; Taylor, 2000).

financial markets both inside and outside the country. When the exogenous macroeconomic shock is strong enough, this combination of events can trigger so-called "twin crises", which is what did in fact occur in Argentina.

Negative shocks reduce firms' net worth, increasing the probability of financial distress. A regression exercise shows that a one-percentage-point increase in the country risk premium reduces the value of firms listed on the Buenos Aires Stock Exchange by 2.2 percentage points (Fanelli, 2000). Under such circumstances, creditors react by shifting their demand toward assets with short-term maturity, in order to better monitor the behaviour of debtors and because the liquidity premium rises in uncertain environments. But if we assume that the duration of assets is somewhat constant throughout the cycle, then when debt maturities are shortened, the firms' financial position further deteriorates and default becomes more probable. This increase in risk is perceived by creditors as an upward movement in the costs of financial distress (if we calculate these costs as the probability of default multiplied by its cost). Under these circumstances, a logical result is that creditors will try to shorten maturities to better monitor and discipline debtors. If this reasoning holds, there are endogenous factors which tend to reduce maturity and increase financial duress during recessionary periods.

The phenomenon of risk migration is closely related to this issue. Risk tends to migrate in the financial system because hedging does not reduce systemic risk. It only transfers the exposure elsewhere or transforms the type of exposure. This is very important in the case of Argentina. When the level of perceived systemic risk increases, banks hedge against currency risk and seek better matching of the duration of assets and liabilities. The counterpart of this is that firms' liquidity falls and the maturities of their liabilities shorten during downturns. This augments the firms' vulnerability, increasing counter party risk. The ultimate effect of the banks' attempt to hedge is that risk migrates from currency risk to credit risk. And the greater the amount of risk mitigation by banks, the more likely it is that unforeseen losses will migrate quickly from one market to another. As risk migrates through the system it tends to emerge in its most basic form, as credit risk (Kimbal, 2000). When one takes into account the phenomenon of risk migration and its effects on bank solvency, the argument of Calomiris and Powell (2000) about market discipline seems weaker. They argue that tight credit supply during a downturn is a sign of the

financial system's strength, because tight credit supply in the face of a recession and high loan losses is precisely what one would expect from a banking system that is subject to market discipline. The Argentine case, however, suggests that in the context of a generally weak economic system, the financial sector does not become more healthy if it simply transfers its risk to firms, because this too rebounds on it.

3. Simultaneous shocks and financial fragility

We have already drawn attention to the striking differences in the economic performance of Argentina between the 1991-1998 and the 1999-2000 periods. The breaking point can be situated in the third quarter of 1998, when the current prolonged recession began. The various external shocks that hit the economy hard in 1998-1999 played a decisive role in this. Any of these shocks would have been enough to induce significant macroeconomic imbalances, but the fact that they occurred almost simultaneously compounded their effects and the economy was ill prepared to absorb them and manage the consequences. We already identified weaknesses in the economic structure and dynamic mechanisms that may have substantially amplified the impact of the shocks.

Another factor that helped to aggravate the downturn and exacerbated financial fragility was the poor quality of economic policies in a context of political instability. The counter-cyclical instruments in the hands of the authorities were rather limited, so it is clear that Argentina would have suffered a substantial recession under any post-shock scenario. But the point is that the available instruments were not used efficiently, and the influence of political factors was a determinant in this regard. In the pre-election 1998-1999 period the authorities followed inconsistent fiscal policies which resulted in public sector over-borrowing, a disarray in the relationship between the federal and provincial governments, crowding out of the private sector, and rising financial stress. The policies implemented by the politically weak administration that took office in December 1999 did nothing to correct the situation.

The appreciation of the dollar and the global financial crisis of 1998-1999 played a critical role in generating the shocks, since they triggered various events that negatively affected the Argentine economy (table 5).

Under convertibility, the appreciation in the dollar directly affected the competitiveness of Argentine

TABLE 5

Argentina: The 1998 – 1999 crisis

Fall in the terms of trade (percentage variation)	11.1
Fall in export prices (percentage variation)	20.0
Fall in exports to Brazil (percentage variation)	30.0
Real devaluation of the Brazilian real vis-a-vis the Argentine peso (wholesale price index)	18.4
Appreciation of the US dollar vis-a-vis the euro (per cent)	10.0
Net capital outflows (as a percentage of GDP, excluding FDI)	1.4
Increase in public sector interest payments (as a percentage of GDP)	1.0

Source: Based on ECLAC data.

exporters because the bulk of the country's exports do not go to the United States. As the Argentine peso was pegged to the dollar, a strong dollar meant an overvalued peso. The strong dollar had another important consequence. In 1998, Brazil was using the nominal exchange rate as an anti-inflation device and the real was more or less pegged to the dollar. Under such circumstances, the stronger dollar increased pressure on the Brazilian real exchange rate and the country ultimately adopted a floating system in January 1999. With the marked depreciation of the Brazilian real, it was much more difficult for Argentina to compete with that country's exports, and this was aggravated by the fall in domestic global demand in Brazil. Thus, Argentine exports fell substantially in the two years following the devaluation (table 5). The asymmetry between the direction of trade flows (toward Europe and Mercosur) and financial flows denominated in dollars also played a role. As table 5 shows, the deterioration in the terms of trade was accompanied by a fall in the nominal value of export prices. *Ceteris paribus*, this increased the real debt burden in terms of Argentine exports and deteriorated the debt/exports indicator. Argentina's creditworthiness was affected by these developments in that the country's solvency was put under severe scrutiny.

In the period that began with the Asian crisis, and especially after the Russian episode, the interest rates that Argentina paid to its foreign and domestic creditors increased substantially. Table 5 shows that government interest payments augmented by one percentage point of GDP in 1998-1999. However, this was only the beginning, for in 2000, the interest burden was to reach

3.3% of GDP (compared with 1.8% in 1997). Likewise, net capital inflows fell by more than one percentage point of GDP. Soaring interest rates and tight liquidity constraints quickly eroded the country's solvency.

Argentina's level of debt was not high in terms of GDP, this ratio being 43% in 1997, which was in line with Latin American standards. Other Latin American countries which were similar to Argentina in this respect did not default on their external commitments, but this fact does not take account of the role played in Argentina by some of the structural destabilizing mechanisms discussed earlier, namely, the elevated debt/exports ratio - which was increasing because of the fall in exports- and the fact that investors may have anticipated that the dollar value of GDP and, hence, government revenues, would plunge if the convertibility system were abandoned. Under these circumstances, macroeconomic disequilibria triggered feedback effects. As the likelihood of devaluation grew, borrowers had to offer higher interest rates to compensate lenders for the increasing credit risk. The increase in interest rates, in turn, helped to raise the risk of default, which led in turn to even higher interest rates and so on.

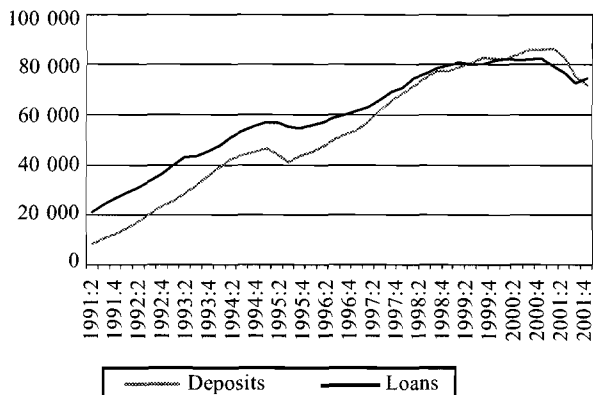
Although these dynamics represented an increasing threat to the banks' financial position, in the first stages of the crisis the banking system was able to cope with the pressures quite well. After the Tequila Effect, bank reserves increased substantially and tighter prudential regulations based on the Basle Accords were implemented, which resulted in stronger bank capitalization (11.5% of assets at risk). But even bank assets of reasonable quality and liquidity can deteriorate seriously when the economy experiences a stubborn recession in which risks migrate and financial contracts tend to be short.

As "pure" uncertainty about the future rose steadily in 2001 -hand in hand with the increasing likelihood of a regime change and the deepening of the recession that was deteriorating the banks' assets- depositors rushed to cash their deposits. In 2001, total deposits in the financial system fell by 16%, and this gave rise to mounting liquidity problems, in spite of the high reserves ratio and the strong capitalization of private banks at the beginning of that year. Figure 7 shows the evolution of deposits and credit under convertibility.

Another disturbing consequence of the continuous deepening of the crisis was the persistent deterioration of the budget equilibrium. To a certain extent this was an endogenous consequence of the recession-driven fall in government revenues. In mid-2001 the tight international and domestic credit rationing obliged the

FIGURE 7

Argentina: Deposits and loans
(Millions of pesos)



government to launch a “zero deficit” policy which quickly failed. As a consequence of this failure, the IMF refused to disburse the funds corresponding to a previous agreement, and under these circumstances, the government had no choice but to default in January 2002.

In December 2001, several banks showed an unsustainable liquidity position, while the deposit drain accelerated. To stop the drain, the government implemented the so-called “*corralito*”, which

prohibited the withdrawal of deposits from the banking system, although it was possible to transfer deposits between banks. There was, however, an ongoing “trickle-down” of liquidity from banks because some depositors found legal ways to overcome the prohibition and the *corralito* did include some exceptions (the so-called wage accounts). The restrictions were later tightened in order to restrain liquidity and stop the continuous depreciation of the peso, but the authorities were only partially successful in this.

Another key initiative for handling the crisis was the “pesification” of private credits. The stock of private credit in the banking system is now denominated in pesos and partially indexed to inflation. Pesification created a sizeable gap between the value of the banks’ assets and that of their liabilities, and in practice this completely eroded the banks’ net worth. The situation is currently at a sort of standstill. Private banks are claiming compensation for the effects of pesification, while the government intends to replace the deposits in the *corralito* with government and bank bonds. In this context, the credit supply has evaporated and it is extremely difficult to finance working capital, not to mention investment. There are also huge problems in restoring a fluid payments system. In sum, after the implementation of the *corralito* and the adoption of a floating system, the economy is experiencing severe financial, fiscal, and inflationary problems.

IV

Final remarks

Argentina has no choice but to face the future. If we assume that the government’s or the IMF’s actions are not completely useless for dampening the effects of shocks and crises, we must conclude that better domestic policies could be designed and that a deeper involvement by the multilateral organizations would greatly help Argentina. Better policies could save Argentina from more destruction of its productive capacity than is strictly necessary and could prevent its population from continuing to sink below the poverty line.

Although the obstacles may appear insurmountable at first sight, on the basis of our analysis we can make educated conjectures on the sequence of policies that

the country should follow in order to restore macroeconomic and financial stability. We will discuss four steps in this respect.

The imposition of the “*corralito*”, the debt default, and the depreciation of the peso induced an across-the-board failure to respect contracts and property rights. This fact, together with the acceleration of inflation and the sudden change in relative prices, exacerbated the situation of pure uncertainty. Given the link between uncertainty and the demand for foreign assets that we discussed above, these events have been continuously pushing the demand for foreign assets to the right, resulting in a combination of repeated reserve losses and exchange rate overshooting. The authorities are

therefore now facing the dilemma of letting inflation skyrocket or letting the reserves drop to zero.¹⁰

The **first step**, then, is to attack the uncertainty which is at the heart of this dilemma. In order to reduce uncertainty, it is critical to restore and reinforce the institutional and contractual infrastructure that collapsed after the fall of the currency board. Under fuzzy property rights it makes no sense to invest efforts if it is not clear who will have the right to claim the future return of assets. In this sense, a minimum level of institutional order is crucial for the activity level to recover. This is no exaggeration. The Argentine financial system is in a mess. Nobody can tell what the value of the banks' assets and liabilities is. The contracts of newly-privatized firms supplying basic services like water, energy and communications need to be renegotiated after the abrupt change in relative prices; indeed, some of these firms have defaulted on their debt obligations. The government has also defaulted on its external debt, as have a good part of private agents. In addition, the law regulating bankruptcy is now being changed. This suggests that institution-building and transparency are key inputs to any consistent economic policy.

Undoubtedly, the place to begin with the reconstruction of institutions and the macroeconomy is the financial system. To avoid hyperinflation it is necessary to stop the Central Bank from assisting the banking system. The banking system is of crucial importance for restoring the payments system, for financing working capital, and for advancing towards a more precise definition of property rights. The restructured banking system will nevertheless not be able to generate a substantial supply of credit, however, for it will have only limited scope for action. This means that Argentina will have to develop other capital market segments. Nonetheless, in the current situation the priority must be to restore the capacity to provide basic services associated with transactions and working capital.

The restructuring of the banking system is no easy task from the political point of view. Under the present circumstances the government cannot afford to bear the

full costs of the financial crisis, as it did in previous financial crises. This suggests two sine-qua-non conditions for solving the crisis. First, the costs of the restructuring must be shared by taxpayers, banks and depositors alike. Second, the financial position of the public sector is so weak that it will not be able to implement a credible restructuring operation without some sort of explicit and active external support.

If the government succeeds in eliminating the *corralito* and avoiding hyperinflation at the same time, it is likely that both the nominal exchange rate and the activity level will stabilize. If this happens, it might be possible to take a **second step**: to focus on the stabilization of public revenues and the negotiation of a new agreement with the provinces.

The **third step** towards stabilization should be to consolidate a sounder monetary and exchange rate regime. This is crucial for restoring the ability to make contracts. The economic system needs a nominal anchor for denominating contracts. Under conditions of instability in the demand for domestic assets, it seems reasonable to concentrate on stabilization of the inflation rate.¹¹ In any case, if the country avoids dollarization, the "monetary regime" in the near future will be characterized by more or less "dirty" management of the exchange rate, probably including capital controls.

One of the main policy goals should be to avoid "big" mistakes in the management of the exchange rate or the design of the exchange rate regime. Argentina's goals should be modest but firm in this respect: The country should avoid economic policies that combine a rigid exchange rate system, external over-borrowing, and fiscal flaws, as was the case of the "tablita" and convertibility. Such policies allow the country to approach "first world" per capita GDP and to reduce volatility artificially for a while, but only at the cost of an inflated dollar value of the non-tradeables sector output. As we have seen, sooner or later agents revise their expectations and recalculate their permanent incomes on sounder bases, and as a result the economy collapses. We believe that Argentina should not implement full dollarization, since this would probably lead to problems like those of the currency board (Fanelli and Heymann 2002).

Another important goal should be to implement "long-run" macroeconomic stabilization policies, namely, policies that seek to transform the economic

¹⁰ There is a vicious circle between the financial fragility of the banks, budget imbalances, inflation and devaluation. If the government helps the banks by rediscounting or prints money to finance the deficit, it will be increasing the monetary base and feeding the demand for foreign exchange. If it allows the nominal exchange rate to find its level, then inflation will shoot up. If the Central Bank sells foreign exchange to meet the increased demand, then the reserves will soon dry up.

¹¹ We have discussed this issue in depth in another paper (Fanelli and Heymann, 2002).

structure so as to eliminate the features and deactivate the mechanisms that make the economy volatile. In this paper, we illustrated at length the fact that volatility and structural breaks matter in Argentina and matter a lot. In fact, given the country's history of perverse interactions between growth and instability, the building of macroeconomic buffers should be one of the most important elements in a sustainable growth policy.

The **fourth step** for stabilizing the economy is to reach an agreement with foreign creditors. This step, however, cannot be taken before the other three. It would be difficult to negotiate with a government that cannot collect taxes or guarantee basic social institutions such as property rights and contracts. This is why Argentina needs to solve its debt problem as soon as possible. Nonetheless, the alternative to overborrowing is not zero borrowing. The country needs to access international capital markets. In addition to the need for foreign savings, we have seen that there is a diversification aspect too. In this regard, Argentina has a lot to learn from the Chilean pragmatism.

What about growth? Are there "hidden" resources that could be mobilized to restore growth? Let us conclude the paper with some conjectures on this issue. A first not-so-hidden resource is that Argentina is reasonably rich in human and natural resources. To keep these stocks from deteriorating further it is vital to solve the crisis and simultaneously implement policies that mobilize the resources. In this regard, Argentina should take full advantage of the current increase in the relative prices of tradeables and complement it with aggressive policies to improve the non-price dimension of competitiveness and to open new markets.

The developed countries that invested heavily in Argentina in the 1990s and have lately seen the value of their bonds and physical assets plunge could greatly help both Argentina and the recovery of the value of their investments. As part of an emergency package,

they might soften trade protectionism in specific sectors to allow Argentina to gain market access. In this connection, Argentina could offer more rapid debt repayment in return for market access. In the end, not only Argentines but also the consumers and investors of the G-7 countries would be better off. Argentina has the rod, and it knows how to fish. The problem is how to get admission to the fish market. The Mexican experience is very important in this respect. After joining Nafta, Mexico's external indicators improved substantially, driven by the spurt in exports and foreign direct investment.

A second hidden resource is the stock of foreign assets in the hands of the private sector. To a great extent, the accelerated accumulation of these assets in recent years was the counterpart of increasing economic uncertainty. Valued at the current exchange rate, the stock of financial resources held by the private sector is sizeable, representing roughly 100% of the current GDP. The real devaluation of the peso must have had an important positive wealth effect in part of the private sector. As soon as the economy stabilizes, this wealth effect can become a powerful incentive to effective demand. We must also take into account that after a long recession there will likely be an increase in the demand for capital goods and consumer durables which depreciated during the downturn. Likewise, the existence of liquid financial assets held by firms means that investment projects could be financed with their own funds.

A third resource that can be mobilized is Mercosur. This agreement has the potential to supply many of the inputs that Argentina needs to sustain the growth process: new markets for exports, an inflow of FDI, and the development of larger and deeper capital markets at the regional level.¹²

(Original: English)

Bibliography

- Agénor, P., J. McDermott and E. Prasad (2000): Macroeconomic fluctuations in developing countries: Some stylized facts, *The World Bank Economic Review*, vol. 14, No. 2, Washington, D.C., World Bank.
- Basu, S. and A. Taylor (1999): Business cycles in international historical perspective, *The Journal of Economic Perspectives*, vol. 13, No. 2, Nashville, Tennessee, American Economic Association.
- Calomiris, C. W. and A. Powell (2000): *Can Emerging Market Bank Regulators Establish Credible Discipline? The Case of Argentina, 1992-1999*, NBER working paper No. 7715,

Cambridge, Massachusetts, National Bureau of Economic Research, Inc. (NBER).

- Chudnovsky, D. and J. M. Fanelli (2001): *El desafío de integrarse para crecer. Balance de una década de Mercosur*, Madrid, Siglo XXI Editores.

- Easterly, W., R. Islam and J. E. Stiglitz (2000): *Shaken and Stirred: Explaining Growth Volatility*, Washington, D.C., World Bank.

¹² The Mercosur growth potential is analysed in Chudnovsky and Fanelli (2001).

- ECLAC (Economic Commission for Latin America and the Caribbean) (1998): CEPAL, Cincuenta años. Reflexiones sobre América Latina y el Caribe, *Revista de la CEPAL*, special issue, LC/G.2037-P, Santiago, Chile.
- _____ (1999): *Economic Survey of Latin America 1998-1999*, LC/G.2056, Santiago, Chile.
- _____ (2002): *Indicadores macroeconómicos de la Argentina*, Buenos Aires, ECLAC Office in Buenos Aires.
- Edwards, S. and M. A. Savastano (1999): *Exchange Rates in Emerging Economies: What Do We Need to Know?*, NBER working paper No. 7228, Cambridge, Massachusetts, NBER.
- Enders, W. (1995): *Applied Econometric Time Series*, London, John Wiley & Sons.
- Fanelli, J. M. (2000): Macroeconomic regimes, growth and the international agenda in Latin America, *Latin American Trade Network Meeting*, Buenos Aires, Latin American Faculty of Social Sciences (FLACSO), 8-9 November.
- Fanelli, J. M., R. Bebczuk and J. Pradelli (2001): *Determinants and Consequences of Financial Constraints Facing Firms in Argentina*, Buenos Aires, Asociación Argentina de Economía Política, www.aaep.org.ar.
- Fanelli, J. M. and D. Heymann (2002): *Monetary dilemmas: Argentina in Mercosur*, paper prepared for the International Conference Towards Regional Currency Areas, Santiago, Chile, ECLAC, March.
- Fanelli, J. M. and S. Keifman (2002): Finance and changing trade patterns in developing countries, in J. M. Fanelli and R. Medhora (eds.), *Finance and Competitiveness in Developing Countries*, London, Routledge.
- Fanelli, J. M. and M. Rozada (1998): Convertibilidad, volatilidad y estabilidad macroeconómica en Argentina, *Estudios de política económica y finanzas. Revista de la Universidad de Palermo*, año 5, No. 2, Buenos Aires, Universidad de Palermo.
- Froot, K. and K. Rogoff (1995): Perspectives on PPP and long-run real exchange rates, in G. Grossman and K. Rogoff (eds.), *Handbook of International Economics*, vol. III, chap. 32, Amsterdam, The Netherlands, Elsevier Science B.V.
- Heymann, D., M. Kaufman and P. Sanguinetti (2001): Learning about trends: Spending and credit fluctuations in open economies, in A. Leijonhufvud (ed.), *Monetary Theory as a Basis for Monetary Policy*, London, Macmillan.
- IDB (Inter-American Development Bank) (1995): *Economic and Social Progress in Latin America and the Caribbean, 1995*, Washington, D.C.
- Kimbal, R. (2000): Failures in risk management, *New England Economic Review*, Boston, Federal Reserve Bank of Boston, January-February.
- Taylor, A. M. (2000): *A Century of Purchasing Power Parity*, NBER working paper No. 7577, Cambridge, Massachusetts, NBER.
- World Bank (1999): *World Development Indicators 1999*, Washington, D.C.



Investment and *financial volatility* in Latin America

Graciela Moguillansky

*Economic Development
Division, ECLAC
gmoguillansky@eclac.cl*

Financial liberalization and the lifting of capital market restrictions have brought in foreign investment and made more financing available for investment projects, but at the same time have made it easier for financial crises originating in Latin America or elsewhere to spread. Such crises became more frequent in the 1990s, and as a result a more careful study was made of the impact of capital flow instability on investment. Hypotheses derived from theoretical procedures were checked against econometric exercises showing that capital flows have a positive impact, but that negative consequences arise when they are volatile. This work covered a large group of countries in the region.

I

Introduction

In the 1990s, investment growth in Latin America was unstable and the investment rate was low as a share of GDP, not only in comparison with high-growth developing countries but also when set against the performance of the region itself in the 30 years after the Second World War. This performance has to be viewed against the background of the economic changes that began in most countries around the mid-1980s, and that continued throughout the 1990s. These opened up the region's economies to trade and international financial flows and integrated them into the globalizing world economy.

This process involved the State withdrawing from production activities and reducing its role in investment financing, so that leadership passed to local and foreign private-sector actors. Contrary to what the supporters of economic reform hoped, however, the liberalization model has not succeeded in stabilizing investment growth or the investment rate. What the present article argues is that, as economies have opened up, the ability to obtain financing for large investment projects at times of international financial liquidity, beneficial though this is, has been offset by the volatility of capital flows,

which can be abruptly reversed because of factors unconnected to the actual macroeconomic fundamentals of the countries. This disadvantage has been compounded by procyclical macroeconomic management.

This argument and the empirical evidence for it are detailed in the following sections. Firstly, section II depicts the new context in which local and foreign private-sector agents make their investment decisions. This is followed, in section III, by a description of the uncertainties associated with structural change that influence investment decisions. Section IV then analyses some stylized facts associated with the components of external financing, discriminating between the volatility of foreign direct investment (FDI) and other external resource transfers. Section V explains the mechanisms whereby capital flow volatility is transmitted to investment, and section VI presents the results of an empirical estimation of the investment function and the hypothesis test of the model, using a specification that includes traditional determinants supplemented by an explicit volatility indicator for external financial flows. Lastly, section VII sets forth the conclusions.

II

The growth model and the new investment context

From a historical perspective, the turn of the millennium has seen a major shift in Latin America's growth model. The shift that has been taking place is from the so-called import substitution model towards a model characterized by liberalized trade, finance and capital markets and by a reduced role for the State in production, finance and the overall direction of the economy.

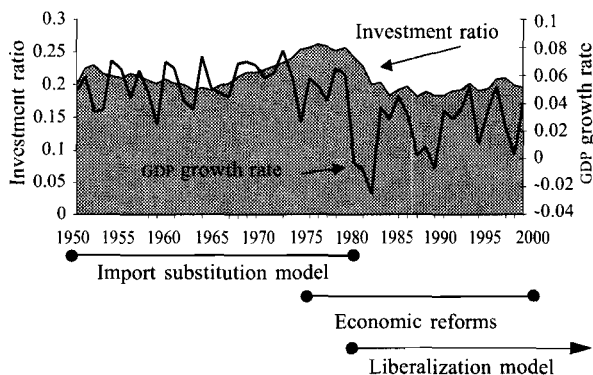
Figure 1 gives growth rates for regional GDP and the investment ratio from 1950 onward (1950 was chosen because it is the earliest year from which consistent series are available). On average, the region's growth rate rose from 4.8% in the 1950s to 5.7% in the 1960s and 5.6% in the 1970s. The investment rate was consistently higher in the 1970s, at 25% of GDP. These results were achieved despite the instability of the terms of trade and net external resource transfers, which were negative on average in the 1950s and 1960s.

In the 1970s the region, and certain countries in particular, began to undergo a marked shift whose

□ This article is based on a document prepared to support the ECLAC paper *Globalization and Development*, LC/G.2157(SES.29/3), which was submitted at the twenty-ninth session of the Commission held in Brasilia from 6 to 10 May 2002.

FIGURE 1

Latin America: GDP growth and the investment ratio, 1950-2000



Source: ECLAC, Economic Development Division, prepared by the author.

causes were partly domestic (the crisis of the substitution model) and partly external.

The first oil shock and the international financial liquidity that resulted from it provided Latin American economies with a respite, allowing them to finance investment and grow through borrowing. But the external debt crisis and the reversal of capital flows—the first time the region had had experience of such volatility—affected all the countries severely, including those that had begun to liberalize and whose private sectors had borrowed in pursuit of near-term profits.

III

Structural change and uncertainties affecting investment decisions

In most Latin American countries, economic reforms began amidst the turbulence generated by the external debt crisis. A number of the policies that shaped them were implemented as part of stabilization programmes (the liberalization of trade and finance, for instance, was included in the policy package alongside currency anchor systems), and their short-term effects were intertwined, producing signals that were sometimes consistent and sometimes inconsistent with the investment stimulus.

Although the countries progressed towards a new economic model, the years from 1990 to 1999 had the

Growth rates in the 1980s, as the countries struggled with the turbulent aftermath of the external debt crisis and the commencement of structural reform, were the lowest in half a century, and many of the social achievements of previous decades were swept away. At the same time, however, the transition to a new growth model was in progress. Henceforth, governments would look to the private sector for leadership and to exports as the key to a new form of participation in the international economy.

Over 15 years have now passed since the reforms began, and the results have not been encouraging. The region is still proving highly vulnerable in trade and financial matters. In only a few countries has investment increased across the whole range of export goods sectors,¹ while in many others, chiefly in South America, capital has been directed towards sectors exporting primary goods or processed raw materials, whose extreme price volatility is compounding the weakness of external trade, just as it did in previous decades.

Furthermore, the weakness of manufacturing investment has reduced industrial GDP as a share of total GDP and worsened the sector's trade balance (except in Mexico and some Central American countries). As a result, investment and growth rates were lower in the 1990s than in the 1950s, 1960s and 1970s, and growth was more unstable (see figure 1 again), a new factor in this being the volatility of capital flows.

characteristics of a transition period. There were a number of reasons for this. Firstly, in those countries that introduced structural reforms in the 1990s (Argentina, Brazil, Colombia and Peru), not enough time had passed for this new model to consolidate. As a result, investment decisions had to be taken in a climate of particular uncertainty.

Secondly, the reforms did not begin simultaneously. By and large, trade liberalization was the first reform

¹ See Moguillansky and Bielschowsky (2001) for a detailed analysis of sectoral investment in Latin America.

to be implemented, and the privatization of public services the last. In some countries, the reforms were initiated simultaneously as a group, but in others the process was slow and the sequencing changed over time, making it difficult for the process as a whole to come to fruition. Brazil and Costa Rica are good examples of the latter.

Thirdly, reform was not carried forward steadily, which meant that economic agents had to cope with changing ground rules; a good example of this is the tendency of countries to introduce tariff surcharges and other obstacles to international trade after each balance-of-payments crisis.

Fourthly, the introduction of reforms at a time of profound imbalance in the system of relative prices and great economic instability enabled those industries that were quick to master short-term financial management to make speculative profits or survive in the market, but did not necessarily favour the most efficient producers or contribute to the long-term strength of the countries' economies.²

This response contributed to the crisis of the early 1980s and the rolling back of reform in several countries (Argentina and Chile were clear examples) as governments raised customs duties, introduced new capital market controls and intervened more heavily in the financial system and in companies with ties to banks.

The combination of an open capital market and domestic financial systems that were institutionally weak was not only destabilizing, but called macroeconomic policy into question and highlighted the fragility of the reforms that had been implemented.³

² See Frenkel (1982); Frenkel and Damill (1987) and Kosacoff (1998).

³ For further information see Ocampo, Bajraj and Martin (coords., 2002).

The recurrence of the phenomena described (in Mexico after the Tequila crisis and in Argentina and Brazil after the Asian and Russian crises) fuelled the suspicion that some aspects of the reforms had actually weakened the countries and made them less able to cope with the economic globalization and internationalization now prevalent in the world.

The initial deregulation of finance, stock markets and public services provision created problems that governments were gradually forced to address by taking regulatory measures and by amending and improving laws and institutions. Reforms were reoriented, creating new areas of uncertainty among economic agents and preventing them even now from following a clear line of action.

Financial liberalization provided the framework within which investment projects were pursued or blocked, depending on the type of company and sector. The financial crises of the 1990s involved all the countries in the region because of investors' perception of the contagion risk. Time and again, therefore, capital flight cut short both growth and investment financing. Meanwhile, the links between the real and financial economies have strengthened to such a degree that a crisis beginning in the real sector rapidly spreads to the financial sector and vice versa, reinforcing the adverse effects.

This combination of structural reforms, changes in the ground rules, capital transfer among sectors and external shocks of a new kind amplified by financial and capital market liberalization, and by globalization in general, not only created a new context, but translated into signals which encouraged investment in some cases and discouraged it in others. For this article we have chosen to look at one of these factors, the instability of capital and financing flows, with a view to analysing its investment impact in greater depth.

IV

Financial flows and investment: some stylized phenomena

During the 1950s and 1960s, capital flows to developing countries were associated with international trade financing or with specific investments to finance real activities, or they were official funds from multilateral or bilateral bodies that offset terms of trade shocks. In the late 1960s and early 1970s, when eurodollars appeared, the international private-sector banking system undertook large-scale lending in Latin America. The external debt crisis and the efforts made to cope with it, particularly the Brady Plan, gave rise to markets for debt instruments and to the region's capital market.

On average, net fund transfers in the 1950s and 1960s were negative (figure 2). When the absolute figures are analysed, what is striking is not only the subsequent increase in capital flows, which rose from US\$ 4 billion in 1970 to a peak of US\$ 142 billion in 1998, but the change in their composition (table 1). The share of official flows fell from 23% of the total in 1970 to 0.4% in 2000, while the composition of private-sector capital flows shifted towards portfolio investments (shares and bonds), whose share of the total rose from 1.3% to 20% between 1970 and 2000, followed by FDI, whose share rose from 25% to 74% in the same period.

Some 80% of all FDI went to just four countries (Argentina, Brazil, Chile and Mexico), although as a percentage of GDP the impact on small countries was greater. Various studies (Ocampo, Bajraj and Martin (coords.), 2002 and ECLAC, 2001) have identified the motivations underlying the different business strategies that gave rise to this investment:

i) the quest for competitiveness in dynamic industries such as cars, electronics and wearing apparel (this was particularly the case with multinational companies in Mexico and the Caribbean);

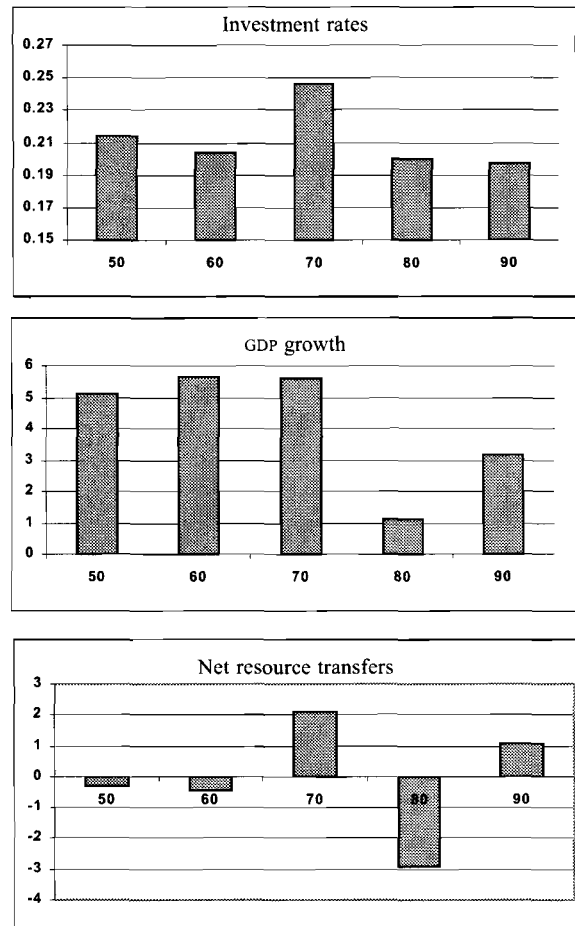
ii) restructuring and modernization of production units in local and regional markets;

iii) investment deepening in sectors with natural comparative advantages (minerals and hydrocarbons), and

iv) acquisitions and modernization in infrastructure sectors with a view to breaking into regional markets.

FIGURE 2

Latin America and the Caribbean: Investment rates, growth and net resource transfers as a share of GDP
(Percentages)



Source: ECLAC, Economic Development Division, prepared by the author.

A significant percentage of the FDI flowing into Latin America in the 1990s was intended for mergers, acquisitions and privatizations. The estimated figure for 1999 and 2000 is 50%. Company acquisitions were supplemented, however, by capital to expand

TABLE 1

Latin America: Capital flows

	1970	1980	1990	1995	1998	1999	2000
Total (billions of dollars)	4.2	29.9	21.8	75.4	142.6	116.5	102.4
Official flows	1.0	5.3	9.2	12.6	12.3	5.2	0.4
Private-sector flows	3.3	24.6	12.6	62.8	130.2	111.3	102.0
Foreign direct investment	1.1	6.1	8.2	29.8	72.1	90.4	76.2
Shares	0.0	0.0	1.1	7.6	1.7	3.9	9.9
Bonds	0.1	0.8	0.1	11.5	18.3	19.1	11.0
Commercial bank and other credits	2.1	17.7	3.2	13.9	38.1	-2.0	5.0
Total (percentages)	100	100	100	100	100	100	100
Official flows	23.2	17.7	42.1	16.8	8.7	4.5	0.4
Private-sector flows	76.8	82.3	57.9	83.2	91.3	95.5	99.6
Foreign direct investment	25.8	20.5	37.6	39.5	50.5	77.5	74.4
Shares	0.0	0.0	5.1	10.1	1.2	3.3	9.6
Bonds	1.3	2.7	0.5	15.2	12.8	16.4	10.7
Commercial bank and other credits	49.7	59.1	14.8	18.4	26.7	-1.7	4.9

Source: World Bank (2001).

production capacity, modernize equipment and introduce leading-edge technology, particularly in infrastructure sectors (electricity and telecommunications), which helped to improve the region's systemic competitiveness.

In Latin America, FDI has been less volatile than net capital transfers overall, as the coefficient of variation shows (table 2). These figures are consistent with the conclusions of the study carried out by Sarno and Taylor (1999), who found that FDI was sensitive to long-term structural movements in a way that other forms of financing were not.

Hausmann and Fernández-Arias (2000a and 2000b) and Lipsey (2001) also concluded that FDI flows were less risky than debt or other financial flows, because they did not trigger crises.⁴

Conversely, portfolio flows and lending by the international financial system were highly volatile in the 1990s (table 3), being repatriated to the countries of origin not only when domestic conditions were unstable, but when shocks occurred in other countries or regions, examples being the Tequila crisis with its repercussions in Argentina and Brazil, the Asian crisis with its repercussions in the Southern Cone, and the Russian crisis with its region-wide repercussions. Only part of these flows was used to finance investment, as is demonstrated by the tendency for internal saving to

⁴ The findings of these studies contrast with those of Claessens, Dooley and Warner (1995), who found that FDI and short-term capital flows had the same degree of volatility, although their observations only covered a few countries.

TABLE 2

**Latin America: Coefficient of variation
in foreign direct investment and net
external resource transfers**
(Average for the period)

	1980-1985	1986-1989	1990-1995	1996-2000
Foreign direct investment	0.22	0.35	0.23	0.24
Net resource transfers	1.51	0.24	1.45	1.31

Source: ECLAC, Balance of payments in 19 Latin American countries.

TABLE 3

**Latin America: Coefficient of variation
in financial flows in the 1990s**
(Average for the period)

	1990-1995	1996-2000
Foreign direct investment	0.23	0.24
Shares	0.62	0.69
Bonds	0.64	0.58
Commercial bank and other credits	1.03	0.89

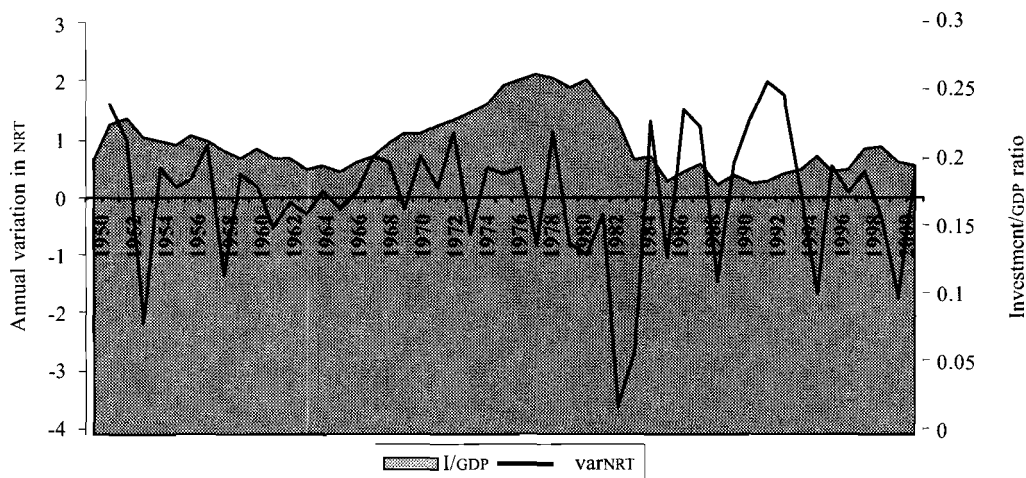
Source: ECLAC, Economic Development Division, prepared by the author on the basis of World Bank (2001).

be replaced by external saving (Uthoff and Titelman, 1997).

As figure 3 shows, there is an inverse relationship between the volatility of financing flows and the average investment ratio for Latin America. The period of least volatility (from the 1950s to the 1970s) coincides with a higher investment-to-GDP ratio. The correlation between the two variables is negative: -22% for the period 1950-2000, rising to -44% between 1980 and 2000.

FIGURE 3

Latin America: The volatility of net resource transfers (NRT) and the investment to GDP ratio



Source: ECLAC, Economic Development Division, prepared by the author.

V

Mechanisms whereby changes in capital flows are transmitted to investment

In a context of financial openness and liberalization, changes in international capital flows affect both the monetary and exchange-rate policies and public spending, but the way they are transmitted depends on the assumptions of the analytical model and, in particular, on how open the capital account is and what exchange-rate regime is in place.

To simplify, we can start with a very straightforward general model:⁵

$$i = i^* + (E^e - E)/E + \lambda \varphi \quad [1]$$

Equation [1] shows that the domestic interest rate i depends on the international interest rate i^* , the expected rate of currency depreciation $(E^e - E)/E$ and a variable φ , which could represent the risk premium demanded by foreign investors to invest in developing countries (country risk).

⁵ The model is based on the work of Claassen (1997) and Krugman and Obstfeld (2002).

If inflationary expectations IP exist, i is replaced by $(r + IP)$ and i^* by $(r^* + IP)$ to give the equation for the real interest rate:

$$r = r^* + (e^e - e)/e + \lambda \varphi \quad \text{(equilibrium in the financial market)} \quad [2]$$

where e is the real exchange rate and e^e is the expected real exchange rate.

Then [1] can be written as:

$$e = e^e / (1 + r - r^* - \lambda \varphi) \quad [3]$$

These equations are a financial approach for determining the real exchange rate, underscoring the role that this rate plays in balancing the expected returns from domestic and external financial assets.

In a small open economy, where domestic and international financial assets are perfect substitutes, any difference in the returns from such assets is immediately eliminated by exchange-rate movements. The difference in expected returns gives rise to capital flows.

The immediate reaction of the exchange rate removes the interest-rate differential, returning the domestic and external rates to balance (parity interest rate). This is a short-term model that can explain daily, weekly or monthly changes in the exchange rate, assuming no intervention whatsoever by the financial authorities in the currency market.

From a longer-term macroeconomic point of view, taking the real economy into consideration, real exchange-rate movements operate in conjunction with other variables to balance the market for goods. In turn, macroeconomic equilibrium acts as an anchor for exchange-rate expectations in the financial market. At the same time, though, unless a situation of capital immobility prevails, macroeconomic determination of the exchange rate can be accompanied by a balance-of-payments current-account deficit or surplus, reflecting a change in net holdings of financial assets. To complete the model, then, we should add the equation for the goods market:

$$y = A(r, m) + B(A, e) \quad [4]$$

(equilibrium in the goods market)

where y is domestic supply, A is the demand for locally produced and imported goods (consumption plus investment), which depends negatively on changes in the real interest rate and positively (wealth effect) on real liquidity m , and B is the trade balance, which is a function of the absorption level and the real exchange rate.

Lastly, the equation that balances the money market is:

$$m = M/P = L(y, r) \quad [5]$$

(equilibrium in the money market)

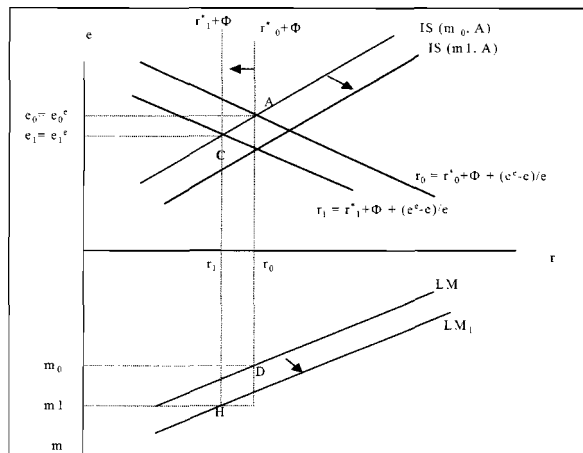
where M is the money supply and P is the price level.

This model can be used to identify the transmission mechanisms (changes in the domestic interest rate, expectations of devaluation or appreciation, inflationary pressures and changes in demand) that operate when there are fluctuations in international capital flows that ultimately affect the level of investment. The model works with different exchange-rate regimes, monetary policies (inflation targeting, money supply targeting, sterilization or non-sterilization) and levels of financial openness (controlled or uncontrolled capital flows).

Let us first assume a situation in which the capital account is completely open and the exchange-rate regime totally flexible, i.e., in which equations [2] and

FIGURE 4

International financial market: Increase in liquidity



Source: ECLAC, Economic Development Division, prepared by the author, 2001.

[3] are operative. An increase in international financial liquidity, expressed in a lower international interest rate or a larger flow of capital into the region, will shift the equilibrium in the financial, real and money markets from point A to point C (figure 4).

This new equilibrium entails a larger supply of money and a fall in the domestic interest rate, the combination of which stimulates spending. At the same time, the influx of capital generates expectations of currency appreciation that will continue until the currency and money markets adjust to the new equilibrium (line r_1) in the financial market. If we isolate the investment function in the real market equilibrium equation we get:

$$I = I(y, r, e) \quad [6]$$

Both the higher spending and the lower interest rate are favourable to the implementation of new investment projects, while currency appreciation, although it reduces the cost of imported capital goods, lowers the returns of the export sector, thus discouraging its expansion. Whether the ultimate effect of the real exchange rate is positive or negative will depend on the elasticity and importance of the different sectors for capital formation.

If instead of increasing, international financial liquidity decreases and capital leaves the region because of some exogenous cause, the impact will be the

opposite. If we were at a point such as *C*, the increase in the domestic interest rate and expectations of currency devaluation will create an equilibrium level at which spending is lower, such as point *A*, and the investment level will fall.

If the assumption of perfect capital mobility is replaced by controls on short-term capital movements, like those seen in Chile and Colombia for much of the 1990s, the effects of increased international financial liquidity will be less than shown in figure 4. Controls on capital movements act like a tax on capital, making it more costly, decreasing the return on flows and reducing expenditure. Because the tax is selective, it does not always affect investment directly. What it does do is prevent overheating in the economy and the subsequent adjustment.⁶

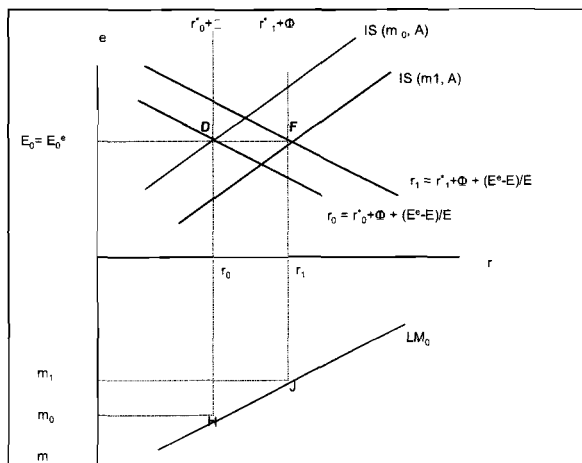
The monetary authorities can also neutralize the impact of the capital flow by implementing a sterilization policy, i.e., buying domestic assets to forestall changes in the money supply. In this case, the monetary effect of rising capital flows is reduced and financial market adjustment takes place primarily through changes in the real exchange rate. The specific monetary policy response will thus partly determine the eventual impact on investment.

If instead of a flexible exchange-rate regime the country has a fixed rate, economic agents will not expect any change in the price of the national currency when capital flows fluctuate. In this case, the adjustment variable in the financial market will be the domestic interest rate, and in the money market it will be the growth or contraction of the money supply resulting from changes in reserves.

Figure 5 shows the effect on spending of a capital outflow resulting from an external shock (international or regional financial crisis). Argentina in 2001 is a good example of this effect. The capital outflow creates expectations of a devaluation that would place the exchange rate at E_1 , above E_0 . The effect of these expectations on the line representing the financial market equilibrium is to shift it upward. To start with, the initial exchange rate remains at r_0 , below the expected rate of return of deposits in external assets. To keep the exchange rate there, the Central Bank sells reserves, reducing the money supply and raising the interest rate. Spending shrinks, and so does investment. Capital continues to flow out until expectations of

FIGURE 5

Latin America: Capital flight and fixed exchange rate



Source: ECLAC, Economic Development Division, prepared by the author, 2001.

devaluation cease and confidence in the national currency returns, except where country risk increases because of recession, as happened in Argentina.

Between the two systems analysed, the flexible exchange-rate system and the fixed-rate system (including convertibility systems), there are intermediate cases, such as when the authorities intervene to prevent the exchange rate from moving beyond pre-set fluctuation bands. In these cases adjustment takes place through the exchange rate and the interest rate. The results will depend on how much confidence economic agents feel in the policies being applied. Chile after the Asian crisis (late 1997 and 1998) offers a good example of conflict between expectations of devaluation and efforts to defend the currency. The outcome was an increase in interest rates that at times exceeded 100%, albeit briefly.

What has been described so far is the mechanism whereby exogenous movements in capital flows are transmitted to macroeconomic variables, which in turn affect investment. The final effect will depend on how open the capital account is and on what monetary and/or exchange-rate policy is being applied at the time. Like political or economic instability, however (see Pyndick, 1991), unexpected financial shocks increase uncertainty and make agents more risk-averse, and this is another way in which the volatility of capital flows affects investment. As uncertainty increases, agents are

⁶ See Le Fort and Lehman (2000); De Gregorio, Edwards and Valdés (1999) and Valdés and Soto (1998).

discouraged from implementing projects and become more likely to postpone them. Broadly speaking, the international financial crises of the 1990s show how important it is to treat uncertainty as a determining factor in investment decisions. At times of crisis, financial investors panic and withdraw capital not just from the country affected but from the entire region, or from all "emerging" countries. This reduces the liquidity of short- and long-term flows, while generating greater uncertainty in the real economy.⁷

From a microeconomic point of view, the relationship between the volatility of capital flows and investment is more complex and does not operate only in the indirect fashion described for the macroeconomic effects. Over the 1960s and 1970s, those who claimed to find links between financing and investment were divided into two schools of thought: the post-Keynesian school, which upheld the original ideas of Keynes, claiming that instability in financial relationships could make investment and the macroeconomy volatile, and the neo-Keynesian school, whose formal approach, based on optimization models derived from neoclassical principles, did not identify important links between financing and investment.

In the theories developed during the 1980s, the "new Keynesians" focused on the study of market imperfections and applied these ideas to credit markets. In this way, they came to the conclusion that the ability of companies to implement investment projects depended not only on the fundamentals of the project but also on their own financial position. This idea provided a new basis for understanding the relationship between the financial structure and real activity.⁸

Bernanke, Getler and Gilchrist (1996) analysed the way changes in credit market conditions amplify and spread the initial effects of real or monetary shocks. When there is a shock, companies whose balance sheets are weakened will have less access to credit than large companies or multinational conglomerates, a phenomenon that the authors term "flight to quality". The reorientation of lending acts as a financial accelerator, deepening the initial recession that resulted from the shock. The same mechanism can operate when international financial flows are reversed. In this case, instead of the flight to quality seen in the national

financial system, there is a flight to lower-risk countries, with similar effects on large companies in emerging countries.

The impact on balance sheets is transmitted through the borrower's higher debt servicing costs (in local and foreign currency), shrinking cashflow and weakening financial position. As many companies depend heavily on short-term borrowing to finance inventories and working capital, international volatility ends up by affecting cash flow in much the same way as a restrictive monetary policy would. At the same time, the higher domestic interest rates resulting from the contraction in external credit are associated with a fall in asset prices that, among other things, reduces the value of borrowers' collateral and their future borrowing capacity.

This leads us to derive the following equation, in which company cash flow c is a function of spending y , cost of capital r , internal financing capacity m and external financing F .

$$c = f(y, m, r, F) \quad [7]$$

In Latin America, and in developing countries generally, the financing capacity of companies with access to the international capital market improves when liquidity in this market increases. This affects companies' cash flow and influences their financing structure. The impact of financial outflows and/or financing restrictions resulting from an external shock will depend on the level of the company's existing external borrowings and on expectations before the crisis. If the economy was overheating and this led firms to overinvest, a sudden outflow of funds will lead to underutilization of production capacity and lower than expected returns. The deeper the crisis and the slower the recovery, the larger the losses will be and the companies will be less able to finance investment out of their own resources. If this is combined with a lower external and internal borrowing capacity or a higher cost of capital, investment rates will recover more slowly than they fell, so the volatility of capital flows will have asymmetrical effects.

Reflecting this analysis, equation [6] includes the direct effect of the variation in international capital flows derived from equation [7]. We thus get:

$$I = f(y, r, e) + c(y, m, r, F) - g(u) \quad [8]$$

where u represents an indicator of uncertainty generated by the volatility of capital flows.

⁷ See Heymann (2000) on learning in the expectations function.

⁸ See Blinder and Stiglitz (1983); Myers and Majluf (1984); Bernanke and Getler (1995); Bernanke, Getler and Gilchrist (1996); Hubbard (1998); Fazzari, Hubbard and Petersen (1988 and 2000) and Carpenter and others (1998).

These factors obviously do not affect all companies alike. In Latin America, it can be seen that financial markets are segmented, owing to the incompleteness of markets and information asymmetry, and that companies have different financing structures in terms of the breakdown among their own resources, debt instruments negotiated with the local financial system, and external debt. In general, small and medium-sized enterprises tend to finance themselves from their own resources and local bank borrowing, while large domestic companies and multinationals have access to local credit and to instruments supplied by the international financial market: bonds, shares or medium- and long-term external debt.

Access to the capital flows from the international financial system, and the reversal of such flows, affect both types of companies through different channels, but also have differentiated effects on large companies depending on whether they are export-oriented or produce for the local market:

i) Small and medium-sized enterprises: during crises, the decline in profits (which are essential for self-financing) is compounded by the constriction of bank lending caused by reduced liquidity in the local financial market and the greater reluctance of banks to take risks. A kind of crowding-out effect operates owing to the flight to quality referred to earlier. During upturns, on the other hand, the liquidity of the domestic financial system leads banks to invest in activities that might normally be considered too unprofitable and/or risky, and crowding in occurs. When flows are reversed, the business cycle is intensified by bankruptcies among companies that have taken on too much debt and the fragility of those that survive.

ii) Large export-oriented local or multinational companies: if the influx of capital prior to the financial shock led to currency appreciation, the subsequent devaluation will benefit them by making local currency-denominated wages and inputs cheaper. This will tend to make them more profitable, but at the same time they will be negatively affected by the lack of liquidity in the international financial market. What this generally means is that they are unable to raise money by issuing bonds or shares or by borrowing, or that it becomes much more expensive to do so, and investment projects are likely to be postponed as a result. The opposite happens during upturns, when investment projects become easier to implement.

iii) Large domestic market-oriented local or multinational companies: currency appreciation during the period of international financial liquidity benefits

them and encourages external borrowing. If the company expects an outflow of external funds or a possible crisis, it may avoid currency risk by shifting part of its external borrowings into local-currency debt. If it fails to anticipate these developments it will be exposed to currency losses. Meanwhile, its access to external financing will be restricted, and if there is a sharp devaluation (because there was previously a fixed exchange rate or dirty float) this will be compounded by a large fall in profits, compromising its future creditworthiness. In this case, investment decisions will depend not only on the fundamentals of the project but also on the assessment that financiers make of the company, which may be faced with a domestic and external credit crunch.

To sum up, the effect of capital account liberalization and financial volatility will depend on how heavily the different types of companies are represented in the economy and in capital formation. If large exporters predominate the economy will be less affected, unless a very high proportion of exports go to markets that have also suffered from the international financial crisis (this was what happened to Chile with the Asian crisis).

It will also depend on how much domestic and external debt companies are carrying. If small and medium-sized enterprises are heavily in debt when capital flows are reversed and spending contracts, they will probably find it very hard to survive. In any event, it will be a long time before they are again in a position to expand production capacity.

Lastly, the scale of the impact will also depend on monetary policy and the exchange-rate regime. It has been shown on different occasions that adjustment is more traumatic for real variables (growth and employment) when exchange rates are fixed than when they are flexible.⁹ While spending clearly has a positive impact on investment and the cost of capital a negative one, abrupt changes in the real exchange rate do not automatically produce a positive or negative result. Rather, the impact depends on which are the markets that companies sell to and what type of effect predominates. If it is the financial effect, devaluation will have a negative impact. If it is the real effect, the impact is indeterminate: export sectors will become more profitable, but the cost of capital goods will rise, adversely affecting activities that are oriented towards the domestic market.

⁹ See Ffrench-Davis and Larrain (2001).

Future research may clarify the effects of international capital flow volatility on companies that have different levels of access to such funding, different

financing structures and different sectoral orientations. The distinction between export- and local market-oriented sectors is particularly important.

VI

Capital flow volatility and investment: empirical estimates

This section presents the results of estimating an econometric model that seeks to explore the impact of capital flow variation and volatility on investment.¹⁰

The weight attached by agents to the recent past when forming future expectations, particularly as regards capital flows, led us to choose a partial adjustment model as the relevant specification for equation [8]. The way this type of model estimates expectations with a special emphasis on the recent past is consistent with the failure of businesses to project turning points in the behaviour of key variables, such as the suspension of flows or sudden devaluation, as they have tended to think that past tendencies will continue in the future. This has meant that external crises have caught them unawares, and in many cases with an excess of investment.

Because level variables are subject to spurious correlation owing to the powerful impact of the trend, differenced explanatory variables are included in the model estimation.

The definition of capital flows does not include FDI. The reason is that some of what is recorded as such is new investment used for gross capital formation in the countries, and is thus a component rather than a determinant of investment, so that it belongs on the left-hand side of the equation rather than the right. The remainder, being payment for assets, constitutes capital transfer rather than capital formation, so it should not be regarded as an investment determinant either.

In estimating the volatility of flows, all net external resource transfers were included. During domestic crises and external shocks there is a decline in all

components of external financing, and it is this that depresses investment. We included real exchange-rate volatility in the model as a supplementary indicator contributing to uncertainty. Like capital flow volatility, it is negative in its effects.

The model also includes two control variables. The first is the degree of trade liberalization, measured by the share of GDP accounted for by foreign trade (exports plus imports). Trade liberalization was regarded as an essential measure for stimulating exports because it lowers the cost of imported inputs and capital goods. Indirectly, it appears to have a positive influence on investment.

The second control variable used is a dummy variable for the 1980s which captures the investment recession brought on by the external debt crisis and the subsequent adjustment process until recovery took place.

The model was estimated using the panel method, applied to a total of 16 Latin American countries for which consistent variables and annual data covering the period 1970-2000 were available. Two methods of estimation with fixed coefficients were employed, the first using generalized least squares and incorporating the matrix of consistent standard errors and covariances obtained with White's method (1980), and the second using a consistent estimator for the presence of both heteroscedasticity and serial autocorrelation of errors. In this case the seemingly unrelated regression (SUR) method was used.

Table 4 presents the coefficients of the panel regressions on the basis of fixed effects and common coefficients for the explanatory variables, i.e., on the assumption that the investment function presents the same elasticities for the different countries. The signs of the variables are as expected and the coefficients are robust when the different methods of estimation are applied.

¹⁰ Although the model explicitly seeks to highlight financial factors as investment determinants, it also considers other factors included in empirical estimates for Latin American countries in the last three decades. See Servén and Solimano (1993); Rama (1993); Mogueillansky (1996) and Agosin (1998).

Box 1

SPECIFICATION OF THE REGIONAL INVESTMENT MODEL

$$I_Y = c(1) \Delta GDP + c(2) \Delta XM_Y + c(3) \Delta RER + c(4) \Delta VRER + c(5) \Delta (OK) + c(6) \Delta VF + c(7) I_Y (-1)$$

Where:

- I_Y : Investment to domestic output ratio.
 GDP : Gross domestic product.
 XM_Y : External trade (exports plus imports) as a share of GDP.
 RER : Real exchange rate index.
 VRER : Indicator of annual volatility in the real exchange rate, calculated from the coefficient of variation in the real monthly exchange rate.
 OK : Net resource transfers from abroad as a percentage of GDP, excluding foreign direct investment.
 VF : Indicator of capital flow volatility. Represents the annual variation in a moving average of the coefficient of variation for net resource transfer flows, calculated on a five-year basis.
 Δ : Delta operator, representing the first difference of the variable.

Source: ECLAC, Economic Development Division, prepared by the author, 2001.

TABLE 4

Results of the regional model for the investment function

Dependent variable: I_Y	Correction of			
	Heteroscedasticity (White, 1980)		Autocorrelation and heteroscedasticity (SUR)	
Explanatory variables:	Coefficient	Student's t-statistic	Coefficient	Student's t-statistic
ΔGDP (-1)	0.0076	7.62	0.0077	11.92
ΔXM_Y	0.0019	4.72	0.0019	9.21
ΔXM_Y (-1)	0.0778	2.03	0.0528	2.39
ΔRER	-0.0172	-4.21	-0.0166	-8.48
ΔVRER (-1)	-0.0002	-0.03	-0.0016	-0.57
ΔOK	0.0064	4.74	0.0061	11.60
ΔVF (-1)	-0.0011	-3.49	-0.0011	-5.35
D8189	-0.0186	-2.15	-0.0291	-5.09
I_Y (-1)	0.8262	34.76	0.8111	44.05

Source: ECLAC, Economic Development Division, prepared by the author on the basis of appendices A and B.

The results show that in the region as a whole, taking the statistical information for 16 countries as a basis, it is possible to identify the significant impact that both the liquidity and the volatility of external financing have as determinants of investment. Variations in the availability of external capital and/or sudden changes of sign are captured by changes in aggregate investment, owing to the microeconomic effect transmitted by the reduced external borrowing capacity of large companies, the flight to quality in the domestic financial system (which results in a credit crunch for small and medium-sized enterprises), and the increase in uncertainty for economic agents.

The model estimates that through the direct channel of reduced financing, a reversal of 1% of GDP in capital flows results in a 0.64% reduction in investment as a share of regional output in the short term. If this reversal of flows makes them more volatile, causing greater uncertainty for economic agents, the result could be expressed as a further 0.11% fall in the investment ratio. These direct effects do not include the impact of reversal on spending, which is obtained from the model estimated using the Keynesian accelerator, and on the real exchange rate (increase in the cost of imported capital goods). A structural model would show this twofold impact.

VII

Summary and conclusions

Financial and capital market liberalization has served to attract foreign investment and, in general, to expand investment project financing capabilities, but at the same time it has made it easier for financial crises originating in Latin America or elsewhere to spread. The frequency of these crises increased in the 1990s and growth and financing were cut off time and again, with the result that more careful study began to be made of the impact of capital flow instability on investment.

One stylized fact brought out by this article is that capital market liberalization led to a change in the composition of international capital flows into the region, with the share of official funds falling from 23% in 1970 to a minuscule amount in 2000. At the same time, FDI came to form the bulk of private-sector flows, averaging 40% or so in the mid-1990s and 74% in 2000, although latterly less than 50% of this investment was used for fixed capital formation. The remainder merely represented asset transfers (i.e., payments for mergers, acquisitions or privatizations), part of a wave of capital concentration that is taking place in the world. Given that the region's investment ratio has been falling in recent years, it is possible that the counterpart of these flows – payments to acquire companies – is being invested outside the region.

The other stylized phenomenon is the great volatility of external capital flows other than FDI. These flows come from a variety of sources, including portfolio investments in the form of shares and bonds, short-term credits, and long-term international bank credits (associated in some cases with FDI), and one of their characteristics is that after being highly liquid in certain periods (particularly prior to the Tequila and Asian crises) they have been abruptly withdrawn in the midst of the crisis, causing serious financial and solvency problems in some of the region's countries.

Analysis of the mechanisms whereby the impact of capital flows and of periods of volatility in such flows is transmitted to investment reveals that, at the macroeconomic level, these variables affect the domestic interest rate, expectations of currency devaluation or appreciation, inflationary pressures and the combined effect that all this has on spending. The scale of the impact will depend, however, on the exchange-rate regime in force (which differs not only

among countries in the region but within any given country at different times), on monetary policy (i.e., on whether or not inflation targeting, money supply targeting or sterilization policies are used) and on the degree of financial freedom (i.e., whether or not there are controls on capital flows). The way these policies are combined creates a context of greater or lesser vulnerability to a sudden capital drought or international financial crisis.

Besides the macroeconomic transmission mechanisms described, there is a microeconomic transmission mechanism that amplifies and spreads the initial effects of monetary or financial shocks, acting as a "financial accelerator". This mechanism works through two channels:

i) through greater access to cheap external credit and fewer restrictions on lending during boom periods, and through the "flight to quality", i.e., the redirecting of international finance to lower-risk countries, when a financial crisis occurs in the region or elsewhere. The result is a surge in the number of major investment projects executed in emerging countries, followed by a sudden contraction.

ii) through crowding out at times of crisis and crowding in during upturns. In the first case, banks concentrate their lending on large companies and crowd out small and medium-sized enterprises, something that is particularly harmful at times of low international liquidity. In the second case, large companies' access to external financing creates opportunities for smaller companies to obtain financing in the domestic banking market. Both the "flight to quality" among external financiers and the crowding out effect in the domestic financial system worsen the original recession resulting from any international financial crisis. At the same time, excessive borrowing among both small and large companies at times of strong financial liquidity plays its part in worsening the crisis when flows are reversed.

Like political or economic instability, unexpected financial shocks make agents more uncertain and risk-averse, and this is another way in which capital flow volatility affects investment. Increased uncertainty makes them more reluctant to implement projects, particularly those whose returns are expected only in the longer term. These include large infrastructure

projects, which in the days before privatization were partially financed by loans from multilateral organizations and implemented by the State as a component of anticyclical policies.

To understand how widespread both financial volatility and the uncertainty determined by it are in Latin America, a panel model was estimated for 16 countries in the region, using statistics that cover the period 1970-2000. The specification took the form of a partial adjustment model, the idea being to capture the learning process among agents in relation to the expectations function. This is consistent with the failure of businesses to foresee turning points in capital flows and exchange-rate regimes, so that external crises have often caught them unawares and with an excess of investment. In addition to variables relating to the impact of external financing volatility, the model includes those variables that have normally been regarded as investment determinants in empirical estimates for the region.

The results show significant coefficients of variation in the liquidity and volatility of external financing. The model estimates that, by reducing the amount of financing available, a reversal of 1% of GDP in capital flows has the direct effect of cutting investment as a share of regional output by 0.64%. If this reversal makes flows more volatile, increasing uncertainty among economic agents, the result could be expressed as a further 0.11% fall in the investment ratio. This still does not take into account the effect of flow reversal on spending, captured in the model by the Keynesian accelerator, and on the real exchange rate.

Not all companies have access to international financing, and the impact of an unforeseen flow reversal depends on the size of their existing domestic or

external borrowings, on the extent of overheating in the economy, and on the monetary policy and exchange-rate regime being applied when the crisis occurs. The conclusion this leads to is that the effect of volatility in international capital movements will differ not just among companies, but among countries as well.

To sum up, the exercise shows that opening a country up to the international capital market has a favourable effect on regional investment at times of financial liquidity, but that the instability and volatility of flows makes this a two-edged sword. One way of mitigating the adverse effects is to erect barriers to capital inflows at times of high liquidity, to prevent the economy overheating.¹¹ Chile has done this successfully on a number of occasions. Another alternative is to apply anticyclical macroeconomic (fiscal and monetary) policies, although the scope of these is reduced by globalization. If the country is exposed to a liquidity trap, has little solvency in its financial system or operates a fixed exchange-rate regime in conjunction with a fully open capital market, monetary policy will be ineffective and then the fiscal instrument will have to be the basis of anticyclical policy. This requires sounder institutions, greater independence and more flexible fiscal policy than are to be found today in the Latin American countries. Lastly, the need to protect small and medium-sized enterprises' access to credit at times of crisis suggests that financial legislation and the role of development banking should be reviewed.

(Original: Spanish)

¹¹ See Valdés and Soto (1998); De Gregorio, Edwards and Valdés (1999) and Le Fort and Lehman (2000).

APPENDIX A

**Results of the regional model estimation: Correction of heteroscedasticity
using White's matrix of covariances**

Sample:	1977-2000			
Dependent variable:	I_Y			
Number of serial observations:	24			
Number of total balanced panel observations:	384			
Variable	Coefficient	Standard error	t-Statistic	Prob.
$\Delta_GDP (-1)$	0.0076	0.0010	7.62	0.000
ΔXM_Y	0.0019	0.0004	4.72	0.000
$\Delta XM_Y (-1)$	0.0778	0.0382	2.03	0.042
Δ_RER	-0.0172	0.0041	-4.21	0.000
$\Delta_VRER (-1)$	-0.0002	0.0061	-0.03	0.973
ΔOK	0.0064	0.0013	4.74	0.000
$\Delta VF (-1)$	-0.0011	0.0003	-3.49	0.000
D8189	-0.0186	0.0086	-2.15	0.031
$I_Y (-1)$	0.8263	0.0238	34.76	0.000
<i>Fixed effects</i>				
Argentina-c	0.3126			
Bolivia-c	0.3333			
Brazil-c	0.3238			
Chile-c	0.2775			
Colombia-c	0.3367			
Costa Rica-c	0.2957			
Dominican Republic-c	0.2762			
Ecuador-c	0.3415			
El Salvador-c	0.3374			
Guatemala-c	0.4098			
Honduras-c	0.2836			
Mexico-c	0.3198			
Paraguay-c	0.3008			
Peru-c	0.2942			
Uruguay-c	0.3641			
Venezuela-c	0.3274			
<i>Weighted statistics</i>				
R ²	0.96	Average of dependent var.		-1.80
Adjusted R ²	0.95	Stand. dev. of dependent var.		0.42
Sum of squares of regression	0.08	Sum of squares of residuals		2.79
Logarithmic probability	412	F statistic		1089
Durbin-Watson statistic	1.97	Prob. (F statistic)		0.00
<i>Unweighted statistics</i>				
R ²	0.90	Average of dependent var.		-1.72
Adjusted R ²	0.90	Stand. var. of dependent var.		0.28
Sum of squares of regression	0.08	Sum of squares of residuals		2.81
Durbin-Watson statistic	1.92			

Source: ECLAC, Economic Development Division, prepared by the author.

APPENDIX B

**Results of the regional model estimation: Correction of heteroscedasticity
and of autocorrelation in errors, SUR method^a**

Variable	Coefficient	Standard error	t-Statistic	Prob.
Sample:		1977-2000		
Dependent variable:		I_Y		
Number of serial observations:		24		
Number of total balanced panel observations:		384		
<i>Fixed effects</i>				
Argentina-c	0.328			
Bolivia-c	0.356			
Brazil-c	0.343			
Chile-c	0.295			
Colombia-c	0.358			
Costa Rica-c	0.313			
Dominican Republic-c	0.293			
Ecuador-c	-0.364			
El Salvador-c	-0.359			
Guatemala-c	-0.438			
Honduras-c	-0.302			
Mexico-c	-0.337			
Paraguay-c	-0.318			
Peru-c	-0.311			
Uruguay-c	-0.388			
Venezuela-c	-0.347			
<i>Logarithmic probability</i>	534.7596			
<i>Unweighted statistics</i>				
R ²	0.90	Average of dependent var.		-1.72
Adjusted R ²	0.90	Stand. dev. of dependent var.		0.28
Sum of squares of regression	0.08	Sum of squares of residuals		2.81
Durbin-Watson statistic	1.89			

Source: ECLAC, Economic Development Division, prepared by the author.

^a SUR: Seemingly unrelated regression.

Bibliography

- Agosin, M. (1998): Capital Inflows and Investment Performance: Chile in the 1990s, in R. Ffrench-Davis and H. Reisen (eds.), *Capital Flows and Investment Performance: Lessons from Latin America*, Paris, Organisation for Economic Co-operation and Development (OECD) Development Centre/ECLAC.
- Bernanke, B. and M. Getler (1995): Inside the black box: The credit channel of monetary policy transmission, *Journal of Economic Perspectives*, vol. 9, No. 4, Nashville, Tennessee, American Economic Association.
- Bernanke, B., M. Getler and S. Gilchrist (1996): The financial accelerator and the flight to quality, *The Review of Economics and Statistics*, vol. 78, No. 1, Cambridge, Massachusetts, The MIT Press.
- Blinder, A. and J. Stiglitz (1983): Money, credit constraints and economic activity, *American Economic Review*, vol. 73, No. 2, Nashville, Tennessee, American Economic Association.
- Carpenter, R. and others (1998): Financing constraints and inventory investment: A comparative study with high-frequency panel data, *Review of Economics and Statistics*, vol. 80, No. 4, Cambridge, Massachusetts, The MIT Press.
- Claassen, E. (1997): *Global Monetary Economics*, New York, Oxford University Press.
- Claessens, S., M. Dooley and A. Warner (1995): Portfolio capital flows: Hot or cold?, *The World Bank Economic Review*, vol. 9, No. 1, Washington, D.C., World Bank.
- De Gregorio, J., S. Edwards and R. Valdés (1999): *Capital controls in Chile: An assessment*, Santiago, Chile, Central Bank of Chile, March, unpublished.
- ECLAC (2001): *Foreign Investment in Latin America and the Caribbean, 2000 Report*, LC/G.2125-P, Santiago, Chile.
- Edwards, S. (1995): *Crisis and Reform in Latin America, from Despair to Hope*, New York, Oxford University Press.
- Fazzari, S., R. Hubbard and B. Petersen (1988): Financing constraints and corporate investment, *Brookings Papers on Economic Activity*, No. 1, Washington, D.C., The Brookings Institution.
- _____ (2000): Investment-cash flow sensitivities are useful: A comment on Kaplan and Zingales, *Quarterly Journal of Economics*, vol. 115, No. 2, Cambridge, Massachusetts, The MIT Press.
- Ffrench-Davis, R. (comp.) (2001): *Financial Crises in "Successful" Emerging Economies*, Washington, D.C., The Brookings Institution.
- Ffrench-Davis, R. and G. Larrain (2001): How optimal are the extremes? Latin American exchange rate policies during the Asian crisis, Santiago, Chile, unpublished.
- Ffrench-Davis, R. and J.A. Ocampo (2001): The globalization of financial volatility: Challenges for emerging economies, in R. Ffrench-Davis (comp.), *Financial Crises in "Successful" Emerging Economies*, Washington, D.C., The Brookings Institution.
- Ffrench-Davis, R. and H. Reisen (eds.) (1998): *Capital Flows and Investment Performance: Lessons from Latin America*, Paris, OECD Development Centre/ECLAC.
- Frenkel, R. (1982): Mercado financiero, expectativas cambiarias y movimientos de capital, *Desarrollo económico*, vol. 22, No. 87, Buenos Aires, Instituto de Desarrollo Económico y Social (IDES).
- Frenkel, R. and M. Damill (1987): *De la apertura a la crisis financiera. Un análisis de la experiencia argentina de 1977-1982*, Ensayos económicos, No. 37, Buenos Aires, Central Bank of Argentina.
- Hausmann, R. and E. Fernández-Arias (2000a): *Is FDI a Safer Form of Financing?*, Working papers, No. 416, Washington, D.C., Inter-American Development Bank (IDB).
- _____ (2000b): *Foreign Direct Investment: Good Cholesterol?*, Working papers, No. 417, Washington, D.C., IDB.
- Heymann, D. (2000): Major macroeconomic disturbances, expectations and policy responses, *CEPAL Review*, No. 70, LC/G.2095-P, Santiago, Chile, ECLAC.
- Hofman, A. (in the press): *Capital Formation, Employment and Potential Output in Latin America: A Simplified Econometric Approach for the 1950-2000 Period*, Santiago, Chile.
- Hubbard, G. (1998): Capital market imperfections and investment, *Journal of Economic Literature*, vol. 36, No. 1, Nashville, Tennessee, American Economic Association.
- Kosacoff, B. (1998): *Estrategias empresariales y ajuste industrial*, Buenos Aires, ECLAC Office in Buenos Aires.
- Krugman, P. and M. Obstfeld (2002): *International Economics: Theory and Policy*, Boston, Addison Wesley.
- Le Fort, G. and S. Lehman (2000): *El encaje, los flujos de capitales y el gasto: una evaluación empírica*, Documentos de trabajo, No. 64, Santiago, Chile, Central Bank of Chile.
- Lipsev, R. (2001): *Foreign Direct Investment in Three Financial Crises*, Working papers, No. 84, Cambridge, Massachusetts, National Bureau of Economic Research (NBER).
- Moguillansky, G. (1996): The macroeconomic context and investment: Latin America since 1980, *CEPAL Review*, No. 58, LC/G.1916-P, Santiago, Chile, ECLAC.
- Moguillansky, G. and R. Bielschowsky (2001): *Investment and Economic Reform in Latin America*, Santiago, Chile, ECLAC.
- Morley, S., R. Machado and S. Pettinato (1999): *Indexes of Structural Reform in Latin America*, Reformas económicas series, No. 12, Santiago, Chile, ECLAC.
- Myers, S.N. and N. Majluf (1984): Corporate financing and investing decisions when firms have information that investors do not have, *Journal of Financial Economics*, No. 3.
- Ocampo, J.A. (coord.) (2002): *Growth with stability: financing for development in the new international context*, LC/G.2171-P, Santiago, Chile, ECLAC.
- Ocampo, J.A. and C. Tovar (1999): *Price-based capital account regulations: The Colombian experience*, Financiamiento del desarrollo series. No. 87, Santiago, Chile, ECLAC.
- Ocampo, J.A., R. Bajraj and J. Martin (coords.) (2002): *A decade of light and shadow: Latin America and the Caribbean in the 1990s*, Santiago, Chile, ECLAC.
- Pyndick, R.S. (1991): Irreversibility, uncertainty, and investment, *Journal of Economic Literature*, vol. 29, No. 3, Nashville, Tennessee, American Economic Association.
- Rama, M. (1993): Empirical investment equations for developing countries, in L. Servén and A. Solimano (eds.), *Striving for Growth after Adjustment: The Role of Capital Formation*, Washington, D.C., World Bank.
- Sarno, L. and M.P. Taylor (1999): Hot money, accounting labels and the permanence of capital flows to developing countries: An empirical investigation, *Journal of Development*

- Economics*, vol. 59, No. 2, Amsterdam, The Netherlands, Elsevier Science Publishers, B.V.
- Serven, L. and A. Solimano (eds.) (1993): *Striving for Growth after Adjustment: The Role of Capital Formation*, Washington, D.C., World Bank.
- Stiglitz, J.E. and A. Weiss (1981): Credit rationing in markets with imperfect information, *American Economic Review*, vol. 71, No. 3, Nashville, Tennessee, American Economic Association.
- Uthoff A. and D. Titelman (1997): The Relation between Foreign and National Savings under Financial Liberalization, in R. French-Davis and H. Reisen (eds.), *Capital Flows and Investment Performance: Lessons from Latin America*, Paris, OECD Development Centre/ECLAC.
- Valdés, S. and M. Soto (1998): ¿Es el control selectivo de capitales efectivo en Chile? Su efecto sobre el tipo de cambio real, *Cuadernos de economía*, year 33, No. 98, Santiago, Chile, Catholic University of Chile.
- Villar, L. (2000): Manejo de auge y crisis financieras internacionales, in ECLAC, *Hacia un sistema financiero internacional estable y predecible y su vinculación con el desarrollo social*, Temas de coyuntura series, No. 8, Santiago, Chile.
- White, H. (1980): A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica*, vol. 48, No. 4, Evanston, Illinois, The Econometric Society.
- World Bank (2001): *Global Development Finance*, Washington, D.C.



International tax

cooperation and

capital mobility

Valpy FitzGerald

University of Oxford
edmond.fitzgerald
@st-antonys.oxford.ac.uk

The international mobility of capital and the geographical dispersion of firms have clear advantages for the growth and modernization of Latin America and the Caribbean, but they also pose great challenges. Modern principles of capital taxation for open developing economies indicate the need to find the correct balance between the encouragement of private investment and the financing of social infrastructure, both of which are necessary for sustainable growth. This balance can be sub-optimal when countries compete for foreign investment by granting tax incentives or applying conflicting principles in determining the tax base. The fiscal authorities of the region could obtain a more equitable share of capital tax revenue, without depressing investment and growth, through more effective regional tax rules, double taxation treaties, information sharing and treatment of offshore financial centres along the lines already promoted for OECD members.

I

Introduction

Globalization involves increasing freedom of capital movement: both for firms from industrialized countries investing in developing countries, and for financial asset owners in developing countries themselves. Standard principles of international taxation suggest that the tax burden should fall most heavily on those factors of production which are least mobile, in order to maximize government income and minimize the disincentives to economic growth. There has been a corresponding shift in the incidence of taxation from capital to labour as governments have tried to maintain levels of both fiscal revenue and private investment. In the major Latin American economies, the estimated tax burden on the income of foreign investors has fallen by about a half over the past two decades.

Free movement of capital and opportunities for the geographical dispersion of firms thus create fundamental challenges for tax authorities. Different national taxation norms and interstices between tax administrations create conflicts of interest among all involved. On the one hand, international double taxation arising from the concurrent exercise by two or more countries of their taxation rights is not conducive to business agreements in general and investment in particular. On the other hand, lack of administrative co-ordination between tax jurisdictions supports capital flight and loss of vital tax revenue. The member governments of the Organization for Economic Cooperation and Development (OECD) have therefore strengthened measures to prevent "harmful tax competition" in recent years. However, this is a problem

for developing as well as developed countries. Latin America and the Caribbean have been at the forefront of the liberalization of capital movements, but they are also chronically burdened by fiscal deficits, external debt and inadequate infrastructure.

Current international taxation arrangements pose particular problems for three main reasons: i) the difficulties in acquiring the potential fiscal resources generated by both foreign and domestic trans-border firms; ii) the economic costs of tax competition between developing countries in order to attract foreign investment; and iii) the consequences of the inability to tax residents' overseas assets for the purpose of combating capital flight and furthering social equity. Despite these problems, tax payments by foreign investors represent a major source of fiscal resources for the region: some US\$ 15 billion in income tax appears to have been paid by foreign firms in 2000, while tax due on income from residents' overseas portfolio holdings might well be of a similar magnitude. At the very least, international taxation arrangements should be seen as a vital dimension of international development policy, just as investment and trade rules have become.

The institutional framework for international tax cooperation - tax competition, conflicting principles for determining the tax base, and double taxation treaties - is outlined in section II below. Section III then addresses the economic principles that underpin policy discussions on the dilemma facing an open economy that needs both to encourage private investment and finance social infrastructure. Section IV looks at international taxation in practice, taking into account both the statistical evidence on flows and the current progress on information sharing and supervision of offshore financial centres. The paper concludes with a discussion of a possible agenda for regional policy debate in section V.

□ This article is based on a text prepared in support of the ECLAC document *Globalization and Development* which was presented at the 29th session of the Commission (Brasilia, 6-10 May 2002). My thanks are due to Rodrigo Cubero and Alex Cobham for their assistance in the research.

II

The institutional framework for international tax cooperation

Capital mobility has transformed national tax policy. The present national tax systems were designed in a post-World War II environment of trade protection and capital and labour immobility when very different rates of direct and indirect tax were feasible, but this is no longer the case (Tanzi, 1996a and 1998). Moreover, it is often argued that in a closed economy corporate income taxes are inefficient as they encourage the excessive reinvestment of profits, and that personal income taxation of the recipients of dividends (and capital gains) is sufficient. Further, if savings are to be stimulated, it is often suggested that only consumption should be taxed. Whatever their conceptual validity, these arguments are not directly applicable in practice to small industrial or developing countries (OECD, 2001). On the one hand, there is a severe income distribution problem in them that requires redistribution of wealth (and thus capital taxes) in order to reduce poverty and increase social cohesion. On the other, much of the most productive assets in the economy belong to non-residents, while much of residents' wealth is held abroad. So capital income taxation cannot be ignored as a central development policy issue.

However, in the absence of a single world government, a key issue in international taxation is the appropriate level of domestic corporation tax in view of the integration into international capital markets. It is widely believed by policymakers that lower rates are essential in order to attract foreign investment and thus raise the rate of economic growth. The role of the tax factor in determining location gives rise to wasteful tax competition for attracting investment (OECD, 1998). This has led to a "race to the bottom" as developing countries compete with other host countries and with declining corporation tax rates in the home countries (UNCTAD, 1995).

Most countries in Latin America and the Caribbean –like other developing economies– attempt to attract foreign investment through tax incentive policies, either to compensate for local distortions and inefficiencies, or simply to prevent foreign investment from going to neighbouring or similar countries. However, the

empirical evidence suggests that such incentives play a very limited role as determinants of foreign investment and that even when successful they involve significant fiscal costs.¹ Reducing regulatory uncertainty is just as important to investing firms as the specific concessions or incentives that a treaty may contain. Tax incentives appear to be regarded by multinational firms as a "windfall gain" and not as the basis for long-term investment decisions, as they may be subsequently reversed. This does not stop investors negotiating for such concessions, but at most they may affect location decisions within a country when other cost factors are equal.

There are two models used in the design of taxes on non-residents' assets and residents' assets abroad, which are similar in their general provisions but have very different implications for developing countries. The OECD Draft Taxation Convention/Model Tax Conventions (OECD, 1997) is based on taxation according to place of residence; while the United Nations Model Double Taxation Convention between Developed and Developing Countries (United Nations, Department of Economic and Social Affairs, 2001) is based on taxation according to source ("territorial" taxation). Developing countries would benefit most from a multilateral tax treaty based on the source principle, for two reasons. First, the gains from taxing income of foreign investors would be greater than the loss from not taxing income from their own residents' assets held abroad, because a developing country has a net external liability position. Second, full taxation of the foreign assets of residents of developing countries by the authorities in the destination country on the source principle would at least make capital flight much less attractive.

The source principle is often also adopted because tax administrators have great difficulty in finding out how much foreign income accrues to their residents.

¹ See Plasschaert (ed., 1994) and Blomström (2001), as well as section IV below.

The residence principle, although based on overall capacity to pay, has proved to be of limited significance in countries whose residents do not have substantial (recorded) investments in other countries, and whose fiscal administration is not well equipped to ensure its application. Moreover, to the extent that developed countries apply both the source and residence principles to their own residents, they claw back tax from their own investors in developing countries, while by not taxing non-residents' holdings of securities they stimulate capital flight from developing countries. For example, the United States taxes both the foreign income of US residents and the US-source "earned income" of non-residents.² Moreover, it does not normally give full credit against US tax liabilities for foreign tax payments.

For developing countries, a further issue is how to strike a balance between maximizing their share of revenues and maintaining a climate that attracts foreign direct investment (FDI). This requires agreements on the sharing of revenues between host and home countries in what is almost a zero sum game that implies a net transfer between the taxpayers of home and host countries in the final analysis. By adopting a tax treaty, a host country also subscribes to international rules that promote stability, transparency and certainty of treatment.

Since the tax systems of the major home (for example, OECD) countries are based on worldwide income taxation principles, their multinational companies are frequently subject to some degree of double taxation. This fact not only deters international investment, but also provides incentives for the use of tax havens to channel cross-border capital flows through offshore holding companies. The use of these schemes is detrimental to both the home and host country, because of reduced tax revenues and distorted investment inflows.

The number of double taxation treaties (DTTs) has therefore increased rapidly in recent decades, and there are now some two thousand such treaties in existence (table 1). The principle of non-discrimination (i.e., national treatment) has been intrinsic to such treaties since the last century and was central to the draft tax convention prepared by the League of Nations in 1935 (IBFD, 1998). Double taxation agreements were originally established between developed countries, but

TABLE 1

**World: Double taxation treaties (DTTs)
and bilateral investment treaties (BITs)**

	1980	1990	2000
DTTs	700	1 150	2 118
BITs	200	400	1 941

Source: UNCTAD (2001).

their recent expansion includes treaties both with and between developing countries: 34% between developed and developing countries, and a further 17% between developing countries. They clearly follow the course of the Bilateral Investment Treaties (BITs), which establish corresponding investor protection disciplines.

The effect of tax treaties depends on the credits and exemptions included in them in order to eliminate or reduce double taxation. When countries are at a similar level of development (and there is roughly balanced two-way investment) the implicit redistribution is not a serious problem, but for host (developing) countries the marginal revenue is of greater value than it is to the home (developed) country. As the flow of income is generally from developing to developed countries, the tax credit method is the most attractive to developing countries. From the point of view of developing country revenue authorities, DTTs are the only way to cover intra-firm transactions and thus overcome the problem of transfer pricing (OECD, 1997).

These treaties, however, become ineffective if offshore centres are used as transfer pricing points as well as for tax evasion. Moreover, a number of developing countries play a key offshore role in the international investment process, where tax avoidance is of particular importance. The object here is not so much the attraction of foreign investment as such, but rather the administration of assets and tax revenue.³ In consequence, in the absence of a comprehensive multilateral tax agreement, reconsideration of tax credits within existing DTTs would be desirable, as would the application of the United States "pass-through" principle to tax havens.

Finally it should not be forgotten that for developing countries capturing tax revenue on the income of their own residents who have assets overseas

² For a summary of current United States rules on international taxation, see United States Congress, JCT (1999).

³ "We thus observe a process that, at times, has been described as 'tax degradation', whereby some countries change their tax systems to raid the world tax base and export their tax burden" (Tanzi, 1996b, p. 3).

is a major problem too. In consequence, closer international collaboration (even within the existing DTT network) by sharing information and permitting joint actions could increase the fiscal resources available to

developing countries dramatically (OECD, 1998; Tanzi, 1996a). Further benefits would include disincentives to capital flight and increased balance of payments stability.

III

The economic principles of capital income taxation and tax co-ordination

The traditional view of capital income taxation in open economies⁴ is that residence-based taxes reduce the after-tax return on domestic savings by driving a wedge between the rate of return on world financial markets and the after-tax rate of return received by residents: in other words, it acts as a tax on the ownership of capital or "savings". In contrast, source-based taxes raise the required rate of return on domestic investment above the rate of return on world financial markets and thus amount to taxes on the location of capital, i.e., on investment. In consequence, the traditional literature suggests that a small open economy should not apply any source-based capital income taxation at all, adopting only residence-based systems.

Universal application of the residence principle would equalize the gross rate of return on capital and thus allocate world capital (but not savings) efficiently, while universal application of the source principle would allocate world savings (but not capital) efficiently by equalizing intertemporal marginal rates of substitution. Optimal tax theory has thus held that even in a second-best world (where Pareto efficiency cannot be attained because of the need to raise taxes for public goods and redistributive aims) the residence principle is preferable because it at least ensures production efficiency (Diamond and Mirrlees, 1971).

Residence based taxation is also claimed to be preferable as it allows progressive rates to be applied for equity reasons. However, if these residence-based taxes cannot be collected effectively (due to lack of fiscal information, administrative capacity or international cooperation) then capital income taxes as a whole become undesirable. In sum, the traditional

conclusion of the optimal tax literature is thus that "small open economies should adopt no source-based taxes and capital income taxes should be eliminated altogether if countries cannot enforce residence-based taxes" (Bovenberg, 1994, p. 118).

This conclusion is based on four assumptions: (i) that capital is perfectly mobile; (ii) that governments can freely tax immobile factors of production, especially labour; (iii) that there is no tax offset in the home country for capital tax paid in the host country; and (iv) that the government can effectively tax income on residents' overseas assets. In consequence, it is argued that source-based taxation is completely shifted onto immobile factors (including labour) as the perfect mobility of international capital means that the supply of capital is infinitely elastic, so that an explicit labour tax is more effective.

Poorer countries have been under greater pressure to reduce their rates of taxation of affiliates of foreign multinationals than have richer countries. The implication is that—at least for the purposes of foreign direct investment—tax competition affects the poorest countries most, and disproportionately so. Haufler and Wooton (1999) show how tax competition even between industrialized countries for foreign direct investment can lead to resource and location rents being expropriated by multinational firms. This justifies the measures taken by the Organization for Economic Cooperation and Development (OECD) and the European Union (EU) to prevent such harmful competition between their respective members. The same argument holds *a fortiori* for developing countries.

However, the assumptions listed above do not obtain in practice. Capital is not perfectly mobile internationally, being attracted by particular developing economies due to their market size, resource endowments or human capital, so that capital income

⁴ See, for example, Gordon (1986), Giovannini, (1990) or Stern and Newbery (eds., 1985).

taxes are not entirely shifted away from investors (foreign or domestic). Governments cannot tax immobile factors (such as labour) freely for equity reasons and also because the traditional model assumes that labour supply is exogenous. If wage levels affect labour supply or labour productivity, then there is a clear trade-off with capital market distortions, as Sen and Turnovsky (1990) demonstrate.

As we have seen, international tax credit systems do exist, and double taxation treaties are designed in effect to provide a direct transfer between fiscal authorities and thus not affect investment decisions (Frenkel, Rain and Sadka, 1991). In consequence, countries resort in practice to source-based capital income taxes because of feasibility constraints, which explains why the conclusions drawn from the theory of optimal taxation have not been applied in practice (Slemrod, 1990). Finally, there is of course considerable capacity for better coordination between fiscal and financial authorities worldwide.

Moreover, within a rigorous dynamic model designed to include these macroeconomic effects, Bovenberg (1994) shows that governments can neutralize the effect of source-based taxes on investment behaviour by allowing firms to set off their new investment spending against their capital income tax liability, thus converting the tax to one on cash flow only. The intergenerational impact of residence-based taxation can similarly be neutralized by a tax deduction for new saving. In addition, the intergenerational impact of both forms of taxation can be countered by an appropriate public debt policy.

Capital income taxes also discriminate between different forms of financing (e.g. portfolio versus direct investment), so that different combinations of taxes on dividends, interest income, or capital gains can be used in addition to corporate taxes (which amount to source-based taxes on equity income) in order to achieve the desired balance (Nielsen and Sorensen, 1991). This approach assumes that the capital stock is domestically owned. If it is foreign-owned, the burden of a source-based tax is borne by foreigners (who would not of course be affected by a residence-based tax), but the impact on capital mobility depends on both the cost of adjustment and any tax credit offset in the home economy (Sorensen, 1990).

International tax arbitrage does nonetheless impose severe constraints on the ability of an individual fiscal authority to set tax rates on capital income (and commodities). International tax competition takes place between countries, explicitly or implicitly, when capital is free to move between them. When capital markets

clear, even if any two countries do not explicitly coordinate their tax systems between them, each nevertheless must take into account the tax system of the other in designing its own tax system. As Razin and Sadka (1994) demonstrate, when both countries adopt one of the polar principles (source-based or residence-based) then international capital markets will reach an equilibrium at positive tax and interest rates; but if they adopt different principles (or mixtures thereof) a viable equilibrium may not exist. However, if capital markets are integrated but tax systems are not harmonized, then tax competition will emerge.

If both countries are price-takers (that is, "small" in relation to the world economy) then this competition leads to an equalization of the marginal productivity of investment across countries (i.e., the residence principle). No further gains can be made from tax harmonization and inter-governmental coordination is not necessary. Some countries (e.g., the United States) or groups of countries (e.g., the European Union (EU)) are indeed "large", however, in the sense that they can design their fiscal policies with a view to their effects on world prices. A country with some monopoly power will in effect drive the world interest rate above its own marginal product of capital if it is a net investor overseas. In this case, international fiscal coordination will be a Pareto improvement (Dixit, 1985). However, the existence of a regional arrangement (such as the European Union) allows for gains from coordination within the region, permitting both greater revenues and greater inward investment, even without global coordination (Haufler and Wooton, 2001). This latter case would appear to be relevant for developing country regions such as Latin America or the Caribbean.

Nonetheless, it is also clear (and is reflected in modern endogenous growth theories) that the provision of "infrastructure" – in the form not only of roads and the like but also of education, health, research and even law – is also essential for growth. There must be some form of taxation for financing this infrastructure, but there are social limits on the extent to which this can be raised from labour incomes in societies with low levels of per capita incomes. There thus emerges a potential trade-off between low corporation tax rates to stimulate private investment (both domestic and foreign) on the one hand, and high rates in order to finance physical and social infrastructure provision on the other. It is not clear, therefore, that the lowest tax rates are necessarily the most conducive to growth.

The "new economic geography" gives sound analytical reasons for believing that capital is not

entirely mobile (i.e., indifferent to location), because of agglomeration economies, etc., so tax potential is affected too. Rather than a simple “race to the bottom”, advanced “core” economies may be able to act as semi-monopolists in fixing “prices” (i.e., taxes) against the less advanced periphery, but integration may not lead to falling tax rates and may be consistent with the maintenance of large Welfare States (Baldwin and Krugman, 2000). This result is extended formally by Kind, Knarvik and Schjelderup (1999), who find that a source tax should be levied on capital in order to capture the positive externality that arises from agglomeration. The existence of transaction costs and economies of scale means that investors are attracted by larger markets, which then require fewer tax incentives to attract investment than would otherwise be the case (Haufler and Wooton, 1999). Finally, these taxes on semi-mobile capital can be used to produce a public good and relieve the tax pressure on immobile labour (Andersson and Forslid, 1999).

The analytics of this problem are addressed in the Appendix, within the framework of a simple model of an economy with an open capital market and two types of capital. If there is only one type of capital –mobile and private– then the model reproduces the conventional result that any increase in the domestic corporation tax rate will reduce national income. The optimal tax rate is zero, or even negative (subsidies), if these can be financed from taxes on another immobile factor such as labour. In addition, it is clear that if the international corporation tax rate, or the tax rate levied by competitors for inward investment, is reduced, then in order to maintain national income levels it will be necessary to reduce the domestic corporation tax rate as well.

However, once a second type of capital –social infrastructure– is introduced a positive corporation tax rate is optimal, because although it reduces the private capital stock, as in the first case, it also raises the public capital stock. The optimum value of the tax rate depends on the marginal productivity of the two forms of capital.

The policy implications of this are considerable. On the one hand, in developing countries where infrastructure is relatively scarce, and thus its marginal productivity is higher (while the marginal productivity of mobile capital is being equalized worldwide), there is a sound economic argument for corporate tax rates being higher than in advanced countries. In effect, host countries should set their optimal tax rate independently of the international rate. On the other hand, it is also the case that the resulting level of national income does depend on the international tax rate, and when this is lowered by home countries –or competing host countries– then national income will fall. However –and even more significantly– the model shows that, even under these circumstances, pushing the corporation tax rate downwards will reduce national income even more.

In sum, there are sound reasons, well grounded in economic theory, for believing that more effective taxation of income from foreign assets can provide substantial fiscal resources to support sustainable development in Latin America and the Caribbean. For developing countries with greater external liabilities than external assets, and considerable difficulties in registering the latter, source-based capital income taxes are the best solution. Their distorting effects on investment can be mitigated by appropriate tax design (especially domestic reinvestment offsets and international tax credits).

IV

The international taxation problem in practice

In practice, the taxation of international assets relates to residents and non-residents on the one hand, and affiliate firms and portfolio assets on the other. The main focus of interest is in fact the taxation of foreign affiliates, that is, “inward FDI”. In the case of Latin America and the Caribbean, the inward FDI stock as of 2000 was valued at US\$ 607 billion (UNCTAD, 2001). Assuming that the recorded income tax payments by US affiliates (see

below) are representative of all foreign investment in the region, then the total income tax paid in this category to host countries was approximately US\$ 15 billion in 2000. In that year, the stock of outward FDI from the Latin America and the Caribbean (that is, of affiliates abroad) was valued at US\$ 111 billion (UNCTAD, 2001), but there is no evidence on the fiscal revenue accruing to host or home countries from this activity.

There is little statistical evidence on the tax paid or payable on portfolio holdings and debt paper either. The general practice in the region is not to tax interest payments, dividends or capital gains to non-residents on the grounds that this merely increases the cost of borrowing above the going rate of return set in international capital markets, plus the country risk premium. This follows the precedent set by the United States in 1984 in absolving withholding tax on foreign residents earning interest income on portfolio investments (OECD, 1998). Non-residents investing on the US stock market face no capital gains tax, although they do pay United States tax on dividends accruing. The US decision subsequently obliged all other industrialized countries to follow suit.

While industrialized countries may be able to tax their own residents' overseas capital gains, the tax infrastructure of many developing countries is not sufficient for this. The OECD/Council of Europe Multilateral Convention on Mutual Administrative Assistance in Tax Matters signed in 1988 ensures that information on such holdings is shared with other OECD governments, but not with non-members. In the case of the large international portfolio holdings of residents of Latin America and the Caribbean, there is even less data, because most of these assets have not been declared to the residents' tax authorities.⁵ However, analysis of Bank for International Settlements data on international bank deposits indicates that non-bank depositors are very sensitive to domestic wealth taxes and interest reporting, as well as to interest rates, which implies that tax evasion is a determinant of such deposits, and that this sensitivity increased significantly during the 1990s (Huizinger, 2001).

The focus of empirical research has therefore been on the taxation of income earned by foreign affiliates, and in particular those of United States firms, because the US Department of Commerce publishes uniquely detailed data. We may assume that the figures in table 2 are representative of tax paid by all foreign affiliates in the region. The effective tax rate paid in the Latin America and Caribbean region, on average, is well

below that for any other region of the world. However, this is almost entirely due to the effect of the "low-tax" countries in the Caribbean: just two Caribbean jurisdictions (Bermuda and the British West Indies) are reported as the location of more gross income than the five major economies of the continent, while having effective tax rates one-tenth of those elsewhere in the region. South and Central America, in contrast, have effective tax rates similar to those in Europe, although lower than those in Asia.

Moreover, as shown in table 3, the present situation reflects a general downward trend in tax burdens in the major economies of the region: the average for Argentina, Brazil, Mexico and Venezuela declined from 50% in 1983-1986 to 25% in 1993-1997. This is undoubtedly the result of tax competition in order to attract foreign investment.

Conover and Nichols (2000) confirm earlier findings that United States firms do engage in income shifting worldwide on a large scale, although they did conform with the 1986 Tax Reform Act by bringing profits back to the United States. The same is true of the firms of European OECD members, where extensive transfer pricing and tax-induced capital restructuring (e.g., intra-firm debt) takes place despite the fact that the OECD Model Tax Convention and the OECD Transfer Pricing Guidelines call for the application of market prices to intra-firm transactions (Bartelsman and Beetsma, 2000). The analysis of US data made by Altshuler, Gruber and Newlon (1998) supports this view, indicating that the elasticity of US manufacturing investment abroad to host tax rates is greater than unity and rose between the 1980s and 1990s.⁶

As we have seen, developed countries tend to adopt the residence principle, since they usually have a net positive foreign asset position and this principle maximizes their tax take. Developing countries typically favour the source principle because they are hosts to significant amounts of FDI, although a number of emerging markets such as Mexico and Argentina have moved from source to residence taxation in an attempt to stimulate foreign investment and capture income from their residents' overseas assets.

The problem for developing countries is exacerbated by the fact that the major industrialized

⁵ The detailed statistics published by the US Treasury on foreign holdings of US financial assets (principally bank deposits and government bonds) do not allow us to determine the holdings of Latin American and Caribbean residents, firstly, because they include the operating balances of banks in the region, including central bank reserves, and secondly, because the largest holdings are those of offshore financial centres and are thus mainly owned by non-residents of the centres in question.

⁶ Specifically, these authors estimate that the elasticity has risen from -2 to +3 between 1984 and 1992. Interestingly, this figure is very similar to the value for the corresponding elasticity $(-1/(1-\beta))$ between the capital stock (K) and the tax rate (t) that the model in Appendix B predicts for plausible parameter values.

TABLE 2

**All countries: Income and taxation of
United States affiliates worldwide, 1998**
(Billions of dollars)

	Reported income	Cost of sales	Foreign income tax paid	Net income	Effective income tax rate (%)	Other local taxes paid
All countries	2115	1937	41	137	23	112
Canada	248	233	5	10	33	7
Europe	1208	1102	22	84	21	73
Latin America and the Caribbean	245	218	5	23	17	14
Africa	22	19	1	2	38	1
Middle East	10	8	1	1	50	14
Asia-Pacific	378	358	8	17	32	3
South America	127.0	120.7	1.8	4.5	25	11.7
Central America	77.0	69.5	1.9	5.7	25	2.3
Caribbean	41.3	27.7	1.0	12.5	7	0.4
Argentina	21.4	20.5	0.4	0.4	50	2.6
Brazil	67.0	63.2	0.6	3.2	16	7.2
Chile	10.1	9.1	0.2	0.8	20	0.5
Mexico	67.5	61.6	1.7	4.1	29	1.8
Venezuela	10.3	10.2	0.2	-	..	0.5
Bermuda	18.0	11.3	0.3	6.5	4	-
British West Indies	11.7	7.6	0.2	3.9	3	-

Source: Calculated by the author on the basis of US Commerce Department figures. "Effective income tax rate" is foreign income tax paid divided by gross income (net income plus foreign income tax paid).

TABLE 3

**Latin America and the Caribbean: Income and
taxation of US affiliates in the region, 1998**
(Billions of dollars)

	Reported income	Cost of sales	Foreign income tax	Net income	Effective income tax rate (%)	Other local taxes paid
All Latin America and the Caribbean	245.1	217.8	4.6	22.7	17	14.4
South America	127.0	120.7	1.8	4.5	25	11.7
Central America	77.0	69.5	1.9	5.7	25	2.3
Caribbean	41.3	27.7	1.0	12.5	7	0.4

Source: Calculated by the author on the basis of US Commerce Department figures. "Effective income tax rate" is foreign income tax paid divided by gross income (net income plus foreign income tax paid).

countries follow worldwide income taxation systems that depart from pure residence or source principles. The United States, for instance, taxes both foreign income of United States residents and US-source income of non-residents. Moreover, it does not generally admit full foreign tax credits against US tax liabilities. This all-inclusive system tends to discourage outbound investment because it departs from the

"capital export neutrality" principle in that the tax rate varies according to the country of destination. Furthermore, the United States currently applies different rules to the taxation of foreign income received by US residents, depending on whether the operations are carried out directly by United States persons (e.g., through a foreign branch) or indirectly, through a foreign corporation.

In the first case, foreign income is currently taxed in the United States, while in the second it is only taxed upon distribution to United States persons, so that by choosing the corporate form in their foreign operations, US investors can defer US taxation and exploit cross-country tax differentials, at least in the short-run. Moreover, in order to regulate foreign tax credit availability and related issues (such as deferral of US taxation of foreign income), the system has evolved into a very complex set of rules that discourages capital mobility and encourages the use of tax havens to conduct foreign investment.

The study by the OECD (2001) is the most authoritative recent examination of the problem of tax incentives for FDI, from the point of view of both OECD members and non-members. Corporate income tax is shown to play an important "backstopping" role in enforcing capital gains tax on equity holders, and it has a withholding function for foreign firms too. It is also justified as a fee for the use of public goods and services and as a way of enabling local governments to share in economic rents. The OECD cautions about the use of tax incentives for FDI, especially up-front measures such as tax holidays that promote tax evasion, and it also highlights the dangers of excessive rewards for existing capital stock as opposed to net new investment. Much of the desired reallocation effect can be achieved by the redesign of tax structure rather than blanket reductions.

The type of multinational company most likely to be swayed in its location decisions by levels of taxation will be those multinationals driven by short-term cost-minimization and tending to emphasize low value-added production. Multinationals aiming at the maximization of profits in the long term are more concerned with ensuring flexibility of their international production structures, and hence with other location factors such as labour quality, currency stability, market access and natural resource availability. They view tax breaks as a "windfall" gain to be considered (and claimed) only after more important criteria have been satisfied. Moreover, although the justification adduced for tax incentives may be the desire to generate technological externalities, in practice the ability of a developing economy to realize these gains depends on the prior existence of sufficient enterprise capability and a skilled workforce - and thus in all probability fairly high taxes (Blomström, 2001).

A further problem associated with this issue is that of offshore financial centres (OFCs). By allowing multinationals, through transfer pricing, to declare the

majority of their profits in shell companies registered in OFCs, the tax revenues resulting from investment and production in (non-OFC) developing countries are lost to the hosts.⁷ The Financial Stability Forum (Financial Stability Forum, 2000) addressed the issue of OFCs from the point of view of systemic instability in international capital markets. Offshore financial centres which are unable or unwilling to adhere to international supervisory standards (displaying weak supervisory practices and/or a lack of cooperation and transparency) pose problems with regard to prudential concerns for the effective supervision of international financial intermediaries and market integrity concerns relating to the effectiveness of international enforcement efforts in respect of illicit activities and abusive market behaviour.

The Financial Action Task Force (OECD, 2000) initially defined 35 jurisdictions as "non-cooperative countries or territories" in key areas of transparency and information exchange required to meet international anti-money laundering standards - a list which included the Bahamas, Cayman Islands, Dominica, Panama, St. Kitts & Nevis and St Vincent and the Grenadines in the region, as well as Israel, Lebanon, Liechtenstein, the Philippines and Russia. Six of these countries or territories, including Bermuda and the Cayman Islands, rapidly made commitments to eliminate harmful practices by the end of 2005. In the wake of global anti-terrorist measures after September 2001, the remaining Caribbean States and United Kingdom dependencies⁸ in the region signed similar commitments to embrace international standards for transparency, exchange of information and fair tax competition by February 2002.

Finally, foreign portfolio investment has recently become subject to a variety of taxation measures intended to act as controls on capital inflows or outflows in a number of emerging markets. Although this paper is concerned with the direct taxation of income from foreign assets rather than indirect (i.e., turnover) taxes on asset transactions,⁹ it should be noted that withholding taxes on asset income can have a similar dampening effect, because although the base is smaller the rate is much higher (Zee, 2000). Such a tax can be

⁷ A particularly contentious case is the use of Foreign Sales Corporations to reduce the tax burden for US exporters, but as these mainly operate through the US Virgin Islands they lie beyond the scope of this paper.

⁸ As well as the Channel Islands.

⁹ See FitzGerald (1999), however, for an extensive analysis of this subject.

designed to provide an incentive to foreign investors holding assets with longer maturities, or to promote the holding of any asset for a longer period, of course. Moreover, a withholding tax of this kind would bear

on the many resident holders of domestic securities (particularly high-yield government bonds) who purchase them via offshore mechanisms in order to avoid tax.

V

New policy issues for Latin America and the Caribbean

From the point of view of developing country tax authorities, double taxation treaties (DTTs) are at present the only reliable way to cover intra-firm transactions and thus overcome the problem of transfer pricing (OECD, 1998). It is therefore necessary to ensure far more comprehensive information exchange within existing treaties than is currently the case, particularly in relation to assets in the United States. Such measures, however, become ineffective if offshore centres are used as transfer pricing points as well as for tax avoidance. In consequence, in the absence of a comprehensive multilateral tax agreement, reconsideration of tax credits within existing DTTs would be desirable, as would the application of the United States “pass-through” principle to tax havens.

If applied uniformly, either the source or the residence principle could provide a basis for an effective system of international tax co-operation. Thus, Tanzi (1996a and b; 1998) argues that the time has come for some sort of world tax organization, not so much to impose and/or collect taxes (which would be politically unfeasible), but rather to support national tax authorities. Such an organization would i) exercise surveillance on tax systems worldwide; ii) provide a policy forum; iii) resolve disputes on tax competition; iv) exercise moral pressure on “free-riders”; v) gather tax statistics; vi) communicate best practices; and vii) develop codes of conduct for tax administration.

However, it is difficult to see how such a solution could be implemented in practice. The United States is unlikely to change its own tax system simply to increase the tax take of other countries. Prospects for reform are somewhat greater in the European Union, in view of its current efforts to harmonize corporate tax rules within the Single Market and the emerging agreement on the prevention of tax competition and tax evasion between member States. The concern of OECD members

to coordinate measures against tax evasion, avoidance and competition between themselves—and the resultant pressure on offshore centres—indicates their degree of concern for their own tax bases. To extend such cooperative measures towards middle-income non-OECD members (many of whom already have observer status at the OECD) would be a logical and technically feasible step.

The provision of information even by the industrialized country tax authorities alone would improve the situation. Since the information is collected in any case, in order to levy dividend taxes, the ultimate cost would not be excessive. This option would require confidence in the administrative capacity, independence and discretion of the tax authorities of even the leading Latin American countries. In a transitional period, an alternative might be for taxes to be levied at source and simply transferred to the authorities of the country of residence. At the very least, the principles of information exchange could be established within the framework of the proposed Free Trade Area of the Americas, as a counterpart to the property rights established under the proposed investment provisions.

The European Community’s proposal for the taxation of cross-border interest payments (the “withholding tax directive”) shows that a measure of this nature is feasible (European Commission, 1998). Even opponents agree that in principle withholding taxes are justifiable because they are neutral for investors who declare their tax liabilities properly elsewhere, but unless universally applied this would simply lead to the shifting of the formal location of income payments. Progress in the European proposals—even if only in the form of information exchange on payments—would provide a precedent for Latin America and the Caribbean. In this context, Zee (2000) argues for a withholding tax on all private capital inflows into emerging markets, with a

credit and refund provision which would operate within the administrative framework of the existing domestic tax system and which would be substantially more difficult to evade than reserve requirements.

As mentioned above, a prospect for reforming tax administration could be provided by the drive for better co-ordination among national tax authorities to tackle organized crime and money laundering. Both banks and regulators have come under strong pressure to share information on financial transactions as part of this crime-fighting effort and, in the process, divulge the overseas assets of residents in a particular tax jurisdiction. This would seem to imply a need for greater sharing of technical expertise as well as information as such within the region.

The existence of a regional tax cooperation arrangement (such as that of the European Union) would make possible gains from coordination within the region, permitting both greater revenues and greater inward investment, even without global coordination (Haufler and Wooton, 2001). Indeed, as investment incentives in industrializing countries have tended to move in recent years towards the "regulatory domain" in terms of market access, environmental protection and labour standards, this too has made necessary greater cooperation in order to avoid a "race to the bottom" (FitzGerald, 2001). Furthermore, a regional arrangement that makes national tax rules more predictable will have a positive effect because uncertainty about future rates of return can have a disproportionate impact on investment decisions (Dixit and Pindyck, 1994).

Information exchange is therefore central to tax cooperation, although it should be remembered that the scope and usefulness of exchanges of information are limited by political, legal, technical and administrative

obstacles (Tanzi and Zee, 1999). In general, withholding taxes may be the only solution to the revenue problem: "It is unlikely that an efficient and complete system of exchange of information can be developed. This leaves the alternative of using withholding taxes applied at source as final taxes" (Tanzi, 1998, p. 21). Specifically, in order to tackle the income-shifting problem, a presumptive tax could be levied on corporations on the basis of their gross assets rather than reported profits.

In sum, the pressure for effective international cooperation to facilitate income tax collection is increasing. The growing mobility of capital across national borders poses serious problems for national fiscal authorities committed to taxing income from wealth. Cooperation between tax officials could reduce some of these problems, but jurisdictional disputes and bank secrecy laws have blocked progress. However, advances in tax cooperation between OECD members – and particularly European Union members – provide not only a precedent for a regional arrangement but also the basis for requiring cooperation from developed countries. For Latin American and Caribbean countries, such an arrangement would also allow much greater capture of tax revenue on the capital income of their own residents, not only in respect of undeclared assets overseas but also of domestic assets, by reducing the fiscal attraction of expatriating capital or ownership. Closer international collaboration within the Americas within the existing tax treaty network, by sharing information and adopting joint actions, could increase the fiscal resources available to the region, and this would bring further benefits, including disincentives to capital flight, increased fiscal and macroeconomic stability, and greater resources available for poverty alleviation.

APPENDIX

A simple model of capital income tax in an open economy

This note seeks to illustrate the optimal capital income tax problem for an economy with an open capital market and two types of capital, one of which is private, mobile and "directly productive" (i.e., generates profits), while the other is public, immobile and "indirectly productive" (i.e., infrastructure). The problem is how to set a level of tax so as to fund infrastructure and maximize welfare when capital can move abroad.

Let us consider an economy with three production factors: immobile labour (L), mobile capital (K) and tax-financed infrastructure (J). National income (Y) is determined by:

$$Y = AL^\alpha K^\beta J^\gamma \quad (1)$$

The usual conditions obtain, determining the return on capital (r) as:

$$r = \frac{\partial Y}{\partial K} = \beta L^\alpha K^{\beta-1} J^\gamma \quad (2)$$

The labour force and the infrastructure stock are given for any one period, but the capital stock is flexible as capital can flow inwards or outwards, depending upon the post-tax rate of return. We could also include an appropriate risk premium, but if constant it would not affect the results. For a given domestic tax rate (t) and the exogenous international rates of tax (t^*) and of return (r^*), capital will flow in so long as the post-tax rates of return are

attractive: that is, if $r(1-t) \geq r^*(1-t^*)$. We ignore here the effect of double-taxation agreements, which effectively reduce t not only for the host country but also for others with which the home country has similar treaties. At equilibrium, then:

$$r(1-t) = r^*(1-t^*) \tag{3}$$

and substituting (3) into (2) yields the equilibrium capital stock

$$K = \left[\frac{\beta L^\alpha J^\gamma (1-t)}{r^*(1-t^*)} \right]^{\frac{1}{1-\beta}} \tag{4}$$

Note that this will give an elasticity of the capital stock to the tax rate that is negative and greater than unity. Substituting (4) into (1) then gives national income (Y) in terms of the two tax rates:

$$Y = \left[AL^\alpha J^\gamma \left[\frac{\beta(1-t)}{r^*(1-t^*)} \right]^\beta \right]^{\frac{1}{1-\beta}} \tag{5}$$

From (5) it apparently follows that any increase in the domestic corporation tax rate (t) will reduce national income (Y). The optimal rate is zero, or even negative (subsidies) if these can be financed. This is the basis for the traditional argument for reducing corporation tax rates in developing countries in order to stimulate investment and growth. In addition, it seems clear that if the international tax rate (r^*) in general – or that of competitors for inward investment in particular – is reduced, then in order to maintain national income levels it will be necessary to reduce (t) as well. International tax competition is thus held to be conducive to welfare maximization.

For this conclusion to hold, however, it is necessary to assume that not only the labour force (L) but also the infrastructure provided (J) is independent of the tax rate. In this model the infrastructure stock (J) is given by the previous year's stock less depreciation (d) plus the new investment funded by revenue from the tax on profits ($K.r$):

$$J = J_{-1}(1-d) + t.K.r \tag{6}$$

In order to simplify the algebra, we shall only consider the second term on the right of (6), because the first term is unaffected by the current tax rate. In this case we can rewrite (1) by substituting in the truncated (6) to yield:

$$Y = AL^\alpha \{tr\}^\gamma K^{\beta+\gamma} \tag{7}$$

Substituting in (2) and (3) as before then yields a new expression for national income:

$$Y = [a.L^\alpha . \beta^\beta \{r^*(1-t^*)\}^{-\beta} t^\gamma (1-t)^\beta]^{-\frac{1}{1-\beta-\gamma}} \tag{8}$$

(Y) is no longer monotonically and inversely related to (t) in (8) as it was in (5), because a tax increase no longer just reduces the private capital stock (K) but also raises the public stock (J). Under the usual conditions there is an optimum positive value (T) where income (Y) is maximized, found by differentiating (7) with respect to (t):

$$T = \frac{\gamma}{\beta + \gamma} \tag{9}$$

The optimal tax rate is thus positive and depends on the relative marginal productivities of the two forms of capital stock (K, J). Indeed, if the tax rate is set to zero, then national income will also be zero as there will be no infrastructure. By extension, in poor countries where infrastructure (J) is scarce and its marginal productivity is higher (while the marginal productivity of mobile capital (K) is equalized worldwide) corporate tax rates should be higher than in advanced countries.

From (8) it is also clear that the resulting level of national income still depends on the international tax rate (r^*) even after the optimal domestic tax rate has been applied. If the international rate is lowered by "home" (i.e., investor) countries – or by competing host countries – then national income in the host country will fall as less mobile capital is attracted. However, even under these circumstances (r^* falling), to engage in a "race to the bottom" (i.e., set t below T) would reduce host national income even more.

(Original: English)

Bibliography

Altshuler, R., H. Gruber and T. Newlon (1998): *Has US Investment Abroad Become More Sensitive to Tax Rates?*, NBER working paper, No. 6383, Cambridge, Massachusetts, National Bureau of Economic Research, Inc. (NBER).
 Andersson, F. and R. Forslid (1999): *Tax Competition and Economic Geography*, CEPR discussion paper, No. 2220, London, Centre for Economic Policy Research (CEPR).
 Baldwin, R. and P. Krugman (2000): *Agglomeration, Integration and Tax Harmonisation*, CEPR discussion paper, No. 2630, London, CEPR.
 Bartelsman, E. and R. Beetsma (2000): *Why Pay More? Corporate Tax Avoidance through Transfer Pricing in OECD Countries*, CEPR discussion paper, No. 2543, London, CEPR.
 Blomström, M. (2001): *The Economics of International Investment Incentives*, Paris, Organization for Economic Cooperation and Development (OECD).
 Bovenberg, A. (1994): Capital taxation in the world economy, in F. Van der Ploeg, *The Handbook of International Macroeconomics*, Oxford, U.K., Blackwell.

Conover, T. and N. Nichols (2000): A further examination of income shifting through transfer pricing considering firm size and/or distress, *International Journal of Accounting*, vol. 35, No. 2.
 Diamond, P. and J. Mirrlees (1971): Optimal taxation and public production, *American Economic Review*, vol. 61, No. 1, Nashville, Tennessee, American Economic Association.
 Dixit, A. (1985): Tax policies in open economies, in A. Auerbach and M. Feldstein (eds.) *Handbook on Public Economics*, Amsterdam, The Netherlands, North-Holland
 Dixit, A. and J. Pindyck (1994): *Investment under Uncertainty*, Princeton, New Jersey, Princeton University Press
 European Commission (1998): *Proposal for a Council Directive to ensure a minimum of effective taxation of savings income in the form of interest payments within the Community*, Brussels.
 FitzGerald, E. V. (1999): *Policy Issues in Market Based and Non Market Based Measures to Control the Volatility of Portfolio Investment*, Development studies working papers, No. 129, Turin, Italy, Centro Studi Luca D'Agliano.
 ——— (2001): *Regulatory Investment Incentives*, Paris, OECD.

- Financial Stability Forum (2000): *Report of the Working Group on Offshore Centres*, Basle.
- Frenkel, J., A. Rain and E. Sadka (1991): *International Taxation in an Integrated World*, Cambridge, Massachusetts, MIT Press
- Giovannini, A. (1990): Reforming capital income taxation in open economy: Theoretical issues, in H. Siebert (ed.), *Reforming Capital Income Taxation*, Tübingen, Germany, J.C.B. Mohr.
- Gordon, R. (1986): The taxation of investment and savings in a world economy, *American Economic Review*, vol. 76, Nashville, Tennessee, American Economic Association.
- Haufler, A. and I. Wooton (1999): Country size and tax competition for foreign direct investment, *Journal of Public Economics*, No. 71, Amsterdam, The Netherlands, Elsevier Science Publishers, B.V.
- _____ (2001): *Regional Tax Coordination and Foreign Direct Investment*, CEPR discussion paper, No. 3063, London, CEPR.
- Huizinger, H. (2001): *Are International Deposits Tax Driven?*, Economic papers, No. 152, Brussels, European Commission.
- IBFD (International Bureau of Fiscal Documentation) (1998): *Annual Report 1997-1998*, Amsterdam, The Netherlands.
- Kind, H., K. Knarvik and G. Schjelderup (1999): *Competing for Capital in a Lumpy World*, CEPR discussion paper, No. 2188, London, CEPR.
- Nielsen, S. and P. Sorensen (1991): Capital income taxation in a growing open economy, *European Economic Review*, vol. 34, Amsterdam, The Netherlands, Elsevier Science Publishers, B.V.
- OECD (1997): *Model Double Taxation Convention on Income and Capital*, Paris.
- _____ (1998): *Harmful Tax Competition: an Emerging Global Issue*, Paris.
- _____ (2000): *Towards Global Tax Cooperation: Progress in Identifying and Eliminating Harmful Tax Practices*, Paris.
- _____ (2001): *Corporate Tax Incentives for Foreign Direct Investment*, Paris.
- Plasschaert, S. (ed.) (1994): *Transnational Corporations: Transfer Pricing and Taxation*, London, Routledge.
- Razin, A. and E. Sadka (1994): International fiscal policy coordination and competition, in F. van der Ploeg, *The Handbook of International Macroeconomics*, Oxford, U.K., Blackwell.
- Sen, P. and S. Turnovsky (1990): Investment tax credit in an open economy, *Journal of Public Economics*, vol. 42, No. 3, Amsterdam, The Netherlands, Elsevier Science Publishers, B.V.
- Slemrod, P. (1990): Optimal taxation and optimal tax systems, *The Journal of Economic Perspectives*, vol. 4, No. 1, Nashville, Tennessee, American Economic Association.
- Sorensen, P. (1990): Optimal capital taxation in a small capital-importing country, in V. Tanzi (ed.), *Public Finance, Trade and Development*, Detroit, Michigan, Wayne State University Press.
- Stern, N. and D. Newbery (eds.) (1985): *Taxation in Developing Economies*, Washington, D.C., World Bank.
- Tanzi, V. (1996a): *Taxation in an Integrating World*, Washington, D.C., The Brookings Institution.
- _____ (1996b): *Globalization, Tax Competition and the Future of Tax Systems*, IMF working paper, No. 141, Washington, D.C., International Monetary Fund (IMF).
- _____ (1998): *International Dimensions of National Tax Policy*, paper presented at the United Nations Expert Meeting on International Economic and Social Justice, New York.
- Tanzi, V. and H. Zee (1999): Taxation in a borderless world: The role of information exchange, in B. Wiman (ed.), *International Studies in Taxation*, The Hague, Kluwer Law International.
- UNCTAD (United Nations Conference on Trade and Development) (1995): *Incentives and Foreign Direct Investment*, Geneva.
- _____ (2001): *World Investment Report 2001. Promoting Linkages*, Geneva.
- United Nations, Department of Economic and Social Affairs (DESA) (2001): *United Nations Model Double Taxation Convention between Developed and Developing Countries*, New York.
- United States Congress, JCT (Joint Committee on Taxation) (1999): *Overview of Present-Law Rules and Economic Issues in International Taxation*, Washington, D.C.
- Zee, H. (1998): Taxation of financial capital in a globalized environment: The role of withholding taxes, *National Tax Journal*, vol. 51, No. 3, Washington, D.C., National Tax Association.
- _____ (2000): *Retarding Short-Term Capital Inflows through Withholding Tax*, IMF working paper, No. 40, Washington, D.C., IMF.

Reforms and growth *in Latin America*

Andrea C. Bandeira

*Master of Economics,
doctoral candidate at the
Economics Research Institute
of the University of São Paulo
camara@gvmail.br*

Fernando Garcia

*Associate professor
at the São Paulo
Business Administration School,
Getulio Vargas Foundation
fgarcia@fgvsp.br*

This article analyses the effects of the economic reforms applied by Latin American countries during the second half of the 1980s and after. In order to include the reform indices among the elements determining the per capita gross domestic product, in accordance with neoclassical growth models, the authors start by analysing the institutional nature of these reforms. The econometric analysis, carried out for a set of 17 Latin American countries for the 1970-1995 period, revealed that the five reform areas studied significantly affected GDP. On the basis of empirical analysis, it can be concluded that: i) the general impact of the reforms on per capita GDP was positive, as other studies have found; ii) the main mechanism by which the reforms raised per capita income was the positive effect they had on the productivity of the capital factor, and iii) capital accumulation also responded positively to the reforms.

I

Introduction

During the first half of the 1990s, the growth rates of the Latin American countries recovered in comparison with the previous decade. The main factors cited as causing this recovery included stabilization plans, which yielded good results, and more favourable international conditions, associated with improved liquidity and lower international interest rates; renewed flows of external capital into the region; and the growth of the United States economy, mainly from 1992 on. According to a series of relatively recent studies, the economic reforms made during the 1980s and 1990s were among the factors responsible for the region's growth. These studies include those by Easterly, Loayza and Montiel (1997), Fernández-Arias and Montiel (1997), Barrera and Lora (1997), Burki and Perry (1997) and Fajnzylber and Lederman (1999), along with the research project "Growth, employment and equity: Latin America in the 1990s" carried out by ECLAC, which includes a series of studies on this subject, such as those by Morley, Machado and Pettinato (1999), Hofman (2000), Paunovic (2000) and Escaith and Morley (2000).

A preliminary analysis of the performance of the Latin American economies during the period of the reforms reveals that average growth rates were higher than those posted in the 1980s, although lower than those between 1950 and 1980, when the "old" development model prevailed. Using very similar methodologies, Easterly, Loayza and Montiel (1997) and Fernández-Arias and Montiel (1997) examine the question of reforms and reach similar conclusions: in terms of growth, the response to the economic reforms was satisfactory and in line with expectations, taking into consideration international experience in this respect. The findings of Barrera and Lora (1997) were similar. They demonstrate that the reforms applied in the 1980s boosted long-term growth by 1.9 percentage points compared to the previous period, due above all to their effects on productivity and investment. The economy's total productivity rose 1.7% during the period under study, while the average rate of investment in the region grew by a similar amount.¹

¹ Burki and Perry (1997) compiled the results of the three studies mentioned in this paragraph.

Using the same methodology of growth accounting, Fajnzylber and Lederman (1999) tried to measure the effects of the economic reforms on total factor productivity in 18 Latin American economies. The main conclusion of their study was that, on average, productivity rose faster during the periods of economic reform.

With regard to the ECLAC research project mentioned above, Paunovic (2000) and Hofman (2000) examine the relationship between the reforms and Latin America's economic performance during the 1990s. On the basis of political economy concepts, the first of these authors analyses the reasons why the region's countries fall into sub-groups according to their performance in terms of growth rates, along with the relationships between this segmentation and each country's degree of progress in its reforms. According to this author, the countries which applied most reforms and managed to effectively stabilize their economies were the ones that posted the highest growth rates during the 1990s. Hofman (2000), for his part, examines the economic growth of a number of countries in the region and highlights the differences in GDP growth rates observed among those economies over time. He analyses the performance of this country sample at the aggregate level and in terms of economic growth, factor accumulation and different types of productivity measurement. He divides the period from 1950 to 1998 into sub-periods, using the debt crisis and the subsequent economic recovery as reference points. Based on this division, and applying growth accounting methods, Hofman draws some conclusions regarding each country. In general terms, during the reform period the countries under study registered a recovery compared to the 1980s (a period of crisis), but in terms of certain variables they did not manage to equal their performance during the 1950-1980 period.

The article by Escaith and Morley (2000) evaluates the same five areas of reform as our study, that is, trade openness, capital account liberalization, privatisation, and financial and tax reforms, and their impact on the growth of 17 Latin American economies from 1970 to 1996. On the basis of a statistical model which takes into consideration a large number of control variables,²

² These control variables include indicators for macroeconomic policy management and the dynamism of the international economy.

the authors conclude that altogether the reforms did not directly affect the region's economic growth, and they assume that this was due to the compensatory effects of the different reforms. Only tax reforms and capital account liberalization had a significant impact on these countries' economic performance. The authors do not, however, discount the possibility that the reforms may have indirectly affected growth in Latin America during the period under study, through such factors as investment and macroeconomic stability.

The claims made in the studies mentioned earlier that the reforms positively affected the economic growth of the Latin American countries were the starting point of this investigation. In contrast with some of these studies, however, the aim of the present article is not only to analyse the reforms' effects on growth, for there seems to be a consensus in the relevant literature that the general impact of the reforms was significant and positive. Here, conversely, the aim is to investigate how and through what mechanisms this effect was produced, considering what have been described as the prime sources of growth: factor accumulation and productivity.

This article is based on a different methodological approach from those used in most other studies of this subject. According to Temple (1999), the most common approach is based on *ad hoc* or informal growth regressions. Recent studies applying this method are essentially based on work by Barro (1991) and they link the rise in the product to a set of variables considered relevant from the empirical or theoretical point of view. However, the specification that must be calculated does not derive directly from theoretical models, which is why these regressions are called informal. The variables under consideration can be divided into two groups. The first corresponds to the initial level of the so-called state variables: the stock of physical and human capital, the latter in the form of indicators of educational level. The second group consists of control variables, such as government consumption as a percentage of GDP, the profit margin in the parallel foreign exchange market, the degree of political instability, and changes in the terms of trade, among others.

The present article is based on the premise that for a number of reasons a solid theoretical foundation and a formal empirical analysis can help in investigating the impact of these reforms. The most important of these reasons, for the purpose of this article, is that a theoretical formulation allows us to develop and test different hypotheses regarding the mechanisms by

which the reforms affected the region's performance.³

In addition to the present Introduction (section I), this article is composed of four more sections which analyse the relationship between economic reforms, institutional changes, and economic growth and its determinants (factor accumulation and productivity). Section II summarizes the main reforms adopted in Latin America—trade openness, financial and tax reforms, privatisation, liberalization of the capital account, and reforms in the areas of labour and social security—and analyses to what degree the reforms can be considered as changes of an institutional nature. For this purpose, Hirsch's approach (1988) from the perspective of law and economics is the theoretical reference used.

Section III briefly describes the economic growth model on which the empirical part of this article is based, which is Solow's growth theory, with the incorporation of contributions from Mankiw, Romer and Weil (1992), Hall and Jones (1996 and 1999) and Jones (2000). Two methods for including variables representing institutional changes in neo-classical growth models are then examined, one using the concept of social infrastructure, developed by Hall and Jones (1996 and 1999) and formalized by Jones (2000), while the other is based on the work of Garcia et al. (1999). On the basis of this theoretical economic growth model, section IV analyses the empirical relationship between the reform indices developed by Morley, Machado and Pettinato (1999) and factor productivity and capital accumulation. This analysis examines the reforms' impact on the per capita product, economic growth and factor accumulation of the Latin American countries in the past two decades, which makes it possible to identify the main mechanism by which these economic reforms generated growth: namely, by increasing the productivity of capital. Section V briefly sets out some final considerations, and lastly the Appendix presents convergence equation estimates.

³ Furthermore, using a specific theoretical model permits comparison with other theoretical approaches, particularly the model established for economic growth. As a result, the econometric results obtained using formal empirical models can also be compared with those of other studies, such as those by Campos and Nugent (1998) and Piedrahita (1998). This approach also helps to identify and evaluate the economic significance of dummy variables and coefficients estimated using panel data models, as proposed by Islam (1995), for example.

II

Economic reforms and institutional changes

Since the 1940s and 1950s, the Latin American economic situation has been characterized by strong protectionism and the presence of the State in various economic sectors and activities. As from the second half of the 1980s, that structure began to give way to a new strategy which, among other aspects, gave priority to market liberalization, a more outward-oriented approach (in the sense of stimulating trade and exports), and less State intervention. This set of policies gradually evolved throughout the region. The process had begun in the 1970s, in the midst of the first oil crisis. In that period, the reforms dealt with fewer areas than in the decades that followed and were restricted to a small number of countries. Despite their progress on many fronts, in the early 1980s most reform efforts suffered a setback due to the debt crisis, and it was only in the years that followed, especially from 1985 on, that the reforms gathered renewed strength and began to affect more economies. Then, in the late 1980s and early 1990s, as the process consolidated throughout the region, these measures ceased to be regarded as stabilization policies and began to be recognized as structural reforms.

The consensus concerning the need to carry out reforms of this nature was based on the perception that the "old" development strategy had become incapable of guaranteeing economic growth, mainly because of the imbalances, distortions and inefficiencies generated by the policies applied from the 1940s and 1950s onward.⁴ According to the consensus that developed after the debt crisis, strong protectionism, over-involvement of the State and excessive market regulation had reduced economic efficiency, restricting productivity growth, assigning resources badly, and limiting private enterprise. This was because when it came to making investment decisions, the actions of the State carried greater weight than efficiency criteria. According to Morley, Machado and Pettinato (1999), the various Latin American countries gradually developed their own particular view of how the

economy should function and what role the government should play.

In the light of the way this process evolved from 1985 to the mid-1990s, the extensive literature on this subject identifies seven main areas of reforms: trade, finance, taxation, capital account liberalization, privatisation, social security and the labour market. Because of their scope and the number of countries involved, the first five reform areas became known as first generation reforms, while the last two –social security and the labour market, which are still in their initial stages in the case of most Latin American countries– tend to be considered, along with another group of measures,⁵ as second generation economic reforms.

The first attempt at quantifying Latin American reforms may be attributed to Lora (1997), who developed a structural policy index for a set of 18 economies for the period from 1985 to 1995. This index is a simple average of another five indices reflecting changes in the areas of trade, taxation, finance, privatisation and the labour market, respectively. Morley, Machado and Pettinato (1999) developed another reform index for the 1970-1995 period for a sample of 17 Latin American countries.⁶ As with the Lora index, this was composed of another five indices for trade, finance, taxation, capital account liberalization, and privatisation.⁷ Figure 1 shows the behaviour of the six indices, the general index being the result of the simple average of the indices for each reform. These indices provide an overview of the trends and scope of these reforms from 1970 to 1995, along with the different behaviour of each of the five areas under analysis.

⁵ Particularly reforms of the State, mainly in the administrative area, and of institutions such as the legal system and the educational system.

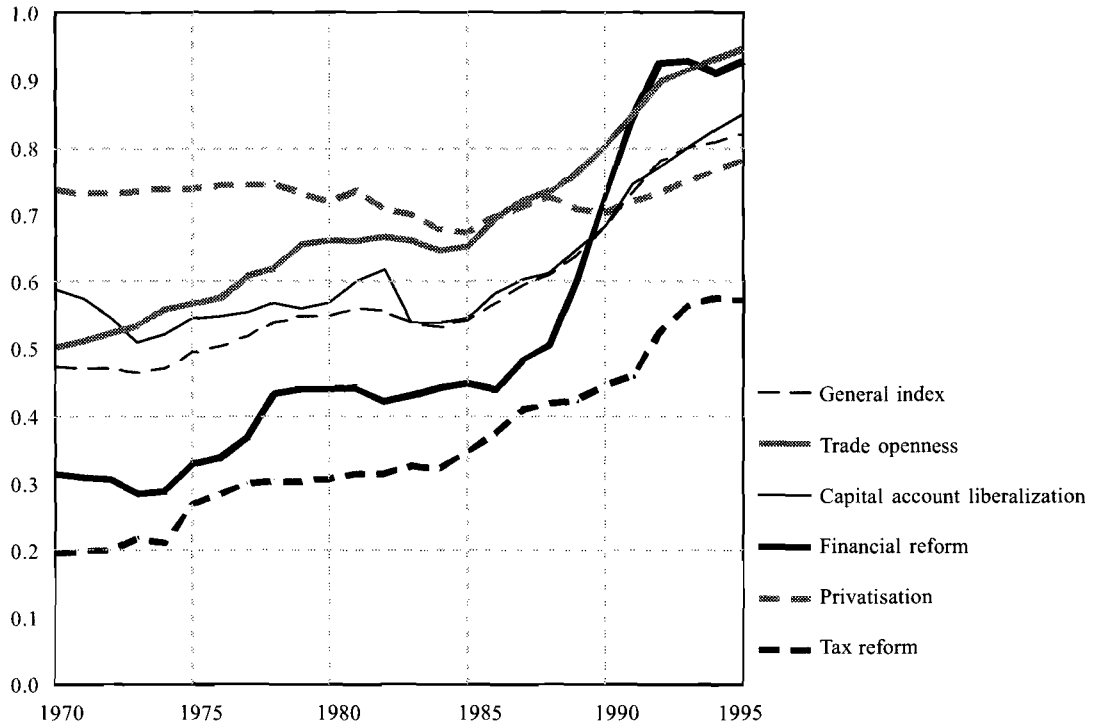
⁶ Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, Peru, Uruguay and Venezuela.

⁷ The authors did not include social security and labour market reforms because these were still very incipient during the period analysed. In the preparation of these indices, only policy variables under government control were considered, and the indices were normalized within a 0 to 1 interval, assigning the value of 1 to any structure completely free of distortion.

⁴ With regard to the specific objectives and technical details of the different areas of reform, see Edwards (1995), Lora (1997), IDB (1997), Morley, Machado and Pettinato (1999) and Bandeira (2000).

FIGURE 1

The reform index and its components



Source: Morley, Machado and Pettinato (1999).

Notwithstanding the fact that each reform area may have had important specific characteristics which were as relevant as the differences between countries, this section seeks to develop a general argument applicable to the process of change which affected the Latin American economies.⁸ Generally, the literature on reforms in Latin America only highlights their economic side: their effect on relative prices. This article, however, argues that these reforms represented not just economic but also institutional changes.

As from the 1940s and 1950s, the State gradually assumed a crucial role in the economies of Latin America, propelling an industrialization process based on import substitution. The economic repercussions of its actions have been substantial. It may be said that the functioning of the different markets and their interaction has depended on the whole structure created

in the period prior to the 1980s. This environment, however, while favouring the industrialization process in many countries, generated various kinds of distortions, especially in the system of relative prices, resulting in inefficient allocation of resources, low productivity and loss of well-being. In this sense the reforms begun in the 1980s, by reducing controls on the different markets, represented significant economic changes.

Similarly, the reforms can also be said to have triggered an important process of institutional change, since they altered the "appropriability" of rights, transaction costs, the structure of the yield on investments, the environment in which trade was carried out, and the contracts between economic agents, as well as the rules governing property rights. The way economies function and the role placed by the State constitute the starting point for the debate about the institutional nature of the reforms. The basis for this analysis is a relatively new field in economic science: the application of microeconomic considerations in the field of law. The arguments that follow are based on

⁸ Bandeira (2000) gives detailed data on the different reform areas and national experiences and provides a summary of the main studies on this subject.

two major studies of this subject: Hirsch (1988) and Cooter and Ulen (1988).

Just as the price structures within economies were affected by the type of development of the Latin American countries, the economic agents' ability to appropriate their rights may also have been similarly conditioned in previous decades. This finally led to a situation that has been defined as the "imperfect appropriability" of rights. This concept is directly related with the idea of externalities, which arise when one economic agent's consumption or production affects another's profits, without the market providing suitable compensation. This amounts to saying that the functions of individuals or companies are interdependent. According to Cooter and Ulen (1988), the essence of the problem arising from the existence of externalities lies in the fact that maximizing profits does not automatically lead to efficient solutions within the economy. Those who make rational decisions centred on their own interest generally do not take into account the effect they may have on the profits or production of others. Thus, these effects occur without the consent of others and without due compensation.

Why does this occur? One of the main reasons is the imperfect appropriation of rights. Returning once again to the elements presented by Hirsch (1988), this imperfect appropriation occurs when an economic agent is unable to appropriate the full marginal value of the benefits generated or cannot avoid the cost imposed by another agent in the case of a negative externality. Therefore, even when from the economic point of view whoever exercises the right should be able to make decisions on resource use and claim the benefits these generate, other factors may mean that this right is not guaranteed. In this sense, just as rights help to define the set of opportunities and the behaviour of the agents—and hence the results of their actions and choices—the degree to which these rights are protected (degree of fulfilment) undoubtedly also influences these elements.

There are reasons and factors of an ethical and institutional nature which may help to reduce the appropriability of rights. When this happens, the validity of the so-called exclusion principle becomes uncertain. According to Musgrave's definition (1959), this principle establishes that people cannot enjoy the benefits of a specific item of merchandise unless they are willing to pay its owner the going price. This principle can be extended to the use of factors of production and any benefits or profits deriving from these. If it were possible to consume a certain item of merchandise by mutual agreement, without due

compensation, this principle would be violated. If the cost associated with guaranteeing exclusivity were high, that is, if it required considerable resources, the validity of the principle would also become uncertain and the appropriability of rights would be imperfect. Under these circumstances, when an exchange occurs or factors are used in productive activities, the agents end up effectively absorbing the cost of excluding other agents from consumption (or from the benefits arising from the activity). In other words, in the case in question the transaction costs would be higher, with three important consequences: i) reduction of the number of transactions within the economy; ii) interference in the existence of markets; and iii) the perpetuation of externalities.

Thus, to a large extent the appropriability of rights conditions the decisions of economic agents. Guaranteeing and satisfying property rights promotes the efficient use of resources within the capitalist system. According to the legal and regulatory framework—the institutions of the law—agents have more or less confidence that they will receive the appropriate profits from the use of their property (Hirsch, 1988, p. 25). It can therefore be argued that both the accumulation of factors and changes in productivity depend on institutional development, the central aspect of which is the degree of appropriability of rights. This means that the performance of a given country in terms of economic growth and social well-being will ultimately depend on the prevailing institutional structure.

This conclusion is crucial for understanding the institutional nature of the reforms. In the Latin American countries, in each area and market where there was State intervention it is possible to identify factors which ended up reducing the agents' ability to appropriate their rights.⁹ One factor common to almost every area was the extremely discretionary nature of governmental decisions and policies. Obviously, all public policy contains an arbitrary component, which may be associated with the government's ideological or political position. In the case of the Latin American countries, however, it could be argued that this component was particularly pronounced, mainly

⁹ It should be borne in mind that the institutional structure of a country alone will not guarantee the perfect appropriation of rights. The idea set forth in this article is that the special circumstances of Latin America have meant that, compared to other countries or regions, it has a lower degree of appropriability of rights, thus affecting accumulation, productivity and economic growth.

because of the nature of the industrialization process, which was led by the State. As from the 1970s, this discretionary aspect rose still further due to the increase in domestic and external imbalances. In reality, this component was always more closely associated with the adjustment plans implemented by the different countries in response to imbalances. In other words, both economic aspects and those typical of the development model chosen by most of the countries of the region reinforced the arbitrary component inherent in the formulation and implementation of public policies. Thus, the time frame and the results expected

by the economic agents were often affected by unexpected changes of course due to arbitrary decisions of the government.¹⁰

This reading of the previous economic model and the nature of the economic reforms applied in Latin America, which differs from the prevalent view in the literature on this subject, is a crucial argument of this article, for it makes possible an evaluation of the mechanisms whereby the reforms' effects were materialized, on the basis of a theoretical approach that combines neoclassical growth fundamentals with the theoretical aspects of the New Institutional Economy.

III

Institutional changes, factor productivity and growth

Several recent studies and research papers have analysed the effect of institutional variables on economic performance, especially with regard to growth and inequality. One of the fundamental principles in this line of work derives from concepts developed by Douglass North in the sphere of the New Institutional Economy. More specifically, several studies analyse the role of institutions in explaining the causes of economic growth, including the effects that institutional changes have had on factor productivity and accumulation. The studies by Hall and Jones (1996 and 1999), Jones (2000) and Garcia et al. (1999) follow this line.

The articles by Hall and Jones develop the concept of infrastructure in order to explain the differences in the output per worker observed in different economies. To do so, the authors start from an analysis based on an aggregate production function and the concept of factor accumulation. According to this analysis, country differences in the output per worker can be attributed to differences in physical capital, human capital, and total factor productivity: i.e., to what have been called the determinants of growth, considered to be associated fundamentally with the social infrastructure of an economy. Hall and Jones define social infrastructure as the government (or public) policies and institutions that determine the environment in which people accumulate skills and companies accumulate capital, invest in technology and generate output. According to these authors, a structure that encourages productive activities and capital accumulation, skills acquisition,

technology transfer and invention should lead to higher levels of output per worker.

Hall and Jones (1996 and 1999) start with a scheme based on a Cobb-Douglas aggregate production function in which each country's product Y is determined by the stock of physical capital K , human capital H , and knowledge A , so that $Y_i = K_i^\alpha (A_i H_i)^{1-\alpha}$. They restate the function as follows:

$$y_i = \left(\frac{K_i}{Y_i} \right)^{\alpha / (1-\alpha)} h_i A_i \quad [1]$$

where $y = (Y/L)$ and $h = (H/L)$. This equation allows us to break down the differences in the output per worker between countries into three parts: the capital-output ratio, education, and productivity. On the basis of this scheme, the authors make an empirical study of the relation between the output per worker and a set of variables that act as proxies for social infrastructure, since there is no group of variables that represents this concept directly.

Jones (2000) develops the idea of social infrastructure theoretically and proposes changes in the neoclassical growth model. The production function mentioned above is restated as follows:

$$Y = IK^\alpha (hL)^{1-\alpha}, \text{ with } H_i = h_i L_i \text{ and } h_i = e^{\phi_i u} \quad [2]$$

¹⁰ Bandeira (2000) analyses in detail how the economic reforms in Latin America tried, directly or indirectly, to increase the agents' ability to appropriate their rights.

where I represents the influence of the economy's infrastructure on total factor productivity: economies with the same values for K , h and L can have different levels of output per worker, if the economic environments in which these inputs are used are different.

Garcia et al. (1999) analyse the functional form for including institutional development in Solow's growth model, together with its conceptual consequences with regard to a modern institutional economy, following the line of work developed by Douglass North. Starting from the thesis put forward by Mankiw, Romer and Weil (1992), they propose two other possible hypotheses about the institutional variable's influence on the product and on the productivity of the economic factors. The first of these considers that institutions directly affect the productivity of physical capital, just as knowledge influences labour productivity. Based on this hypothesis, physical capital, corrected for the degree of institutional development I , as shown in equation [3], becomes "effective capital".

$$Y_i = (I_i K_i)^\alpha H_i^\beta (A_i L_i)^{1-\alpha-\beta}, \quad \alpha, \beta > 0 \text{ and } \alpha + \beta < 1 \quad [3]$$

The second way of evaluating the influence of institutional changes consists of viewing institutions as a production factor. Thus, it is posited that there is a stock of institutions that, along with other production factors, determines the economy's aggregate product. According to this proposal, the variable indicating the degree of institutional development is incorporated into the Cobb-Douglas production function raised to the exponent γ and is multiplied by the product of the other production factors, as shown in equation [4]. The difference between this second hypothesis and that of Jones (2000) consists of the idea that institutions directly influence the average and marginal productivity of the other production factors in so far as a γ that is not zero means lower ratios of capital/output, human capital/output, and labour/output.

$$Y_i = I_i^\gamma K_i^\alpha H_i^\beta (A_i L_i)^{1-\alpha-\beta-\gamma}, \quad \alpha, \beta, \gamma > 0 \text{ and } \alpha + \beta + \gamma < 1 \quad [4]$$

Garcia et al. (1999) calculate convergence and product determination equations for a sample of 67 countries, using a scale of satisfaction with political freedom as a proxy for the degree of institutional development. The results of these calculations and comparison of the institutional variable coefficients

indicate that the adjustment hypothesis defining effective capital is more empirically valid.

The inclusion of institutional variables in growth models in order to analyse the effects of economic reforms in Latin America was defined on the basis of the theoretical approach described earlier. We started from the hypothesis that the reforms, by eliminating restrictions and reducing discretionality, increased the possibility of appropriating rights and reduced distortions in relative prices, as discussed in the previous section, thus affecting factor productivity and capital accumulation within the economy. The initial hypothesis considered was that reforms only influenced the product in the case of physical capital. Applying this effective capital hypothesis, the neoclassical production function was restated, replacing physical capital with a variable expressing the factor adjusted for its productivity:¹¹

$$Y_i = (I_i K_i)^\alpha (A_i H_i)^{1-\alpha}, \text{ with } 0 < \alpha < 1 \quad [5]$$

Apart from the effective capital hypothesis, two other assumptions were also considered, each corresponding to a new specification of the production function. The first relates the institutional variable to human factor productivity according to models for estimating the influence of knowledge on this variable: this hypothesis has been called the effective human capital hypothesis. In this case, human capital is replaced by a variable that expresses this factor, adjusted according to its productivity, as shown in equation [6]:

$$Y_i = K_i^\alpha (I_i A_i H_i)^{1-\alpha}, 0 < \alpha < 1 \quad [6]$$

The second assumption takes into consideration the institutional variable's effect on the total productivity of the economy, which assumes that the institutional structure influences the productivity of all factors, as shown in equation [7], which coincides exactly with the specification of Jones (2000).

$$Y_i = I_i \left[K_i^\alpha (A_i H_i)^{1-\alpha} \right], 0 < \alpha < 1 \quad [7]$$

Using the same hypotheses as the Mankiw, Romer and Weil (1992) model regarding the initial stock and accumulation of knowledge, equation [5] can be applied

¹¹ Unlike Garcia et al. (1999), who use the Mankiw, Romer and Weil (1992) specification of human capital, here it was decided to include this variable in the Hall and Jones (1996 and 1999) and Jones (2000) models.

to derive a specification for the output per worker. If the function is rewritten in shortened form, we have:

[5']

where $\tilde{y} = Y/AH$, $\tilde{k} = K/AH$ and $H = e^{\phi u L}$

Since the accumulation of knowledge is given by $A_t = A_0 e^{gt}$, and using the same hypothesis as Mankiw, Romer and Weil (1992) that $\ln A_0 = a + \varepsilon$, where a is a technological constant and ε is a specific random impact on the economy and, to simplify, $t = 0$, a final specification is obtained that includes the variable associated with institutional change, as represented by equation [8].¹² In this equation, the coefficient associated with the degree of institutional development is, at least in theoretical terms, identical to the coefficient for the physical capital saving effort. If these coefficients were different, however, there is evidence suggesting that the degree of institutional development would influence not only capital productivity. In that case, one of the other assumptions considered could be expected to prevail. The empirical formulae for these follow the same logic as equation [8] and are shown in equations [9] and [10].

$$\ln(Y_t/L_t) = a + \frac{\alpha}{1+\alpha} \ln I_t + \frac{\alpha}{1-\alpha} \ln s_k - \frac{\alpha}{1-\alpha} \ln(n+g+d) + \phi.u + \varepsilon_t \quad [8]$$

$$\ln(Y_t/L_t) = a + \ln I_t + \frac{\alpha}{1-\alpha} \ln s_k - \frac{\alpha}{1-\alpha} \ln(n+g+d) + \phi.u + \varepsilon_t \quad [9]$$

$$\ln(Y_t/L_t) = a + \frac{1}{1-\alpha} \ln I_t + \frac{\alpha}{1-\alpha} \ln s_k - \frac{\alpha}{1-\alpha} \ln(n+g+d) + \phi.u + \varepsilon_t \quad [10]$$

The study of the effects of reforms on capital accumulation was based on the corresponding equation defining that process, as well as on a corollary of the Solow model. If, to simplify, knowledge is treated as constant and depreciation as non-existent, the expression for the accumulation of this factor establishes that the change in capital stock per worker in an economy depends on two factors: savings per worker and the growth rate of the labour force. This equation is restated in the expression below, in which k now represents capital per worker and k the investment per worker.

$$k_t = s_k f(k_t) - nk_t \quad [11]$$

In this sense, to influence the capital accumulation process reforms must change the first term, given that in this model labour market dynamics are determined by demographic aspects. Thus, in theoretical terms, the effects of reforms on the accumulation process are of the same nature as their influence on the generation of the amount of savings per worker within the economy. In line with the hypothesis that savings equal investment, their impact on investment per worker is of the same nature.

As indicated, according to the Solow model formulation, the corollary conclusion is that factors are remunerated according to their marginal productivity. With regard to the problem of maximizing company profits, the following relationship is obtained:

$$r = \alpha \frac{Y}{K}, \text{ where } 0 < \alpha < 1, \quad [12]$$

which defines the long-term interest rate or yield on capital. Investment is negatively related to this rate, because it reflects the marginal productivity of capital, which goes down with the stock of this factor. Likewise, the fraction of this product that goes to accumulation is not only related to r , but also to family decisions, which reflect such factors as personal preferences, point

¹² Solow's capital accumulation equation (1956), in which s_k reflects the saving rate, n the population growth rate, g the level of technological innovation and d the rate of depreciation, could also be rewritten in shortened form as follows:

$$\dot{\tilde{k}} = s_k \tilde{y} - (n + g + d) \tilde{k}$$

In a steady state, the variation in capital stock per unit of effective human capital is nil. We thus reach a break-even point, that is, a point where gross investment is in equilibrium. If equation [5'] is substituted in this equation, we have the capital stock per unit of labour in the steady state, as expressed by \tilde{k}^* . By substituting the corresponding expression for this variable, we obtain the equation for the product per unit of effective human capital in the steady state, indicated by \tilde{y}^* . Both equations are given below:

$$\tilde{k}^* = \left(\frac{I^\alpha s_k}{n + g + d} \right)^{\alpha/1-\alpha} \quad \text{and} \quad \tilde{y}^* = I^{\alpha/1-\alpha} \left(\frac{s_k}{n + g + d} \right)^{\alpha/1-\alpha}$$

If y^* is defined as the output per worker in the steady state, we have:

$$y^* = I^{\alpha/1-\alpha} \left(\frac{s_k}{n + g + d} \right)^{\alpha/1-\alpha} A e^{\phi u}$$

If the above equation is stated in linear form by applying the natural logarithm, a new expression for the output per worker is obtained:

$$\ln(Y_t/L_t) = \frac{\alpha}{1-\alpha} \ln I + \frac{\alpha}{1-\alpha} \ln s_k - \frac{\alpha}{1-\alpha} \ln(n+g+d) + \ln A + \phi.u$$

in the life cycle, and institutional aspects. Let us assume that the first two factors can be captured by the dependency ratio by age: the higher this ratio, the lower the savings. Similarly, the influence of institutional elements, the context in which the reforms are applied, follows the line of reasoning analysed above. This simple theoretical scheme makes it possible to study the evolution of investment per worker and the effect of the reforms on this variable, using the following expression:

$$i = s_k f(k) = g(r, dep, I) \quad [13]$$

where i is the investment per worker, dep the dependency ratio by age, and I the indicator of economic reforms. It may be expected, therefore, that $g'(r) < 0$, $g'(dep) < 0$, and $g'(I) > 0$. The effect of reforms, if significant, must be positive, because of the economic and institutional nature of the measures applied.

IV

Economic reforms, institutional changes and growth in Latin America

The empirical analysis of the effects of reforms during the period from 1970 to 1995 was carried out using a balanced sample of 17 Latin American countries. The set of economies was defined according to the availability of data on the reform variables, in this case the six indices formulated by Morley, Machado and Pettinato (1999). Once these indicators had been prepared for the 1970-1995 period, this also defined the time interval to be considered. Six chronological observations were used for each country (1970, 1975, 1980, 1985, 1990 and 1995). Thus, the data bank comprised a total of 102 observations. The other variables were formulated according to World Bank indicators (World Bank, 2000) and data from Barro and Lee (1996), updated to 1995.¹³

The hypothesis assumed a constant depreciation rate of 3% per year, equal for all the countries. The exercise began with a g rate set at 1.2%, likewise constant and identical for all countries, in line with the basic Solow model.¹⁴ However, the hypothesis that $\ln A_{(t)} = a + \varepsilon$ permits the inclusion of differences

between countries in the level of knowledge or technology, which are captured by dummy variables for each country. With regard to the reform indices, the original variable I_t was changed to take into consideration the fact that these indicators are limited to the interval between 0 and 1. It was therefore considered that $I_t = e^{\eta}$ where η represents the reform indices (both the general index and those associated with the five areas of reforms). Savings correspond to the average rate posted over the 20 years prior to the period under analysis, and the rate n reflects the average between five-year sub-periods.

To begin with, specifications were estimated for the output per worker and per capita product, although the model's theoretical equations actually take into consideration the first case. With regard to the per capita product, the variable n represents the population growth rate and the model behaves as if everyone had a job. In general, the regressions that use the per capita product were those posting the best results. Consequently, and bearing in mind the problems associated with measuring the labour force in the countries of the region, per capita product was defined as a dependent variable.

The econometric analysis was divided into two parts. One involved investigating the impact on total factor productivity or the productivity of each factor considered individually. The other analysed the impact on capital accumulation. The first estimate was based on equation [14] below, in which $i = 1, \dots, 17$, and $t = 1, \dots, 6$. According to the theoretical values predicted in equations [8], [9] and [10], the evaluation of the

¹³ The data used in the regressions can be obtained from Bandeira (2000) or directly from the authors of the present article.

¹⁴ The values assigned to these two rates follow the general lines established in the literature on growth. See, for example, Mankiw, Romer and Weil (1992). In the specific case of the technological innovation rate, we followed Piedrahita (1998), who assumes that g is equal to the average real per capita GDP growth rate in Latin America for the period from 1916 to 1989, as established by the World Bank.

coefficient for the variable representing institutional change should define the most probable hypothesis: if the reforms only influence the productivity of the physical factor, if they only affect the productivity of human capital, or if they have a general impact on the productivity of the economy as a whole.

$$\ln(Y_{i,t}/L_{i,t}) = \beta_0 + \beta_1 \ln I_{i,t} + \beta_2 \ln s_{ki,t} - \beta_3 \ln(n_{i,t} + g + d) + \beta_4 u_{i,t} + \varepsilon_{i,t} \quad [14]$$

Table 1 shows the results of these regressions. All the models were estimated using the least squares method with fixed effects.¹⁵ Preliminary test results on the importance of including dummy variables indicated that only the fixed effect for countries was significant. The fact that the chronological dummy variables were not significant may be due to the correlation between those variables, educational level and the reform indices, since the last two do reflect a tendency.

The basic model estimated in table 1 corresponded to equation [14] and did not take into account the reform index. This variable, like the specific indices for each area, was gradually incorporated in order to identify its partial effects. The results for the first regression were quite reasonable and served as a point of reference for analysing the impact of the reforms. The coefficients for saving and average schooling were significant at the 5% level and had the expected sign. In contrast, the coefficient associated with the variable $n + g + d$ was not significant. This result seems to be related to the fact that this variable shows little variance and a high degree of multiple collinearity, reflected in the high value of the VIF statistic for every specification.

The second model, which included the general index of the reforms, gave better results. Through an estimate carried out using least squares with dummy variables, there was a slight increase in the adjusted R^2 , while the standard error of the regression declined. There were no signs of heteroskedasticity. The reform coefficient was significant at the 5% level and showed

TABLE 1

Latin America: Determination of per capita product, 1970-1995^a

	Basic model	Reform index	Trade openness	Financial reform	Capital account liberalization	Privatisation	Tax reform
$\ln(s_k)$	0.647 (0.112)	0.654 (0.106)	0.677 (0.110)	0.646 (0.108)	0.627 (0.111)	0.649 (0.108)	0.658 (0.106)
$\ln(n+g+d)$	0.350 (0.250)	0.427 (0.239)	0.374 (0.245)	0.407 (0.244)	0.433 (0.250)	0.319 (0.242)	0.390 (0.238)
Schooling (u)	0.072 (0.023)	0.031 (0.026)	0.042 (0.027)	0.042 (0.026)	0.061 (0.024)	0.077 (0.023)	0.028 (0.026)
Reform (I)		0.394 (0.125)	0.190 (0.089)	0.160 (0.064)	0.194 (0.103)	0.625 (0.235)	0.346 (0.110)
Adjusted R^2	0.955	0.960	0.957	0.958	0.956	0.958	0.959
Mean standard error	0.130	0.124	0.127	0.126	0.128	0.125	0.123
White's test - n. R^2	24.800	23.540	24.542	27.164	29.165	27.267	23.379
χ^2 (5%)	37.653	43.773	43.773	43.773	43.773	43.773	43.773
F - fixed effect ^b	68.883	76.236	70.698	73.552	69.558	74.358	76.879
Hausman test	6.15	8.08	7.33	6.64	7.17	6.62	6.56

^a Numbers in brackets are the standard errors of the estimates.

^b The F statistic calculated for the fixed effect test is equal to 2.24. The basic model has 82 degrees of freedom, the other models 81.

¹⁵ In line with the studies by Mankiw, Romer and Weil (1992) and Islam (1995) on the nature of the term A_{it} , and in view of the hypotheses regarding the behaviour of that term, it was decided to work with the fixed effect model. The technological constant represents not only knowledge, but also all other aspects related to factor productivity. In this context, the fixed effects for countries indicate productivity differences which, given their

formulation, are correlated with the model's explanatory variables (saving, population growth and reforms). At all events, the Hausman test was applied to every empirical model in order to evaluate the possibility that the residual terms were not related to the set of explanatory variables, which would imply a better estimate of the parameters on the basis of the random effects model.

a low degree of correlation with the other variables of the model. Another interesting point concerned the human capital factor. The estimated coefficient for this variable, when controlled for the fixed effect by country and reforms, was low and insignificant. This was also due to the high collinearity and low tolerance of the coefficient in this second model (the VIF reached 8.003). Thus, the specifications in table 1 display a certain degree of correlation between the explanatory variables and the dummy variables for the countries which affects the estimated value of the coefficients. This problem did not call for corrective measures, however, because the level of multiple collinearity seems to be within acceptable margins.

In order to analyse the impact of each reform separately, the general reform index was replaced sequentially by each of its components, yielding the five models that follow. All represent values of adjusted R^2 that are higher and mean standard error that are lower than the basic model. The estimated coefficients for the s_k variables were very stable, with the implicit α staying somewhere between 0.38 and 0.40, while the coefficients associated with the $n + g + d$ variable were not significant. As regards the reform indices by area, all the other regressions yielded coefficients that were positive and significant at the 5% level, except the regression for capital account liberalization, which was significant at the 10% level. This indicates that each reform area positively affected the per capita product during the period under analysis.

To investigate how this effect occurred, a series of tests were conducted that consisted of applying a set of linear restrictions on the estimated coefficients for the s_k and I variables. These tests were defined according to the three theoretical specifications [8], [9] and [10] which establish the values predicted for each of these coefficients according to each of the hypotheses under consideration: effective capital, effective human capital and total productivity.

Using equation [14], the values for the coefficients associated with each variable were estimated, but this expression did not determine *a priori* which of the specifications was the most probable; only a coefficient β_1 was assigned to the institutions. Comparing this estimated coefficient with the others makes it possible to identify the role of the reforms. If the test of applying restrictions to the coefficients proves unable to refute the hypothesis that the coefficient β_1 is equal to β_2 , then the institutions can be considered to affect the productivity of capital. In this case, the coefficients associated with the reform indicator and the rate of

saving should be statistically equal, thus indicating the validity of the restriction present in equation [5].

If it proves impossible to refute the hypothesis that $\beta_1 = 1$, then the conclusion is that institutions respond to the effective human capital hypothesis, as proposed in equation [9]. This result is compatible with the restriction implicit in the theoretical specification formulated in equation [6]. Finally, if it proves impossible to refute the hypothesis that β_1 is equal to $1 + \beta_2$, then a conclusion favourable to the third hypothesis can be reached, as formulated in equation [10]: institutions affect both productive factors equally, thus affecting total factor productivity. This happens because in this case the effect of institutional reforms is identical to the sum of their partial effects, both on physical capital and effective human capital, as indicated by the reform coefficients in equations [8] and [9]. Table 2 shows the results of the tests corresponding to the three hypotheses.

The first test corresponds to the first hypothesis analysed: that the reforms mainly affect the productivity of physical capital. Table 2 offers evidence that reforms in general, and the privatisation process in particular, had a significant impact on the productivity of this factor, because it is not possible to reject the hypothesis that the coefficients associated with s_k and I are equal. In the case of the second hypothesis, regarding effective human capital, only privatisation seems to have significantly affected the productivity of the human capital factor. Evidently, it is not possible to affirm that the general impact of the reforms and the five areas under consideration were concentrated on the total productivity of these economies, in line with the third theoretical hypothesis. Thus, it can be concluded that the positive impact of the reforms was associated with effective capital, or even that this effect on the product of the region's countries was mainly due to an increase in the productivity of physical capital. The reduction or elimination of controls on the different markets seems to have promoted more efficient use of this factor.

The impact of the reforms on capital accumulation was then estimated. Starting from a parameter 1/3 for α and working with the product and capital stock series—the latter calculated according to the methodology suggested by Nehru and Dhaireswar (1993)—, it was possible to calculate the long-term interest rate r . The function expressed below was then estimated, assuming a basic specification in which, once again, $i = 1, \dots, 17$, and $t = 1, \dots, 6$. For the purpose of this estimate, the dependency ratio by age was approximated by including

TABLE 2

Tests of linear restrictions on the coefficients β_1 and β_2
(Student's *t* statistic)^a

Hypothesis	Reform index	Trade openness	Financial reform	Capital account liberalization	Privatisation	Tax reform
$\beta_1 = \beta_2$	1.598	3.677	3.859	2.735	0.094	2.075
$\beta_1 = 1$	-4.837	-9.079	-13.120	-7.821	-1.593	-5.932
$\beta_1 = 1 + \beta_2$	-7.758	-11.224	-11.802	-9.051	-3.969	-8.723

^a Two-sided calculated *t*-statistic of 1.98 (Alpha = 5%).

TABLE 3

Latin America: Determination of per capita investment, 1970-1995^a

	Basic model	Reform index	Trade openness	Financial reform	Capital account liberalization	Privatization	Tax reform
Ln(<i>r</i>)	-0.905 (0.165)	-0.785 (0.157)	-0.857 (0.159)	-0.749 (0.159)	-0.850 (0.163)	-0.939 (0.174)	-0.774 (0.163)
Ln(<i>dep</i>)	-0.202 (0.194)	-0.632 (0.215)	-0.601 (0.234)	-0.547 (0.203)	-0.338 (0.201)	-0.222 (0.198)	-0.496 (0.209)
Reform (I)		0.647 (0.176)	0.368 (0.131)	0.324 (0.087)	0.301 (0.144)	0.228 (0.367)	0.459 (0.151)
Adjusted R ²	0.931	0.940	0.937	0.941	0.934	0.931	0.938
Mean standard error	0.186	0.173	0.179	0.173	0.182	0.187	0.178
White's Test - n.R ²	35.799	29.519	32.579	31.333	33.484	39.100	34.234
χ^2 (5%)	32.671	37.652	37.652	37.652	37.652	37.652	37.652
F - fixed effect ^b	57.142	64.808	62.017	66.683	59.704	51.436	63.056
Hausman test	4.49	15.18	8.30	8.48	5.43	6.56	7.15

^a Numbers in brackets are standard errors of estimates.

^b The *F* statistic calculated for the fixed effect test equals 2.24. The basic model has 83 degrees of freedom while the others have 82.

people 65 years of age and over. First of all the general index was verified, and then each reform separately.

$$\ln i_{i,t} = \beta_0 + \beta_1 \cdot \ln r_{i,t} + \beta_2 \cdot dep_{i,t} + \beta_3 \cdot I_{i,t} + \mu_{i,t} \quad [15]$$

Table 3 gives the main results and statistics for a set of specifications. The first model corresponds to the formulation in which per capita investment is a function of interest rates and dependency by age. The next model identifies the fixed effect by country as significant, indicating the presence of factors not taken into account in the model which are associated with each economy and affected investment in the period under analysis.¹⁶ The second model considers the

¹⁶ The fixed effect tests indicated that it was important to include the fixed effect of time. In contrast, the inclusion of chronological dummy variables gave rise to serious problems of heteroskedasticity, so that it was decided not to take into account the specifications including those variables.

general reform index as an explanatory variable, in order to investigate the effect of the set of measures on capital accumulation.

The basic model's explanatory power is high (adjusted R² of 93.1%). However, if White's Test is applied, the hypothesis of heteroskedasticity cannot be discounted. This indicates that both the interest rate and dependency by age negatively affect investment. The coefficient associated with this second variable is not significant at the 5% level, however. The model that includes the reform index produced better results. The adjusted R² rises slightly as the standard error of the regression goes down. According to White's Test, there are no signs of heteroskedasticity. Inclusion of the reforms permits correction of the estimated coefficients for interest rates and dependency by age. The coefficients for the latter displayed the greatest variation, while the reform coefficient was significant at the 5% level and had the expected sign.

With regard to the areas of reform, except for the estimated coefficient for privatisation all were significant at the 5% level. The model that included privatisation yielded the worst results. The adjusted R^2 was the lowest of the specifications in the table, while the standard error of the regression was the highest.

V

Final considerations

The empirical research conducted on the effects of the economic reforms in Latin America made it possible to obtain a series of tests to identify the impact of these policies on the per capita product of the economies of the region and at the same time provided useful elements for analysing the mechanisms by which this impact was materialized. These results must now be evaluated. On the basis of empirical analysis of the reforms' effects, it can be concluded that: i) their general impact on the per capita product was positive; ii) considering total and partial factor productivity, the main channel was the positive effect on the productivity of the physical capital factor; and iii) capital accumulation responded positively to the reforms, except in the case of privatisation, whose effect does not appear to have been statistically significant. The third conclusion tends to corroborate the second, in the sense that with an increase in the marginal productivity of capital, there should be a sustained or steadier rise in investment.

The recovery in the per capita product observed in the late 1980s and the first half of the 1990s therefore appears to be directly linked to the reforms' effects on productivity and capital accumulation. However, it should be noted that these results, like those that appear in the empirical literature on economic growth in general, are conditioned by the econometric specifications and samples used, as well as the set of control variables selected.

The empirical literature on this subject uses the product growth rate as dependent variable. As mentioned in the introduction, these studies show that the reforms had a positive impact on this rate in recent years. The exception was the article by Escaith and Morley (2000), which concluded that the positive impact of the reforms on growth was, at best, indirect. The methodology applied in the present article permits

This was also the only model that showed signs of heteroskedasticity. If we examine the other four reform areas, the results clearly indicate the positive impact of these measures on per capita investment during the period under analysis. Taken individually, each of the reforms confirms this result in general terms.

the conclusion that the general impact of the reforms on the per capita product of these economies was positive during the 1970-1995 period.¹⁷ As table 1 showed, all the reforms contributed to this result. Similarly, there seems to be proof that the reforms did in fact reduce distortions in relative prices (economic aspect) and increased the appropriability of rights, mainly by limiting discretionary powers (institutional aspect).

Only the study by Barrera and Lora (1997) investigated the channels through which the reforms achieved their impact (higher productivity or capital accumulation). These authors reached the conclusion that the main element had been the effect of these measures on total factor productivity, although a recovery in investment levels was also observed. The specifications used in the empirical stage of the present study made it possible to explore whether this effect applied to total or partial factor productivity. The results indicated that physical capital was the factor most favoured in terms of higher productivity during the reform process. The reforms' impact on effective capital is derived largely from the evidence associated with privatisation operations. This area of reform can be said to have clearly affected capital productivity, although its influence via effective human capital cannot be discounted. The other four reforms affected the product and investment, but tests carried out using the estimated coefficients did not permit a conclusion as to whether this occurred by way of effective capital or effective human capital.

¹⁷ The appendix examines the effect of the reforms on growth in the Latin American countries from 1975 to 1995. On the basis of a theoretical conditional convergence equation, it is considered that, taken both individually and together, the reforms had a positive effect on the region's economic growth.

An important corollary to the research presented in this article has to do with the effect of the reforms on income distribution. As already noted, the impact of these policies was greater in the case of physical capital than on labour. In other words, comparatively speaking, remuneration of capital must have risen more than other factors. The relative changes in productivity, and therefore wages, caused by reforms may have favoured the concentration of income to some extent. Morley (2000), who uses the same set of six economic reform indices to evaluate the effect of growth and the reforms on income distribution in Latin America, found signs that the reforms in general may have had a regressive effect on this distribution, although he sustains that it was not very significant, statistically speaking.

Parallel to the evidence presented by this author, there is a second study whose conclusions seem to confirm the impact of the reforms on distribution. Behrman, Birdsall and Székely (2000) explore the relationship between the implementation of the economic reforms and wage differences in 18 Latin American economies between 1980 and 1998 (as measures of the reforms they use the same indices as Morley, Machado and Pettinato). This study offers some

important conclusions. In the first place, the authors find proof that wage differences between workers with higher education and those with primary and secondary education increased considerably, particularly during the 1990s. With regard to the impact of the reforms, they reached the conclusion that on average these profoundly and positively affected these differences, although this effect tended to decline over time. They also examined the effect on wage levels: their results, although preliminary according to the authors, suggest that the reforms had a positive impact on wage levels. In short, this study indicates that, taking 1980 as the starting point, the reforms affected both the average level and variance of wages.

The empirical results and theoretical implications of the present article point in the same direction. The positive effect of the reforms on the productivity of human capital, although not integral, offers proof that the wage level for this factor did increase somewhat. At the same time, the fact that productivity increases occurred mainly in the case of the capital factor indicates that the reforms must have negatively affected income distribution, along the same lines as the increase in the difference in wages observed in the aforementioned study.

APPENDIX

The conditional convergence equation

As they affected productivity and capital accumulation, the economic reforms should be directly linked to the growth in the per capita product noted in the late 1980s and the first half of the 1990s. To evaluate this effect, the conditional convergence equation developed by Mankiw, Romer and Weil (1992) was used, with the product expressed, in this case, per unit of effective human capital $\tilde{y}(t)$, as shown in the following equation:

$$\ln \tilde{y}(t_2) - \ln \tilde{y}(t_1) = (1 - e^{-\lambda\tau}) \ln \tilde{y}^* - (1 - e^{-\lambda\tau}) \ln \tilde{y}(t_1) \quad [A.1]$$

The steady-state product, when no restriction is imposed on the production function in terms of the role of reforms, is expressed as:

$$\tilde{y}^* = N \left(\frac{s_k}{n + g + d} \right)^{\alpha / 1 - \alpha} \quad [A.2]$$

Substituting equation [A.2] in [A.1], and expressing the output per worker as $y(t)$ gives the following equation, which permits evaluation of the general impact of the economic reforms on the growth rate of the Latin American countries.

$$\begin{aligned} \ln y(t_2) - \ln y(t_1) &= (1 - e^{-\lambda\tau}) \gamma \cdot I + (1 - e^{-\lambda\tau}) \\ &\cdot \frac{\alpha}{1 - \alpha} \ln(s_k) - (1 - e^{-\lambda\tau}) \cdot \frac{\alpha}{1 - \alpha} \ln(n + g + d) \quad [A.3] \\ &+ (1 - e^{-\lambda\tau}) \cdot \phi \cdot u - (1 - e^{-\lambda\tau}) \cdot \ln y(t_1) \\ &+ (1 - e^{-\lambda\tau}) \cdot \ln A_{(0)} + g(t_2 - e^{-\lambda\tau} t_1) \end{aligned}$$

According to this formula, the growth rate will be positively associated with the degree of reform: countries which have applied more reforms should show higher rates while in the transition process. The econometric study was based on a set of 17 Latin American countries but was limited to the period from 1975 to 1995, for reasons of data availability. The specification of this set, in which $i = 1, \dots, 17$, and $t = 1, \dots, 5$, was based on expression [A.4] below, which was derived directly from equation [A.3].

$$\begin{aligned} \Delta \ln y(t) &= \beta_0 + \beta_1 \ln I_{i,t} + \beta_2 \ln s_{k,i,t} \\ &- \beta_3 \ln(n_{i,t} + g + d) + \beta_4 u_{i,t} + \beta_5 \ln y(t_0)_i + \varepsilon_{i,t} \quad [A.4] \end{aligned}$$

where $\Delta \ln y(t)$ indicates the difference in product at two points in time, while $y(t_0)$ represents the product during the initial period of the analysis.

Table A.1 gives the main results from the estimation of this specification, using the fixed effect model. (According to the Hausman test, this model is appropriate for all specifications). The basic model, with fixed effect but without reforms, has little explanatory power, with the set of dummy variables proving significant. The estimated coefficient associated with the initial income level is significant at the 5% level and has the expected sign. This result indicates the validity of the conditional convergence hypothesis for the income of the region's countries.

TABLE A.1

Latin America: Determination of per capita product growth, 1970-1995^a

	Basic model	Reform index	Trade openness	Financial reform	Capital account liberalization	Privatisation	Tax reform
Ln(y ₀)	-0.731 (0.127)	-0.706 (0.115)	-0.696 (0.122)	-0.721 (0.121)	-0.693 (0.116)	-0.689 (0.118)	-0.767 (0.119)
Ln(s _k)	0.219 (0.163)	0.210 (0.147)	0.222 (0.156)	0.215 (0.155)	0.170 (0.149)	0.183 (0.151)	0.251 (0.152)
Ln(n+g+d)	0.590 (0.269)	0.659 (0.243)	0.585 (0.257)	0.638 (0.257)	0.777 (0.250)	0.493 (0.250)	0.632 (0.251)
Educational level (u)	0.036 (0.028)	-0.025 (0.030)	-0.008 (0.032)	-0.002 (0.030)	-0.002 (0.028)	0.035 (0.026)	-0.013 (0.031)
Reform (I)		0.449 (0.114)	0.231 (0.089)	0.156 (0.057)	0.372 (0.100)	0.709 (0.207)	0.355 (0.110)
Adjusted R ²	0.386	0.500	0.438	0.443	0.490	0.474	0.465
Mean standard error	0.111	0.100	0.106	0.106	0.101	0.103	0.104
White's Test - n.R ²	35.458	37.767	38.661	37.898	40.286	39.296	37.590
χ ² (5%)	43.773	49.800	49.800	49.800	49.800	49.800	49.800
F - fixed effect ^b	3.908	5.455	4.645	4.421	5.570	5.241	4.823
Hausman test	45.74	65.39	55.2	56.78	70.54	62.94	61.48

^a Numbers in brackets are standard errors of the estimates.

^b The *F* statistic calculated for the fixed effect test equals 2.37. The basic model has 64 degrees of freedom, while the rest have 63.

The coefficients for the other variables do not appear to be significant, except for the break-even point for the investment rate, $n+g+d$, which has an inverse sign.

The second specification in the table includes the general reform index as an explanatory variable in the model with fixed effects. The rise in adjusted R² and the reduction in the standard error of the regression should be noted. There are no signs of heteroskedasticity problems. The fixed effect test shows the importance of the set of dummy variables. The coefficient associated with the reforms is significant (at the 5% level) and indicates that altogether these measures influenced growth in the countries of the region during the period under analysis. When evaluating the other variables, the effect of the initial product continues to be

important, while the *break-even point* continues to have the opposite sign to that which was expected.

If we look at the individual reforms, it is clear that the five reforms considered are important in determining the growth of the sample countries. The coefficient associated with privatisation is also worthy of note. Its value is a good deal higher than the others, as in the case of the equation for the per capita product. Once again, in all five specifications the rate of saving and the educational level do not seem important. The estimated initial income level coefficient is significant in all five models, thus supporting the convergence theory.

(Original: Portuguese)

Bibliography

- Bandeira, A. C. (2000): *Reformas econômicas, mudanças institucionais e crescimento na América Latina*, São Paulo, Brazil, Escola de Administração de Empresas de São Paulo (EAESP), Getúlio Vargas Foundation, master's thesis.
- Barrera, F. and E. Lora (1997): *A decade of structural reform in Latin America: Growth, productivity, and investment are not what they used to be*, IDB working papers, No. 350, Washington, D.C., Inter-American Development Bank (IDB).
- Barro, R. J. (1991): Economic growth in a cross section of countries, *Quarterly Journal of Economics*, vol. 106, No. 2, Cambridge, Massachusetts, MIT Press.
- Barro, R. and J. Lee (1996): International measures of schooling years and schooling quality, *American Economic Review*, vol. 86, No. 2, Nashville, Tennessee, American Economic Association.
- Behrman, J., N. Birdsall and M. Székely (2000): *Economic reform and wage differentials in Latin America*, Papers and Proceedings of the Fifth Annual Meeting, Rio de Janeiro, Latin American and Caribbean Economic Association (LACEA).
- Burki, S. and G. Perry (1997): *The Long March: A Reform Agenda for Latin America and the Caribbean in the Next Decade*, Washington, D.C., World Bank.
- Campos, N. and J. Nugent (1998): Institutions and growth: Can human capital be a link?, *CEPAL Review*, No. 64, LC/G.2022-P, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).

- Cooter, R. and T. Ulen (1988): *Law and Economics*, New York, Harper Collins Publishers.
- Easterly, W., N. Loayza and P. Montiel (1997): Has Latin America's post-reform growth been disappointing?, *Journal of International Economics*, vol. 43, No. 3/4, Amsterdam, The Netherlands, North-Holland Publishing Company.
- Edwards, S. (1995): *Crisis and Reform in Latin America*, Washington, D.C., World Bank
- Escaith, H. and S. Morley (2000): *The Impact of Structural Reforms on Growth in Latin America and the Caribbean: An Empirical Estimation*, "Macroeconomía del desarrollo" series, No. 1, Santiago, Chile, ECLAC.
- Fajnzylber, P. and D. Lederman (1999): *Economic Reforms and Total Factor Productivity Growth in Latin America and the Caribbean (1950-95). An Empirical Note*, Policy research working paper No. 2114, Washington, D.C., World Bank.
- Fernández-Arias, E. and P. Montiel (1997): *Reform and Growth in Latin America: All Pain no Gain?*, IDB working papers, No. 351, Washington, D.C., IDB.
- Garcia, F. and others (1999): Instituições e crescimento: a hipótese do capital-efetivo, *Proceedings of XXVII Annual Meeting of ANPEC*, Belém, Brazil, Associação Nacional dos Centros de Pós-graduação em Economia (ANPEC), December.
- Hall, R. and C. Jones (1996): *The Productivity of Nations*, NBER working papers, No. 5812, Cambridge, Massachusetts, National Bureau of Economic Research, Inc. (NBER).
- _____ (1999): Why do some countries produce so much more output per worker than others?, *Quarterly Journal of Economics*, vol. 114, No. 1, Cambridge, Massachusetts, MIT Press.
- Hirsch, W. (1988): *Law and Economics: An Introductory Analysis*, San Diego, Academic Press.
- Hofman, A. (2000): *Economic Growth and Performance in Latin America*, "Reformas económicas" series, No. 54, Santiago, Chile, ECLAC.
- IDB (Inter-American Development Bank) (1997): *Latin America After a Decade of Reforms. Economic and Social Progress. 1997 Report*, Washington, D.C.
- Islam, N. (1995): Growth empirics: A panel data approach, *Quarterly Journal of Economics*, vol. 110, No. 4, Cambridge, Massachusetts, MIT Press.
- Jones, C. (2000): *Introdução à teoria do crescimento econômico*, Rio de Janeiro, Editora Campus.
- Lora, E. (1997): *A Decade of Structural Reforms in Latin America: What Has Been Reformed and How to Measure It*, IDB working papers, No. 348, Washington, D.C., IDB.
- Mankiw, N., D. Romer and D. Weil (1992): A contribution to the empirics of economic growth, *Quarterly Journal of Economics*, vol. CVII, No. 2, Cambridge, Massachusetts, MIT Press.
- Morley, S. (2000): The effects of growth and economic reform on income distribution in Latin America, *CEPAL Review*, No. 71, LC/G.2060, Santiago, Chile, ECLAC.
- Morley, S., R. Machado and S. Pettinato (1999): *Indexes of Structural Reforms in Latin America*, "Reformas económicas" series, No. 12, Santiago, Chile, ECLAC.
- Musgrave, R. (1959): *The Theory of Public Finance*, New York, McGraw-Hill.
- Nehru, V. and A. Dhareshwar (1993): A new database on physical capital stock: Sources, methodology and results, *Revista de análisis económico*, vol. 8, No. 1, Santiago, Chile, Latin American Institute for Social Doctrine and Studies (ILDES).
- Paunovic, I. (2000): *Growth and Reforms in Latin America and the Caribbean in the 1990s*, "Reformas económicas" series, No. 70, Santiago, Chile, ECLAC.
- Piedrahita, A. (1998): Crecimiento económico en la América Latina. Estudio basado en el modelo neoclásico, *El trimestre económico*, vol. 65, No. 3, Mexico City, Fondo de Cultura Económica (FCE).
- Solow, R. (1956): A contribution to the theory of economic growth, *Quarterly Journal of Economics*, vol. LXX, No. 1, Cambridge, Massachusetts, MIT Press.
- Stiglitz, J. and H. Uzawa (eds.) (1969): *Readings in the Modern Theory of Economic Growth*, Cambridge, Massachusetts, MIT Press.
- Temple, J. (1999): The new growth evidence, *Journal of Economic Literature*, vol. 37, No. 1, Nashville, Tennessee, American Economic Association.
- World Bank (2000): *World Development Indicators 2000*, Washington, D.C.

EMBRAER:

From national champion **to global player**

Andrea Goldstein

*OECD Development Centre,
Paris, France*
andrea.goldstein@oecd.org

Much has been written on the macroeconomic aspects of the economic reform process in Latin America, but much less has been published on its microeconomic results, especially at the company level. This paper explores how Embraer, a Brazilian aircraft manufacturer, transformed itself after privatization to become a world market leader in a high-tech industry traditionally dominated by companies based in member countries of the Organization for Economic Cooperation and Development (OECD). Its main findings are that top management played a key role in aligning innovation for dynamic capabilities, that the company has been very successful in forming alliances with foreign partners and strengthening its bargaining position, and that the Brazilian authorities have consistently supported Embraer after relinquishing direct control. For these results to be extended to other companies, however, Brazil's export promotion tools must be made compatible with multilateral norms.

“We are engineering minded [...],
not fanatical about the business side”
JUAREZ WANDERLEY, President of EMBRAER
Financial Times, 6 June 1995

“EMBRAER’s aircraft are developed
with customer satisfaction in mind”
MAURICIO BOTELHO, President of EMBRAER
InfoBrazil, 26 May 2000

I

Introduction

Large industrial enterprises have historically played a vital role in developing new technologies, marketing new products, and introducing new organizational forms (Chandler, Amatori and Hikino, 1997). In this way, they have contributed to economic growth and development in Europe, North America, and East Asia, although of course they may have also generated inefficiencies, especially through their ability to lobby for wrong policies (Goldberg and Maggi, 1999). What is conspicuous about Latin America is the region’s inability to nurture big firms, especially if they are private-owned and/or export-oriented. There are of course more than a few relatively large private diversified groups —indeed, they constitute the backbone of the business community in most developing countries— but they mostly cater for the domestic market and are hardly market leaders in their lines of business. And there are also some large exporters, which may sometimes even claim a large share of the world market for their goods, but these are mostly State-owned concerns exploiting non-renewable mineral resources such as oil and copper.

One of the few Latin American manufacturing companies that can justifiably claim to be a world leader in its market is Brazil’s Embraer, which vies with Bombardier for the third place in the world ranking of

aircraft manufacturers —and is more profitable than its Canadian arch-rival. In this industry, success depends on sound design and manufacturing strength,¹ the price and operational costs of the aircraft, and the after-sales services provided to customers, who are relatively few in number but are spread around the world. Launch and research and development (R&D) costs, as well as survival risk, are high, but cost reductions over time from learning by doing are unusually large. In short, this is a global oligopolistic sector, where, not surprisingly, almost all the countries now offering world-class planes were already established in aviation by the end of World War I.

The purposes of this paper are two-fold. First, to add to the literature on the results of privatization by exploring the continuity in Embraer’s corporate history and determining to what extent the resources, skills and learning capabilities that have proved crucial in gaining market shares on world markets in the 1990s had been accumulated under public ownership and how the transfer of ownership has made it possible to turn them into sources of competitive advantage. Second, to contribute to the literature on the forms of State intervention supporting industrial transformation by looking at a concrete example in a high-tech industry (Embraer) to find out how this company interacts with the Brazilian government apparatus and the global economy, whether a successful Latin American

I am grateful to Roberto Carlos Bernardes, Takahiro Fujimoto, and various executives of Embraer for conversations on the subject matter of this paper and to Edmund Amman, Steve McGuire, Richard Moxon, Nelson Silva and Paulo Bastos Tigre, as well as the participants in the seminars of the Center for Brazilian Studies (Oxford), INSEAD, the National University of Singapore and three anonymous referees, for their comments and suggestions. The usual disclaimers apply: in particular, the opinions expressed do not reflect the position of the OECD, the OECD Development Centre, or the organization’s member States.

¹ The actual manufacture of an aircraft consists of three principal stages: i) fabrication of primary parts (metal sheets and plates, parts produced using computerized and non-computerized machines, and prefabricated parts); ii) assembly of major components, and iii) final installation of the aircraft’s various operating systems (such as wiring and electronics) in the structure.

company like this is any different from its competitors in more advanced industrial countries, and to what extent its dynamics can be successfully replicated in other industries and/or countries.

Having stated what this paper *is* about, it is equally important to specify what it is *not* about. First, it does not test quantitatively whether public intervention has been successful domestically, i.e., whether the benefits outweighed the costs, and internationally, i.e., whether that intervention served to increase competition in the world market for regional jets.² Second, and related with the foregoing, it does not seek to explain the circumstances in which governments support a domestic industry up to the point of risking external retaliation. The literature on strategic trade policy does both these things, using two separate approaches. As far as modeling is concerned, it would be interesting to update the results of Baldwin and Flam (1989), who

included Embraer in a 3-country study of the market for 30-40 seat commuter aircraft; as far as political science is concerned, Goldstein and McGuire (2002) analyse Embraer in parallel with its Canadian rival, using the framework developed in Busch (1999).

The next two sections present the history of the company, first as a State-owned entity (section II) and then in the period following privatization (section III), with the aim of identifying the specific focuses of business competence accounting for the rise of Embraer in the 1970s and 1980s, the reasons why difficulties subsequently arose, and the elements of continuity and change since 1994. These factors are then analysed in section IV, while the conclusions (section V) link this case study to the wider debate on the results of privatization, the role of the State in nurturing industrial transformation, and the contribution of large industrial enterprises to this process.

II

EMBRAER as a State-owned enterprise: 1969-1994

1. The origins

The Brazilian armed forces have had an active and ongoing interest in industrialization since the 19th century, and an industrialist-technocratic orientation developed within them in the 1940s (Sikkink, 1991). Influential military thinkers, such as General Carlos de Meira Mattos, developed a geostrategic theory of Brazil's place in the world system predicated on the country's success in achieving technological and industrial autonomy. As regards the aeronautical sector, concrete strategies involved a market reserve policy, State financing, and technological support to private firms through the Centro Tecnológico Aeroespacial (Aerospace Technology Centre) (CTA),³ established in

1945 at São José dos Campos, in the state of São Paulo, because of the availability of electrical power, a pleasant climate, and excellent topography (Campolina Diniz and Razavi, 1999). The CTA, an umbrella organization for aeronautical research modeled on the Massachusetts Institute of Technology, grew to become "probably the most advanced research [institution] among industrializing countries" (Dahlman and Frischtak, 1993, p. 437), and led to the establishment of sister institutions devoted to technical training (Instituto Tecnológico da Aeronáutica (Institute of Aeronautical Technology) (ITA)) and aerospace research (Instituto de Pesquisas Espaciais, INPE).

Various prototypes were built and some, such as the Paulistinha, entered into production. In the early 1960s the Brazilian economy ran out of steam and the ensuing deterioration in political stability eventually led to a coup in 1964 and to 21 years of military rule. While they fully accepted private ownership, the military directed greater efforts towards development planning and increased resources were allocated to science and technology. For reasons of national security, it was argued, Brazil could not afford to depend on imported aircraft and spare parts, nor could it allow the domestic manufacture of such strategic equipment to

² In 1991 the European Union blocked the takeover of De Havilland by the Franco-Italian ATR consortium on the grounds that the merged firm would have dominated the turbo-prop aircraft market. Bombardier eventually bought up its smaller Canadian rival. A formal analysis of the market for regional jets, which ATR has not entered, could determine whether Brazilian export subsidies, insofar as they prevented Bombardier from acquiring monopoly power, have increased consumer welfare.

³ In 1971 the CTA changed its name to Centro Técnico Aeroespacial (Technical Centre for Aerospace Activities).

be controlled by foreign companies. A revival of the alliance between public sector technicians and the military, which had been so important for the founding of State-owned enterprises in the 1940s and 1950s (Treat, 1983), led to the creation of Embraer (Empresa Brasileira de Aeronáutica – Brazilian Aeronautical Corporation) in 1969.⁴ Embraer was majority-owned by the government and inherited some mission-oriented activities from the CTA, especially the IPD-6504 project to produce a prototype of a twin-engine turbo-prop plane. Although the relationship between the company and the Ministry of Aeronautics remained very close, much bureaucratic red tape was avoided and a clear sense of corporate mission emerged.⁵ Not only did the Ministry manipulate the domestic market to Embraer's advantage,⁶ but it also concentrated in its hands most financial, fiscal, marketing, regulatory, and international responsibilities, which were transferred to Embraer. In addition, the firm was able to provide customers with alternate financing through BNDES (a State development bank), it benefited from FINEX (Fundo de Financiamento à Exportação – Export Finance Fund), an export support scheme administered by Banco do Brasil, and it was granted very generous tax holidays.⁷ Finally, in 1973 the Ministry of Foreign Affairs set up PNEMEM (Política Nacional de Exportação de Material

de Emprego Militar – National Military Materiel Export Policy), an *ad hoc* program to promote arms exports.

2. The rise

Production started in the 1970s in co-operation with foreign partners, under co-production and licensing arrangements designed to achieve rapid market penetration without excessive technological dependence. The need to limit the degree of vertical integration was recognized early on as a key imperative, in order to avoid the risk of excessive fragmentation of business operations that had doomed previous attempts at manufacturing aircraft in Brazil (Silva, 1998, p. 177).⁸ For the most part, Embraer shied away from manufacturing high-value, high-technology components and concentrated instead on designing the aircraft, producing fuselages, and assembling the final product: already in the 1970s it signed long-term purchase agreements with its major suppliers. Its two best-selling planes—the two-seat Tucano turbo-prop military trainer and the 19-seat non-pressurized twin-engine turbo-prop Bandeirante—were of national design, although more than half of the latter's value consisted of imported parts. Particularly fruitful collaboration with Italian partners led to the production of the Xavante jet trainer and ground-attack plane (under license from Aermacchi) and of the AMX (in joint venture with Aeritalia and Aermacchi), a subsonic (Mach 0.86) ground-attack aircraft for battlefield interdiction, close air support, and reconnaissance missions. Embraer also used the threat of a steep increase in import duties to successfully arm-twist foreign producers of general aviation aircraft into accepting an agreement whereby they had to provide the kits to assemble the final product in Brazil. Piper, which accepted this offer, increased its market share dramatically at the expense of its competitors, Beech and Cessna. Besides technical competence, all these partners provided Embraer with organizational know-how in series production.⁹ Within the Grupo Permanente

⁴ Other important defence companies in São José dos Campos which also spun off from CTA are Avibras (established in 1961) for the production of missiles and Engesa (set up in 1975) for the manufacture of tanks and armoured vehicles. In the 1980s, Avibras sold an estimated 66 Astros II multiple rocket launchers to Iraq and an unspecified number to Saudi Arabia, Bahrain, and Qatar. Total sales of the Astros II between 1982 and 1987 reached US\$ 1 billion. While Avibras has been highly dependent on imported components, Engesa developed its own design and technology capabilities and was more integrated with the local industrial base, especially auto parts manufacturers. See *Brazil Special Weapons Guide* at <http://www.fas.org/nuke/guide/brazil/index.html>.

⁵ The composition of the board of directors remained the same between 1969 and 1986 (Silva, 1998, p. 567).

⁶ The government and the Brazilian Armed Forces bought roughly a third of the Bandeirantes produced before 1980. They usually paid up-front and directly contributed to development expenditures.

⁷ All weapons-producing companies were exempted from duties on the import of inputs. Moreover, Embraer did not pay trade (ICM) and production (IPI) taxes. Furthermore, all Brazilian companies buying non-voting shares in Embraer could obtain a 1% rebate on corporate income tax. Federal agencies were also required to buy Brazilian aircraft provided their price was not more than 15% higher than that of competing imported goods. Finally, aircraft imports were subject to a 50% duty if a competing Brazilian product was available.

⁸ Insofar as poaching qualified staff from CTA/ITA reduced these institutions' pool of technical skills, however, Embraer paradoxically ended up with excessive internalization of R&D activities (Dagnino, 1993, p. 15).

⁹ Since the 1980s Embraer has been the sole subcontractor for the design and production of outboard flaps for the McDonnell Douglas MD-11, as well as for the production of the tail fin and wing tips for the Boeing 777. It also manufactures precision-machined parts for the 747 and 767.

de Mobilização Industrial (Standing Industrial Mobilization Group), which had brought together the Armed Forces and the Federation of São Paulo Industries since 1965, Embraer also developed close collaboration with Brazilian private firms, which supplied an increasing share of the final components. Half of Embraer's directors were also private sector executives (Silva, 1998, p. 256). Although equity links were relatively tenuous, aeronautics could thus be seen as a good example of the "triple alliance" between multinational corporations, local private entrepreneurs and State-owned enterprises which accounted for Brazil's rapid capital accumulation up to the early 1980s (Evans, 1979).

A strong focus on the export market was another priority set from the very beginning and proved crucial in offsetting development costs. It permitted longer production runs, stimulated customers to bring new ideas for technical change, and demanded exacting performance standards. In order to be certified on all major markets, Embraer's products included backup systems for major functions and appropriate safety margins for structural components. But the company correctly saw a niche for aircraft that could operate in the more difficult environment (harsh weather conditions, unprepared or unpaved airstrips, minimum ground support) of backward regions and countries and were easier and cheaper to maintain.¹⁰ The Bandeirante joined the fleets of a number of commuter airlines in the United States, accounting by 1982 for a third of the market for 10-20 seat commuters at the expense of American manufacturers (Dagnino, 1993, p. 9).¹¹ As they lacked finance and the capabilities to design a competitive product, rivals such as Beech and Fairchild were unable to respond to the introduction of the Bandeirante. The same logic was behind the production of military aircraft that were less sophisticated than those exported by advanced industrial countries. Thus, the Tucano, which combined low cost and innovative technical solutions (e.g., ejection seats and tandem pupil-trainer alignment), was sold to the British and French air forces and produced in Egypt under license. The *net* foreign exchange impact, however, was minor

and spillovers, if any, never reached a critical level, not least because of the obstacles to labour mobility posed by the dual nature (civil and military) of the technology developed and used by Embraer's technicians (Frischtak, 1992).

3. The crisis

While the debt crisis ended the period of low finance costs that had supported the rise of the Brazilian aerospace industry, the time of reckoning did not arrive for Embraer until the early 1990s. True, as the post-1982 economic crisis took its toll on Brazilian corporations, drastically reducing their profits and therefore their tax commitments, the mechanism designed to provide private equity finance to Embraer dried up and the government's stake in its ownership increased accordingly. Even so, in the peculiar framework of the post-1985 Brazilian democratic transition, the air force heads successfully resisted the cancellation of ministerial status and managed to protect the corresponding budget appropriation from the calls for fiscal discipline emanating from the Finance Ministry and the Bretton Woods institutions (Solingen, 1998).¹²

The EMB-120 Brasília, a 30-seat pressurized turbo-prop derived from the Bandeirante, was launched in 1985 and was supposed to become the firm's main aircraft.¹³ To design and produce this new plane, considerable investment was made in the areas of metal-to-metal bonding, chemical milling, and composite materials manufacturing (Frischtak, 1992). Thanks to its low operating costs, high dispatchability, and relatively high cruising speed, the Brasília met with initial success, capturing a third of the total market for 30-40 seat commuters (Baldwin and Flam, 1989, Table 1, p. 493).¹⁴ The world recession in the late 1980s and the Brazilian government's decision to discontinue FINEX, however, hit Embraer. Furthermore, the

¹⁰ While turboprops are less powerful than straight jets, they have wider wings and therefore require shorter runways. They also consume less fuel.

¹¹ Since brand recognition is an important aspect in the aircraft market, Embraer faced a huge initial obstacle because its name was unknown to travellers —and faith in a Brazilian-made plane was also very low (Silva, 1998, p. 375).

¹² In 1998, President Cardoso finally managed to set up a unified Defence Ministry headed by a civilian, in place of separate ministries run by each service: a change that had happened a decade or so earlier in the rest of South America.

¹³ The Xingu executive plane, the first pressurized aircraft produced by Embraer, proved a commercial failure but allowed the company to accumulate knowledge later used in developing the Brasília.

¹⁴ Simulation experiments suggest that export subsidies proved effective in shifting profits to Embraer (Baldwin and Flam, 1989). In 1982, questioning the fairness of subsidies granted for exports of the Bandeirante, Fairchild filed an ultimately-rejected complaint before the US International Trade Commission.

simultaneous attempt to develop a smaller derivative, the CBA-123, in cooperation with Argentina's *Fábrica Militar de Aviones (FAMA)* turned into a flop. While technically sophisticated, the plane was too expensive, not least because FAMA did not have the capacities required to cooperate with Embraer. Political motivations —to strengthen bilateral co-operation and build mutual trust with Argentina— primed over business considerations and, following the departure of Silva in 1986 to assume the presidency of Petrobras, Embraer could not resist them. Cash-flow management suffered: in an industry where long-term financing is indispensable to match extended development lead times, the company accumulated debt with a dangerously short time-profile. As explained by Frischtak (1992, p. 21), "the presence of specialized skills and endowments accumulated in the process of developing [the AMX and the Brasília...] presented Embraer's engineers with an 'opportunity' [to produce] an overdesigned [aircraft] (in the sense of not respecting market constraints: price)". Although Embraer had been able to build competitiveness and secure an important presence on overseas markets, the preeminence of engineering over marketing considerations does not surprise in view of the company's long-term reliance on public procurement. The military are customers who attach notoriously high importance to performance

requirements, and indeed it was in the context of the AMX project that Embraer installed a CAD/CAM computer-aided design system: the first company in Brazil to dispose of such technology (Sbragia and Terra, 1993, p. 3).

During the Collor and Franco administrations (1990-1994), political circumstances further hindered the launch of economic adjustment, privatization, and structural adjustment measures. The end of the Iran-Iraq war,¹⁵ the lower intensity of the Angola conflict, and the more aggressive stance of the United States government in supporting American producers, closed export markets for Embraer's military equipment. As delays mounted and orders were cancelled, the cost of managing the inventory of unsold planes rose. Some of Embraer's specialized suppliers, such as Engesa and Tecnasa, went bankrupt and the unemployment rate in São José dos Campos reached a level twice as high as that of the state of São Paulo as a whole (Broinizi Pereira, 1991).¹⁶ Despite efforts to diversify into services and other activities, in 1994 Embraer made a loss of US\$ 310 million, with sales of only US\$ 177 million (table 1) and its place in the ranking of Brazil's largest exporters fell to 38th. The return of Silva in 1991 could do little to reverse this decline, although it may have proved crucial in accelerating the subsequent privatization.

III

Embraer as a private company

1. The privatization operation

Despite the opposition of the military and a long strike in 1990, the worsening economic situation led the government in January 1992 to include Embraer in the list of State-owned enterprises to be sold. Following six failed attempts, in December 1994 a consortium

bought a controlling 45% stake for US\$ 89 million. The syndicate included American investors assembled by Wasserstein Perella, a New York investment boutique; Bozano Simonsen, one of Brazil's greatest financial conglomerates; and Previ and Sistel, the pension funds of the Banco do Brasil and Telebrás,

¹⁵ Nearly 40% of all Brazilian arms sales from 1985 to 1989 went to Iraq. Precise financial data on the importance of the Middle East market for Embraer are not available. The company received orders for the EMB-312 Tucano (110 from Egypt in 1983, 80 from Iraq in 1985, 50 from Iran in 1988, and 100 from Libya in 1986), the EMB-111 marine patrol aircraft (two from Algeria in 1982 and eight from Libya in 1986), and the EMB-121 Xingu (25 from Libya in 1986).

¹⁶ All Avibras programmes were put on hold in January 1990, when the company filed for bankruptcy. Its employee roster had fallen from 6,000 to 900 and the company had US\$ 90 million worth of unsold rockets. Avibras improved its financial health in the early 1990s, and signed a deal with NASA in 1994 for the joint development of a rocket programme. Engesa has been dismembered, with some of its companies sold to private interests, and with ordnance-related firms taken over by the State and integrated with Imbel (*Indústria de Material Bélico* – War Materiel Industry).

TABLE 1

Embraer: Main financial data
(in millions of US dollars)^a

	Average 1985-91	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Gross revenues	440	333	261	177	295	390	772	1,362	1,861	2,859	2,929
<i>Of which (per cent)</i>											
Domestic market	45	68	62	60	61	65	16	11	5	2	2
Export	55	32	38	40	39	35	84	89	95	98	98
<i>Of which (per cent)</i>											
Civil, incl. services	..	..	..	..	..	..	88	84	94	..	96
Defence	..	..	..	..	..	..	12	16	6	..	4
Net earnings	-62	-258	-116	-310	-253	-122	-31	114	227	353	467
Exports	..	..	..	..	193	264	634	1,173	1,692	2,377	2,617
Imports	..	..	..	..	147	220	469	881	1,178	1,249	1,723
Net balance	..	..	..	..	46	44	165	292	514	1,128	894
Investment	..	..	..	..	105	102	81	122	147	..	..
Research & development	117	24	35	55	53	75	72	146	..	..	..
Number of employees	..	..	..	6,087	4,319	3,849	4,494	6,737	8,302	10,334	10,900
Revenues per employee (thousands of US dollars)	..	..	..	29	68	101	172	242	247	302	269
Memorandum items (millions of constant 1996 dollars)											
Gross revenues	..	363	278	184	301	390	757	1,320	1,778	2,671	2,678
Exports	..	..	..	..	197	264	622	1,137	1,617	2,221	2,393
Imports	..	..	..	..	150	220	460	854	1,126	1,167	1,575
Research & development	..	26	37	57	54	75	71	142	..	..	..

Source: Embraer and MDIC/SACEX (trade balance data; 2000 and 2001 figures are January-November).

^a The amounts expressed in US dollars were obtained using the average or the final rate of exchange of the commercial dollar during the corresponding periods, depending upon whether they refer to the income statement or the balance sheet data, respectively.

respectively.¹⁷ The government injected new capital, assumed the debt (US\$ 700 million), and retained 6.8% of the company's stock, including a "golden share" carrying veto power over, among other things, change of control and corporate purpose and creation and alteration of defence programmes (regardless of whether or not the Brazilian government participates in such programmes).¹⁸ Clauses included in the

agreement limited foreign ownership to 40% and imposed a 6-month moratorium on layoffs.

The new owners hired an outside executive to chair the firm (although to this day three of the six executive vice-presidents are long-time Embraer executives), injected R\$ 413.6 million since 1996 to strengthen the company's equity base, and intensified efforts to improve the profile and conditions of its heavy debt burden. Production methods and processes were improved, including substantial investment in IT systems, leading in July 1997 to the award of ISO 9001 certification for quality in design, production, sales and service. A fully-owned finance company to help airlines to lease, rather than buy, new aircraft and trade in used ones was set up in the Cayman Islands. An international consultancy firm designed a new organizational chart, which instead of being built around strict functional specifications is structured around single projects to enhance flexibility, interaction, and autonomy.

Services such as site maintenance, transportation, catering, security and machinery upkeep were

¹⁷ In June 1995, after Wasserstein Perella's failure to pay the money it had pledged, Bozano Simonsen bought it out. Together, the three main shareholders account for 60% of Embraer's outstanding common stock.

¹⁸ The government has the right to designate one board member and has customarily chosen an Air Force general for such position. Until 2001, a second board member, also a general, was elected by the controlling shareholders. In 2000, the then Minister of Foreign Affairs, Lampreia, argued that the government-appointed representative could be a civilian, possibly a diplomat. He himself was appointed to the board in January 2001 upon his retirement from the government.

outsourced and, following the dismissal of 1,200 white-collar employees and 500 engineers and workers in June 1995 (Bernardes, 2000a, p. 292), the payroll fell to 3,849 workers at the end of 1996. In May 1996 workers agreed to wage cuts and shorter, but more flexible, weekly working hours to match a 10% cut in management salaries. Productivity rose: between 1990 and 1996 the time needed to make a Brasília was reduced from 16 months to nine.¹⁹ Four overseas support centres were created and in June 1995, as the first sign of its renewed confidence, Embraer signed a risk-sharing agreement with United Technologies-Sikorsky for the development and production of the fuel system, fuel tanks and landing gear of the S-92 19-seat, twin-engine, turbine-powered civilian helicopter. This deal, which is projected to account for 10% of Embraer's sales revenues, gave the company access to important technological advances in the field of new materials (Invar) and virtual design (CATIA).²⁰

2. The recovery

In 1989 Embraer decided to venture into what was then a niche market for jets plying regional routes—generally shorter than 1,000 kilometres and with an average travel time of approximately one hour—with a 50-seater. The ERJ-145²¹ project was stopped as the company sought new owners, but was accelerated after privatization as the new management deemed that the company's very survival hinged on its success. No one will be able to say for sure whether the leap into jet manufacturing was dictated by prestige motives—the desire of engineers to prove their ability at developing an even more sophisticated aircraft—or by careful attention to market signals. Market intelligence was only created as a formal corporate function in 1991. What is sure is that the development effort came as regional turbo-prop operators started upgrading to jets. As industry liberalization made major carriers increasingly dependent on the traffic generated outside major hubs, “feeder” carriers were pushed into extending the length of the “spokes” (the cities that are served by each hub)

and increasing the frequency of services. In addition, passengers started expressing a clear preference for jets, which are faster, more versatile, and cause less noise and vibration than turbo-props. The market for regional jets has thus grown by more than 50% between 1998 and 1999 and it is estimated that it will amount to at least US\$ 56 billion in the next decade (*Financial Times*, 2000). The already favourable prospects are made even rosier by the upcoming expiration of the 1980s agreements between airlines and unions in the United States. These specified that “feeder” carriers would not use planes with more than 70 seats, as the pilots of the big airlines feared that if they did jobs would shift to these lower-cost affiliates.

The ERJ-145 is lighter, cheaper to buy, and 15% less expensive to operate than its main rival, Bombardier's CRJ-200 (which goes slightly farther and faster and was introduced a few years earlier).²² Its superior engineering performance partly results from the incorporation of the turbofan technology developed for the AMX programme, while its price competitiveness owes something to the fact that 30% of its components are shared with the Brasília (including the nose section and cabin), as well as to lower labour costs. The new plane was presented at the 1996 Farnborough fair and secured its first contract with Continental Express, a subsidiary of Continental Airlines.²³ The 300th ERJ-145 was delivered to British Regional Airlines in September 2000, three years and eight months later. In comparison, it took almost seven years for Bombardier to deliver the same number of CRJ-200s. In 1998 the company rolled out the first prototype of the ERJ-135, a 37-passenger version of the ERJ-145, with which it shares 96% of its parts, thus lowering development costs and making the smaller plane more attractive to operators already committed to its larger counterpart.²⁴ Riding on this trend, Embraer returned to profitability in 1998 after 11 consecutive years in the red (table 1).²⁵

¹⁹ “Embraer's Little Jet Could Circle the Globe”, *Business Week*, 28 October 1996.

²⁰ Embraer uses CATIA (Computer Aided Three-Dimensional Interactive Application) as a standard geometric modeling platform to reengineer aircraft manufacturing development processes and improve integration of internal operations and relations with international partners.

²¹ Embraer planes, which were originally designated as EMB, gained the ERJ suffix in late 1997.

²² Nelson Silva, Managing Director, Embraer Europe, gave this information in a personal communication.

²³ The ERJ-145 is equipped with Rolls-Royce engines and with flight instruments, such as engine-indication instruments, crew-alert systems and digital flight control systems, produced by Honeywell.

²⁴ For instance, pilots need only to be trained on any aircraft within a family in order to be certified to fly all aircraft within that family, and the same ground support equipment can be utilized. A long-range version of the ERJ-145, operating on routes of up to 3,000 kilometres was also certified in 1998 and the first model of a 44-seat jet, the ERJ-140, was delivered in July 2001 to American Eagle.

²⁵ Operating results have been positive since 1996.

Employment has grown to over 10,000 people, and as the new workers are obviously younger and also increasingly female, the unionization rate has decreased substantially (from 48% to 28% between 1997 and 2000) (Embraer, 2000a, p. 79).

Exports now account for 90% of total sales and Embraer claims to lead unit sales in the world market for regional aircraft. The 1999 devaluation of the Brazilian real reduced the wage bill from 13% to 9.7% of production costs between 1997 and 1999 (Embraer, 2000a, p. 43), but at the same time it increased the financial costs of raising new debt, as well as servicing outstanding dollar-denominated liabilities, and reduced the dollar-value of the funds budgeted for government export programmes. This made it necessary for the company to intervene directly to help some of its customers to restructure their financial arrangements or, when this proved impossible, to provide special price adjustments. Embraer has also become Brazil's biggest exporter, accounting for 3.5% of total Brazilian sales abroad in 1999. Although it buys roughly half of its inputs abroad,²⁶ making it the country's second largest importer, it recorded a positive net balance of US\$ 984 million in January–November 2001. In 2001 Embraer made substantial gains by buying parts at the beginning of the year with a strong *real* and then selling whole planes later in the year with a dollar that gave more *reais* in return.

3. The challenges ahead

At the 1999 Paris air show Embraer announced it would build a new 70–108 seat platform, sharing approximately 80% of the existing components (but not the engine nor the wing design), which should nearly double its production volumes. Prior to the launch, Embraer held a number of advisory board meetings with potential customers, in order to incorporate their comments into the design of the aircraft.²⁷ The ERJ-170's maiden flight was on 19

February 2002 and the first deliveries will take place in late 2002, while the larger model will be available in 2004. Switzerland's Crossair, the largest regional airline in Europe, will be the first to exploit the technological and marketing advantages (including a prestige factor) associated with operating a brand-new aircraft.²⁸

The rapid increase in the backlog of orders presents substantial production challenges and, as the new family of aircraft enters into production, scheduling conflicts may emerge. Simply to deliver firmly-ordered planes (i.e., those for which a customer has made a contractual commitment accompanied by a down payment),²⁹ Embraer had to increase its monthly production capacity by 33% in the course of 2000 (Embraer, 2000a, p. 14). Besides regional jets, Embraer is also involved in a number of projects in defence, aerospace and general aviation (table 2). Construction work has started on a US\$ 150 million manufacturing and test site at Gavião Peixoto, a remote (some 280 kilometres northwest of São Paulo) and fog-free location that will enable airworthiness flights of high-speed military aircraft to be carried out in Brazil, instead of sending the planes to the Lake Moses base in the United States.

In November 1999, Aérospatiale-Matra, Dassault Aviation and Thomson-CSF each acquired a 5.5% stake in Embraer, and Snecma bought a further 3%, so that the company's value rose to nearly US\$ 1 billion. The French shares will not carry voting rights, but they will receive a 10% higher dividend and will allow the new partners to appoint two directors to the 11-member board. The French consortium outbid rival proposals by BAe and Lockheed Martin,³⁰ all anxious to clinch a deal to improve their chances of winning a possibly large order for the FX-BR modernization programme of the Brazilian Air Force, which is expected to demand that Embraer be given a key

²⁶ "Embraer quer exportar US\$ 9bi até 2005", *Folha de S. Paulo*, 5 November 2000.

²⁷ This input, for example, convinced Embraer to use two underwing engines, instead of the engines-on-the-tail design for the ERJ-145 and ERJ-135 series, thus simplifying aircraft servicing and boosting passenger comfort. This solution allows for full baggage and food loading on the side of the aircraft with its engine shut down. During ground servicing, the engine on the other side could continue to provide electrical power and air conditioning. This configuration should also help operators minimize turnaround times.

²⁸ Crossair chose Embraer over competing propositions from Fairchild-Dornier and Bombardier. According to a report by United States trade officers based in Zurich, the principal factors in favour of the Brazilian jet were the overall weight, the cabin configuration (a single-aisle layout with a 2+2 seat configuration, versus a single aisle with a 2+3 seat configuration on the Fairchild jet), a certain amount of existing acceptance of the product, and an aggressive pricing policy (Galambos, 2000).

²⁹ For the sale of regional aircraft, Embraer customarily receives a deposit upon signing of the purchase agreement and three progress payments (each equivalent to 5% of the sales price) 18, 12 and 6 months before scheduled delivery. The deposit and progress payments are generally non-refundable.

³⁰ "BAe eyes 20pc stake in Embraer", *The Daily Telegraph*, 14 August 1999.

TABLE 2

Embraer's project portfolio (excluding regional jets)

Name	Description and production volumes
AL-X	Developed under a contract with the Brazilian Air Force (FAB). Two prototypes have been flying since 1995. The maiden flight of the first pre-production aircraft took place in May 1999, and the first delivery was due in 2001. These aircraft, whose engine is twice as powerful as that of the standard Tucano, will be used for advanced pilot training and for defence operations in Amazonia.
AMX	The project resulted from 1977 Italian Air Force specifications for a small tactical fighter-bomber. Embraer joined the original Aeritalia/Aermacchi partnership in 1980. The first prototype flew in May 1984, production began in mid-1986, and the first aircraft of the 30-unit batch (21 for Italy, nine for Brazil) rolled out in Turin in March 1988. A second contract (Italy 59, Brazil 25) was signed in 1988 and production for the Brazilian Air Force started the following year. A third production lot was authorized in early 1992, with the first two-seater for the Brazilian Air Force delivered in May 1992.
AMX-T	An enhanced version of the AMX. Production began in Italy in late 1994, where it was halted in 1998 (after production of 110 single-seaters and 26 two-seaters), but it continues in Brazil. Approximately 190 aircraft are currently in operation in the Italian and Brazilian Air Forces. In September 1999 the AMX-T won a bid to supply Venezuela.
EMB-145 AEW&C and RS	Special versions of the ERJ-145 unveiled in May 1999. The AEW&C's advanced radar system, developed by Ericsson, has the capacity to carry out supervision, patrol and air traffic control missions. The RS was designed for remote surface measuring missions, environmental control and geological surveys. They are expected to play a key role in the US\$ 1.2 billion Amazon Surveillance System (SIVAM) being developed by Raytheon. The Greek Air Force has contracted Embraer to furnish four AEW&Cs, to be used in its airspace advance warning and control system within the NATO environment. An ERJ 135 aircraft for special transport and support missions was acquired under this same contract. Mexico also selected Embraer to supply an AEW&C and two RSs for maritime patrol duties.
EMB-314 Super Tucano	A single-engine turboprop aircraft used for pilot training and armed reconnaissance missions. Some 650 units of the first EMB 312 Tucano version have been produced and are in operation in 15 air forces around the world. Currently under development is the AL-X configuration (Light Attack Aircraft), equipped with a 1,600 SHP engine, advanced avionics and other technological advances, in both single- and twin-seat versions. In August 2001 the FAB signed a contract for 76 firm orders, with 23 additional options, to operate in basic/early advanced training missions, including weapons familiarization. Production started in February 2002.
International Space Station	An international project involving 13 OECD countries, Russia, and Brazil, which is responsible for assembling a platform connected to the outside of the International Space Station for performing experiments. The Agência Espacial Brasileira, which coordinates the Programa Nacional de Atividades Espaciais (PNAE), selected Embraer, which works with Boeing.
Legacy	A modified version of the ERJ-135, produced in executive, corporate shuttle, and VIP configurations, unveiled at the 2000 Farnborough Air Show. With the addition of two more fuel tanks, the executive version has a range of 3,200 nautical miles, enough to fly coast-to-coast across the United States or from Paris to the Middle East. The maiden flight was in March 2001 and Brazilian certification was received. As at March 2002, Embraer had received 25 firm orders and 50 options.

Source: Prepared by the author on the basis of data from Embraer and other sources.

role in the deal.³¹ Embraer and the French industrialists are expected to jointly promote the Mirage 2000 and Rafale combat aircraft, as well as the turbofans and electronic software produced by Snecma and Thomson-CSF.³² This

³¹ Between 75 and 150 aircraft will be needed before 2005 to replace aging F-5s and Mirages, for a total cost of as much as US\$ 6 billion. In August 1997 the Clinton administration cancelled a 20-year ban on sales of US high-technology weapons and aircraft to Latin America.

strategic alliance will increase Embraer's military aircraft sales, which currently account for 7% of total revenue,

³² In April 2002 Embraer and its French partners established the "Mirage 2000 BR Consortium" to market a new version of the Dassault Aviation Mirage 2000-5 Mk 2 in Latin America. The activities of the new consortium, in all domains, will be co-ordinated by Embraer, which will exercise the role of consortium leader. Analysis, development and testing activities for the Mirage 2000 BR will be jointly performed, either at Embraer's facilities in Brazil, or in France. The final assembly line will be at Embraer's new plant at Gavião Peixoto.

and its penetration into the Chinese market.³³ The decision was disputed by the Air Force commanders, who were offended at not being consulted over the government's decision to back the deal and were concerned that Embraer's association with Dassault will oblige them to buy French equipment. Following particularly serious

comments, the commander-in-chief was sacked by the government.³⁴ The Brazilian attorney general ruled that the sale does not constitute a change of control and that, insofar as it does not weaken the country's national interests, the government should not use its golden share to block the deal.

IV

Making sense of the evidence

In the course of its 25-year history as a State-owned enterprise, Embraer used licensing and co-operation agreements to bring new resources and knowledge into the firm and develop a strong core competence—system engineering for producing aircraft. But while this learning process was initially accompanied by progress on other fronts—such as organizational and marketing skills—by the mid-1980s engineering considerations overtook other criteria in the minds of senior management. Linkages between different parts of the company—and *a fortiori* between Brazil and the foreign affiliates that were supposed to provide advance warning of what customers were demanding—were weakened. Writing in 1992, when Embraer was facing the most severe crisis in its short life, Frischtak acknowledged its ability to exploit a niche in the world market, but singled out the lack of financial resources and market-driven technical solutions as the main bottlenecks preventing it from sustaining this success over the long run. He also identified co-operative development, production, and marketing agreements as key actions to achieve recovery.

1. Top management

The post-privatization recovery owes a lot to the actions implemented by the new management, which injected a new corporate strategy to ensure alignment between Embraer's core competences and market signals. Various forms of organizational changes have led to innovations and improved performance. The hierarchy

was flattened by cutting the number of managerial levels from ten to four, and performance-related remuneration was also introduced for all employees (Ghemawat, Herrero and Monteiro, 2000). Most importantly, a number of activities—such as strategic planning, total quality management, market intelligence, the *kaizen* workforce empowerment strategy, and the analysis of system performance feedback—were formalized and endogenized in the company's routines (Bernardes, 2000a).

The process of organizational change involves “vision”, learning by trial and feedback, and consensus-building (Fujimoto, 2000). All these elements have played a role, and although it is not easy to say how they rank, vision has probably been the most important. In 2001, Mauricio Botelho, Embraer's CEO since 1994, won the annual Laurels Award granted by the industry's leading magazine for “correctly reading the transformation of the commuter airline industry from turboprops to jets—an insight not gleaned by many established European and American manufacturers— and focusing on a single overarching objective: customer satisfaction” (*Aviation Week and Space Technology*, 2001). It is important to remember that at Embraer the formal creation of a market intelligence function came after, and not before, the launch of the ERJ family. Botelho, while a mechanical engineer by training, did not have any background in aerospace, and this may have made it easier to spot the transformation that was taking place in the industry.

The TOR (Transforming the Organization for Results) Programme launched in 1997 stands at the core of the learning process. In a phase of rapid growth, it

³³ In September 2000 Sichuan Airline received the first of the four ERJ-145s which it had ordered. This is the first Embraer plane to operate in China and also the first Embraer jet in the Southeast Asian market. In 2002 Embraer inaugurated a warehouse at Beijing International Airport.

³⁴ The Embraer controversy coincided with the government's attempt to take the management of the country's airport system away from the air force, in view of the system's possible privatization. See “De cavalo a burro”, *Veja*, 12 January 2000.

has aimed at integrating the development of new activities with constant review and improvement of operational processes. TOR includes corporate initiatives such as Integrated Technological Development (in the areas of production, product engineering, and information technology), emergency projects, data cleaning, and implementation of the ERP (Enterprise Resource Planning) system. As regards the personal development and professional training of its workforce, Embraer has implemented a Career and Salary Plan, an Industrial Integration Programme, and a Supplementary Retirement Plan. In 2000, the medical, hospital and social benefits offered to employees totalled R\$ 124 million: an 81% year-on-year increase. Finally, in 2000 the Profit Sharing Programme distributed R\$ 81 million, compared with R\$ 36.6 million in 1999 (Embraer, 2000b).

2. Location

São José dos Campos stands in the very heart of the Paraíba Valley and consists of 43 municipalities that host 430 exporters and produce 3% of Brazil's GDP. Multinational corporations such as Ericsson, Volkswagen, Ford and General Motors have established some of their largest plants worldwide here, and this has attracted additional investments in the component and electronics industries. Embraer was able to tap into these existing investments, playing the role of fulcrum and co-ordinator in a network of specialized Tier II suppliers (Bernardes, 2000b). While Embraer has not taken equity positions, some such firms were created in the mid-1990s by skilled technicians laid off by Embraer and other aerospace companies (table 3). A concerted effort to improve and deepen the articulation between different private and public partners is currently underway under the leadership of the São Paulo industrial federation (FIESP/CIESP), the national support programme for micro- and small enterprises of the Brazilian Enterprise Support Service (Serviço Brasileiro de Apoio às Empresas, Sebrae), and the local business associations (Associação Comercial e Industrial de São José dos Campos, ACI, and the Vale do Paraíba Chamber of Commerce). The ultimate goal of the Exporta Vale programme is to convert the region into Brazil's high-tech pole, with a strong presence of locally-groomed start-ups, and increase the number of exporting firms to 1,000 and the amount of foreign sales to US\$ 500 million by 2003.

Research and development activities —such as mechanical analysis, thermal tests, electro-magnetic

compatibility tests, and vacuum simulations— have been outsourced to the CTA. Within the framework of the Parceria para Inovação Tecnológica —Partnership for Technological Innovation (PITE) programme financed by FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo— Research Support Foundation of the state of São Paulo) to enhance collaboration between business and the academic world, Embraer and ITA have also launched a number of projects (table 4). However, according to Bernardes (2000b), the links with this and other local technology institutions, such as the Escola de Engenharia de São Carlos and the Escola Politécnica, are becoming looser as Embraer increasingly resorts to foreign technological institutions³⁵ and sets up its own technology schools to train personnel. The Engineering Specialization Programme in the field of Aeronautics, an initiative aimed at training newly graduated engineers and those with up to two years' experience, began in March 2001, and represents the first step towards establishing the Embraer Corporate University.

3. Partners

Several European and American aerospace component suppliers chipped in as risk-sharing partners for the ERJ-145, directly investing R\$ 64 million (of a total equal to R\$ 592.7 million, roughly US\$ 300 million) in cash and materials and providing liquidity *via* deferred payment provisions. First-tier suppliers (table 5) deliver whole systems —rather than discrete components— and take on the responsibility of managing the supply chain by sub-contracting discrete parts from lower-tier suppliers. In the case of the ERJ-170/190 family, development costs are even larger (about US\$ 850 million) and are by far the largest investment ever embarked upon by Embraer. No less than one-third of these costs will be contributed in cash by risk-sharing partners, who will be responsible for developing, producing, and delivering entire systems as well as major components. The whole process of selection and contracting of the main risk-sharing partners took a year from inception to completion. Requests for proposals were sent to 85 companies, of which 58 submitted tenders. Embraer will be responsible for the forward

³⁵ Transonic wind tunnel tests are conducted at the NLR National Aerospace Laboratory in the Netherlands and low speed trials at the Central Aerohydrodynamics Institute of Russia (TsAGI). These tests are primarily oriented towards examining the wing's performance in various segments of its intended flight envelope.

TABLE 3

Brazil: Some of the aerospace companies located in the Paraíba Valley

Company	Description
AEROSERV Serviços Aeronáuticos	Established as a micro-enterprise in 1999, operating inside the Embraer plant, it has rapidly become a small/medium-sized enterprise, with sales of US\$ 5 million in 2001. It now has its own plant in Jacareí and 200 employees, 80% of whom previously worked at Embraer.
AKROS	Founded in the early 1990s, specializes in structural analysis and mechanical parts design, product engineering, and manufacturing processes. It has also been active in the space programme, specifying dynamic and static testing, doing structural analysis, developing mechanical tools design, as well as preparing and reviewing technical documentation.
CENIC	Designs, produces and tests composite materials (carbon fibre) for mechanical parts and groups. Subcontractor (composite motor cases, nozzle parts) for the VLS-1 (satellite launching vehicle)
COMPSIS	Established in 1989, develops and produces numerically-controlled transport systems and testing devices for the auto industry. Its product development and production technologies meet the DOD-STD-2167 and ANSI/IEEE standards required for the acquisition, development or support of mission-critical software systems.
DIGICON	Started its activities in the area of transducers and processors for numerical control machinery. It also produces plotters and hard disks, as well as some CAD software. Produces mechanical components of structural parts and subsystems for satellites of INPE (National Space Research Institute) and assembles satellite solar panels, in collaboration with Germany's MBB.
ELEBRA	Produces, sells and distributes electronic communications equipment and electronic parts (radars, air traffic control consoles, antennae and high frequency transmitters) and provides industrial and civil engineering services. It reported sales of US\$ 15 million in 1999. It has now been bought by the NORCAL Group. In the framework of the CBERS (China-Brazil Earth Resources Satellite Cooperation) programme, it was responsible for the development of the on-board computers, the attitude and orbit control systems, and the design of UHF transmitters.
Gespi Aeronáutica	Established in 1974 to design and manufacture parts and components for Embraer. Since 1990, its aerospace division has developed other products, such as ground support equipment, aviation components cleaning equipment, and anti-haze rocket systems.
MECTRON	Founded by ITA graduates, it develops defence systems such as simulators for anti-tank missiles, electronic equipment for medical applications, and traffic control systems. In the aerospace field, it has developed electrical systems, electronic components and satellite control software, as well as some data collecting platforms. In 2001 the Italian Air Force awarded Mectron and Alenia a US\$ 45 million contract to equip its fleet of AMX aircraft with the SCP-01 radar.
N&N Informática e Automação	Develops customized software for image processing, process control, and product line automation. Customers include the Brazilian Air Force and Navy.
Qualitas Engenharia	Established in 1993 to develop management systems. Customers include Helibras and Embraer (development of applications to simulate pre- and post-sale relations with clients and customer support systems).
TECNASA	Founded by ITA graduates, specializes in electronic equipment for air navigation support, such as multimode air combat radar (for the AMX) and several countermeasures systems. For the MEC-B and CBERS projects, the company developed telemetry and telecontrol transponders and has defined specifications for several items at its design testing facilities.
Tectelcom Aeroespacial	Subsidiary of the Tectelcom group.

Source: Prepared by the author on the basis of company information and other sources.

fuselage, nose cone, centre fuselage II, and wing to fuselage fairings. Some foreign suppliers (such as Pilkington Aerospace, Parker Hanefin, and Sonaca) have already set up operations in Brazil, while others (such as Latécoère) are planning to do so (*Gazeta Mercantil*, 2000). Embraer also created ELEB, a joint

venture with Germany's Liebherr, to produce landing gear and hydraulic components, which in November 2000 was merged with Órbita Sistemas Aeroespaciais.

This strategy should not only reduce Embraer's development costs and risks, but also, by reducing the number of its suppliers and easing logistics, allow it to

TABLE 4

Brazil: Embraer joint projects financed by FAPESP

	Partner	Total budget (US\$)	Embraer share (per cent)	Time frame
Development of a DGPS system for real time aircraft positioning	INPE	218,117	0	March 2002-August 2003
Advanced applications of computational fluid mechanics to high-performance aircraft	ITA	1,255,000	8	January 2002-December 2004
Identification of aerospace stability and control derivatives	ITA	195,525	0	January 2002-June 2003
Development of aerodynamics testing technology for high-performance aircraft	ITA	948,479	0	June 2001-May 2004

Source: Fundação de Amparo a Pesquisa do Estado de São Paulo – Research Support Foundation of the State of São Paulo (FAPESP).

TABLE 5

Embraer's risk-sharing partners

	ERJ 145-135	ERJ 170-190
C&D (United States)	Cabin and cargo compartment interiors	Interiors
ENAER (Chile, State-owned)	Vertical fin, horizontal stabilizers and elevators	
GAMESA (Grupo Auxiliar Metalúrgico) (Spain)	Wings, engine nacelles and main landing-gear doors	Rear fuselage and the vertical and horizontal tail surfaces
General Electric (United States)		Turbofans, power plants and engine nacelles
Grimes Aerospace (United States)		Exterior and cockpit lighting
Hamilton Sundstrand (United States)		Tail core, auxiliary power unit, electrical systems, and air management system
Honeywell (United States)		Avionics systems
Kawasaki (Japan)		Wing stub, engine pylon, fixed landing and trailing edge assemblies, flaps, spoilers, and flight control surfaces of the wings
Latécoère (France)		Central fuselage sections
Liebherr (Germany)		Landing gear assemblies
SONACA (Société Nationale de Construction Aérospatiale) (Belgium, State-owned)	Portions of the central and rear fuselage, service, main and baggage doors, and engine pods	Moving parts for the wing leading edges, associated systems (actuators, de-icing gear), panels and sub-assemblies of the central fuselage section (including the wing attachment)

Source: Prepared by the author on the basis of company information and other sources.

concentrate on what it does better, i.e., designing, assembling, marketing and servicing the final aircraft.³⁶ The 38-month development schedule also aims at front-loading problem-solving measures and identifying interference problems that are very costly to solve if identified after the first full-scale assembly (Thomke and Fujimoto, 2000).³⁷ Engineers from the risk-sharing partners are sent to Brazil to work with their Embraer counterparts. The ERJ-190 Joint Definition Phase started in May 2001 with Kawasaki Heavy Industries, who will be responsible for manufacturing the wings. A new Virtual Reality Center, using virtual prototyping and large-scale visualization to reduce time-to-market for new aircraft, was also built. Embraer will use ENOVIAvpm (Virtual Product Model) and CATIA to generate digital mock-ups instead of physical models, and all Tier I suppliers have been asked to install these programmes in order to facilitate communication. The master electronic mock-up is centralized in Embraer's computers, and a new, dedicated EDI (Electronic Data Interchange) system, utilizing a safe satellite channel, has been set up for on-line updating of the data bank.

4. Public policies

Finally, public sector institutions such as the BNDES and FINEP (Financiadora de Estudos e Projetos – Finance Fund for Studies and Projects, part of the Ministry for Science and Technology) have actively supported this process, contributing 22% and 100% of the development costs of the ERJ-145/135 family and of the AL-X light-attack jet fighter, respectively. Embraer has also been the largest beneficiary of PDTI (Programa de Desenvolvimento Tecnológico Industrial – Industrial Technology Development Programme), a programme of the Ministry for Science and Technology which provides fresh funding and tax holidays to innovating firms.³⁸ A total of R\$ 142 million was assigned to Embraer in subsidies between 1993 and 2000.³⁹

Finamex (now BNDES-exim) allows BNDES to finance up to 100% of capital goods exports.⁴⁰ The Programa de Estímulo às Exportações – Export Promotion Programme (Proex), managed by the Banco do Brasil, is an “interest rate equalization programme”, which provides up to a 3.5% rebate on interest rates on loans to purchasers of exported Brazilian aircraft. Its aim is to offset the so-called *Custo Brasil*, i.e., the higher risk of doing business in the country due to a number of structural factors.

In this brutally competitive environment, the rivalry between Embraer and Bombardier has escalated from the enterprise to the national level. Table 6 summarizes the various stages in this dispute, which in May 2000 led the Canadian government to ask the WTO for permission to retaliate by taking compensatory measures and blocking US\$ 3.3 billion in goods and trade privileges over seven years – the largest trade confrontation Canada has engaged in, and one of the largest disputes in the history of the WTO. The Brazilian authorities maintained that the threat of sanctions “could make it difficult or even impossible for Brazil to seek alternatives which would prevent an irrational escalation of the dispute, with the capacity to set off counter-retaliations or other measures that would damage the economic and commercial relationship in different areas”. Since then, new WTO decisions have favoured Brazil, and Canada has indicated it will comply with the February 2002 ruling. The conclusions of a related study (Goldstein and McGuire, 2002) consider that policy-makers' ideas about the goals of trade policy go a long way towards explaining why this dispute drags on. For Brazil, its place as a leader of the developing world acts as a rallying point for government and firms alike. For Canada, the belief in a rules-based trading regime has led it to strongly oppose all violations, while insecurity about its competitiveness has led to a variety of government schemes to support firms in advanced sectors like aerospace. The study also argues that the WTO process has actually made resolution of the dispute more difficult by making it too costly for firms and countries to comply with the costs of losing.

³⁶ Embraer's programme for integrated product development is described in Araujo and da Cruz (2000).

³⁷ For instance, the use of computational fluid dynamics, digital mockups and virtual reality made it possible to simulate the introduction of winglets on the ERJ-170. Embraer decided to fit them, as they improve fuel consumption and climb capability, as well as Hot & High performance and obstacle clearance.

³⁸ For details of the functioning of the export promotion mechanism, see http://www.mct.gov.br/prog/empresa/pdti_pda/default.htm.

³⁹ Data obtained from http://www.mct.gov.br/prog/empresa/pdti_pda/pdti_res_20_12.htm.

⁴⁰ At the end of March 2000, a little over half of the outstanding orders were financed through the BNDES-exim programme (Embraer, 2000a, p. 12).

TABLE 6

Dispute between Brazil and Canada in the WTO on export credits for regional aircraft

Event	Date	Description
	January 1998	President Cardoso (Brazil) and Prime Minister Chrétien (Canada) appoint Special Envoys to recommend ways to resolve the dispute.
Special Envoys' Report	May 1998	Recommendation that the two governments should negotiate, within two months, a bilateral accord.
Canada's request to the WTO	July 1998	To examine whether the "interest equalization" component of Proex constitutes a subsidy within the meaning of Article 1 of the ASCM (Agreement on Subsidies and Countervailing Measures) and whether such subsidies contravene Article 3 of said Agreement.
Brazil's request to the WTO	July 1998	To examine export financing by the Export Development Corporation (EDC) and Industry Canada provided as support for research and development.
Appointment of panels	October 1998	The European Union and the United States reserved their right to participate in both panel proceedings as third parties.
DSB (Dispute Settlement Body) decision	March 1999	Brazil afforded Embraer an illegal subsidy and should withdraw it within 90 days.
DSB decision	April 1999	Canada should withdraw without delay some subsidy programmes supporting Bombardier. There is not sufficient cause to pursue Brazil's complaints about sub market rate financing by the EDC any further.
Appellate body decisions	August 1999	Upheld the initial findings in both cases.
Brazil's status report	November 1999	The interest rate equalization payments under Proex would be granted only to the extent that they would bring the net interest rate applicable to a transaction under that programme down to the appropriate international "benchmark" (and not below it, as had sometimes happened in the past).
Canada's status report	November 1999	The Canada Account financing of regional aircraft exports was discontinued immediately, and all existing obligations to disburse Technology Partnerships Canada (TPC) funds to that industry terminated.
Bilateral agreement	November 1999	Both countries filed notices requesting the reconvening of the original DSB panels to decide if the two countries have complied with the panel decisions.
Compliance panel ruling	May 2000	Proex-based sales (affecting some 900 Embraer aircraft) cannot proceed.
Appellate body decision	July 2000	Upheld the previous decision.
Arbitration panel decision	August 2000	Canada is entitled to impose tariffs on Brazilian goods worth US\$ 230 million per year until a bilateral accord is reached.
Interim decision	June 2001	The reformed Proex does not necessarily contravene international trade rules. In order for Brazil not to abuse the programme, financing must be at market rates plus a premium for risk; loans must be for no longer than 10 years; and the Proex loans must cover no more than 85 per cent of the purchase in question.
Interim ruling	October 2001	Canada asked for authorization to continue financing given to three separate Bombardier jet buyers (Air Wisconsin, Comair, and Air Nostrum).
DSB ruling	February 2002	The EDC's loan guarantees to three separate Bombardier jet buyers constituted a prohibited export subsidy and must be withdrawn within 90 days.

V

Conclusions

The transformation of Embraer has been described as “a saga from agony to glory” (*Exame*, 1999) and the company itself as a “scrappy, audacious and canny survivor” (*The New York Times*, 2000). Of course there are risks—in particular the heavy dependence on a small number of key customers (Continental Express, American Eagle and Crossair), the substantial amount of debt, and the results of entering into head-on competition with Airbus and Boeing in the bottom end of the full-size jet market—but the company appears to be in a strong position to resist most shocks.

Domestic and international circumstances obliged Brazil to change its approach to development. Privatization was one of these changes, and indeed it was the most important one in the case of Embraer, as the change of ownership forced it to adapt to the new scenario of rapid technological change, shorter product cycles, and shrinking public financial capabilities. Its success in an industry traditionally dominated by American and European producers shows that firms based in developing countries can adapt to changing circumstances and adverse conditions. To be successful in this, they must channel their resources into new value-generating activities through product development, the establishment of alliances, and strategic decision-making. Management skills must be seen as the ability to establish a network of linkages with various external groups in order to maximize the value of corporate resources.

How much continuity is there in this story? The company recovered after privatization because the new management introduced new forms of organizing design, production, financing and marketing and drastically reduced time-to-market. We should not forget, however, that the project for developing the ERJ-145, around which so much of Embraer's fortunes turns, started before the ownership transfer. The capacity to use alliances to bring new resources into the firm from external sources is undoubtedly another constant in the story of Embraer. Insofar as the company competes with bigger companies based in countries with a richer endowment of human capital and institutional infrastructure, Embraer necessarily had to base its development on the identification of a reduced number of core capabilities and their exploitation over

time. But the change in the relative bargaining power is eye-catching. In the 1970s Embraer benefited from the willingness of foreign assemblers to license technology to a still minor industry participant in order to enter the Brazilian and other Southern markets. Two decades later, its partners are to be found among second-tier aero-parts suppliers—some of them from OECD countries—eager to count on Embraer's credibility in order to enter the world market.⁴¹ The recent French partnership is also innovative since it allows Embraer to integrate its own production capabilities with its allies' marketing skills in Asia and the defence market.

All the large and successful companies in the world share the conviction that they must match their global rivals in technology, productivity and entrepreneurial drive. Is Embraer, which is one of the few Latin American global players, any different?⁴² Not at first sight, as it is just as aggressive, technologically savvy, and outward-looking as any other fast-growing corporation. In other words, it seems intuitively true that, regardless of their national origin, only firms capable of making a good return on investment in manufacturing facilities, marketing systems, and modern management methods can be successful (Dosi, Nelson and Winter, 2000). At the same time, however, “countries and organizations approach development and globalization in different ways” (Guillén, 2000, p. 16). The argument is usually justified: it pays to be diverse. What is striking, then, is that Embraer has been obliged to internalize some functions which, in most parts of the world, are not considered to be the direct responsibility of corporations. Thus, Embraer was able to boast a fully literate workforce only in Christmas 1997, when almost 150 employees passed the Brazilian second-level school certificate after attending a special corporate programme (Bernardes, 2000a), and in 2002,

⁴¹ Sonaca and Enaer were only established in 1978 and 1981, respectively, and for the former the collaboration with Embraer accounts for 55% of its 2001 turnover. Gamesa created its aeronautics division to participate in the ERJ-145 project, which accounts for 90% of its turnover.

⁴² The arguments presented in this paragraph would be stronger if I had explicitly compared (at least) Embraer and Bombardier to analyse how they built up and exploited their organizational capabilities.

the Instituto Embraer de Educação e Pesquisa (Embraer Educational and Research Institute) inaugurated a special school in São José dos Campos (the “Engineer Juarez Wanderley” high school).

Another special feature of Embraer is that, notwithstanding its substantial market share and satisfactory financial performance, it remains much smaller than its rivals such as Boeing, Airbus, and Bombardier (whose aerospace division is part of a much larger group). Size is important in an industry such as aerospace, where the ability to weather cyclical storms ensures that skilled personnel and expensive machinery are put to use even during a downturn (a problem Embraer already experienced in the early 1990s). The fact that the firm thrives as a stand-alone entity, rather than as a division of one of the diversified business groups that have traditionally dominated the corporate landscape in emerging markets, therefore reflects its ability to make the most of its resources.

Finally, there is another lesson that the Embraer story can teach policy-makers in industrializing countries. In its early phase as an infant player on the global commuter aircraft market, Embraer received government support through various instruments, including targeted technological promotion, financing and skill development. As non-economic objectives of national pride and prestige also played an important role, procurement decisions by the Ministry of Aeronautics were adapted to the long-term goal of enhancing indigenous technological accumulation. It is important to underline, however, that the government bodies supporting the company have changed rather dramatically in the 1990s. Whereas for many years the defenders of Embraer were mostly in the Air Force and in engineering circles, in the more recent past they are to be found in the BNDES national development bank and possibly, at Itamaraty, the Brazilian Ministry of Foreign Affairs.⁴³ While in the past Brazilians were proud of a domestic company capable of making aircraft, nowadays they are even

more pleased that Embraer is able to make profits. The military, however, show a much higher degree of admiration for the successes of the Brazilian aerospace program and somewhat deride Embraer’s export achievements by pointing to the high import content of its products.⁴⁴

In conclusion, then, Embraer has been able to influence the structure of the world market for regional jets, notably through export subsidies but more generally through the support it received from the Brazilian government. Insofar as high tariff protection and local content requirements have not played a major role in Brazilian policy for the aeronautics industry, it has not been too difficult to keep in line with WTO rules. The main exception, of course, is in the area of export subsidies, although it should be emphasized that the Proex export promotion system is a broad-based instrument, not targeted to any specific sector. While it is true that a more determined effort at reducing policy inconsistencies on the supply side would have reduced the need for an interest rate equalization programme (Bora, Lloyd and Pangestu, 2000), it is unlikely that Embraer could have survived in the real world while waiting for Brazil to reach this stage of development. Obviously, a more rigorous analysis is needed to quantify the net results of Proex’s aid, although the *prima facie* evidence is that it has allowed Embraer to be a price-maker in its market. A similar reasoning applies to the financing provided by BNDES, which proved crucial in supporting the management in the recovery phase, before Embraer gained access to the New York Stock Exchange. A more immediate lesson from the Brazil-Canada WTO saga, albeit perhaps one devoid of normative value, is that non-OECD countries are probably more easily caught out when practising strategic trade policies —possibly because they do not sit at the table where the negotiations to regulate export subsidies take place.

(Original: English)

⁴³ The Brazilian government has proposed the launching of a Mercosur initiative to increase the size of the regional air transport market and is considering removing domestic levies that currently favour imported aircraft (*O Estado de S. Paulo*, 22 September 2000).

⁴⁴ Interview with the Director-General of the Air Force’s R&D department (in *Tecnologia & Defesa*, 1999).

Bibliography

- Araujo, C. and J. L. Da Cruz (2000): *A view of the practice of integrated product development at EMBRAER*, paper presented at the 5th International Seminar on High Technology, Piracicaba, 5 October, mimeo.
- Aviation Week and Space Technology* (2001): 2000 Laurels awards, 7 May.
- Baldwin, R. and H. Flam (1989): Strategic trade policies in the market for 30-40 seat commuter aircraft, *Weltwirtschaftliches Archiv*, No. 125, Tübingen, J.C.B. Mohr.
- Bernardes, R. (2000a): *EMBRAER. Elos entre Estado e mercado*, São Paulo, Hucitec.
- _____ (2000b): *O arranjo produtivo da EMBRAER na região de São José dos Campos*, paper presented at the International Seminar "Arranjos e Sistemas Produtivos Locais e as Novas Políticas de Desenvolvimento Industrial e Tecnológico", Rio de Janeiro, 4 - 5 September, mimeo.
- Bora, B., P. Lloyd and M. Pangestu (2000): Industrial policy and the WTO, *World Economy*, vol. 23, No. 4, Oxford, U.K., Blackwell Publishers.
- Broinizi Pereira, M. (1991): Tiro pela culatra, in Fundação Perseu Abramo, *Teoria & debate*, No. 14.
- Busch, M. (1999): *Trade Warriors. States, Firms, and Strategic-Trade Policy in High-Technology Competition*, Cambridge, Massachusetts, Cambridge University Press.
- Business Week* (1996): EMBRAER's little jet could circle the globe, U.S.A., McGraw-Hill Companies, Inc., 28 October.
- Campolina Diniz, C. and M. Razavi (1999): São José dos Campos and Campinas, in A. Markusen, Y. S. Lee and S. DiGiovanna (eds.), *Second Tier Cities*, Minneapolis, University of Minnesota Press.
- Chandler, A., F. Amatori and T. Hikino (1997): *Big Business and the Wealth of Nations*, Cambridge, Massachusetts, Cambridge University Press.
- Dagnino, R. (1993): *Competitividade da indústria aeronáutica*, Brasília, Ministry of Science and Technology / Finance Fund for Studies and Projects (FINEP)/Programa de Apoio ao Desenvolvimento Científico e Tecnológico (PADCT).
- Dahlman, C. and C. Frischtak (1993): National systems supporting technical advance in industry: The Brazilian experience, in R. Nelson (ed.), *National Innovation Systems*, Oxford, U.K., Oxford University Press.
- Dosi, G., R. Nelson, and S. Winter (2000): Introduction: The Nature and Dynamics of Organizational Capabilities, in G. Dosi, R. Nelson, and S. Winter (eds.), *The Nature and Dynamics of Organizational Capabilities*, Oxford, U.K., Oxford University Press.
- EMBRAER (Brazilian Aircraft Corporation) (2000a): *Prospectus*, São João dos Campos, Brazil.
- _____ (2000b): *Balanco Social*, São João dos Campos, Brazil.
- Evans, P. (1979): *Dependent Development*, Princeton, New Jersey, Princeton University Press.
- Exame* (1999): Decolou!, 30 June.
- Financial Times* (2000): Regional jet market gains altitude over bigger rivals, London, 17 April.
- Folha de S. Paulo* (2000): Embraer quer exportar US\$ 9bi até 2005, São Paulo, 5 November (www.folha.vol.com.br/folha).
- Frischtak, C. (1992): *Learning, Technical Progress and Competitiveness in the Commuter Aircraft Industry: An Analysis of Embraer*, Industry series paper, No. 58, Washington, D.C., World Bank, Industry and Energy Department (IEN).
- Fujimoto, T. (2000): Evolution of manufacturing capabilities and *ex post* dynamic capabilities: A case of Toyota's final assembly operations, in G. Dosi, R. Nelson, and S. Winter (eds.), *The Nature and Dynamics of Organizational Capabilities*, Oxford, U.K., Oxford University Press.
- Galambos, S. (2000): Regional/business aircraft and parts: Switzerland, *Industry Sector Analysis Series*, Washington, D.C., U.S. Commercial Service and U.S. Department of State.
- Gazeta Mercantil* (2000): Forneceadores da Embraer abrem fábricas no país, 8 November (www.investnews.net).
- Ghemawat, P., G. Herrero and L. Monteiro (2000): EMBRAER: The global leader in regional jets, *Harvard Business School Case Studies*, Working paper, No. N9-701-006, Boston, Massachusetts, Harvard Business School Press.
- Goldberg, P. and G. Maggi (1999): Protection for sale: An empirical investigation, *The American Economic Review*, vol. 89, No. 6, Nashville, Tennessee, American Economic Association.
- Goldstein, A. and S. McGuire (2002): *The political economy of strategic trade policy and the Brazil-Canada export subsidies saga*, Paris, Organisation for Economic Co-operation and Development (OECD), Development Centre, mimeo.
- Guillén, M. (2000): *Diversity in Globalization. Organizational Change in Argentina, South Korea and Spain*, Occasional papers, No. 6, Princeton, New Jersey, Princeton University, School of Social Science.
- O Estado de S.Paulo* (2000): Maciel sugere que Embraer cresça no Mercosul, São Paulo, 22 September.
- Ramamurti, R. (1987): *State-Owned Enterprises in High Technology Industries*, New York, Praeger.
- Sbragia, R. and J. Terra (1993): EMBRAER: trajetória de uma empresa de alta tecnologia brasileira, *Cadernos de gestão tecnológica*, No.8, São Paulo, Science and Technology Policy and Management Unit (NPGCT)/ University of São Paulo.
- Sikkink, K. (1991): *Ideas and Institutions: Developmentalism in Brazil and Argentina*, New York, Cornell University Press.
- Silva, O. (1998): *A decolagem de um sonho. A história da criação da EMBRAER*, São Paulo, Lemos.
- Solingen, E. (1993): Macropolitical consensus and lateral autonomy in industrial policy: The nuclear sector in Brazil and Argentina, *International Organization*, vol. 47, No. 2, Cambridge, Massachusetts, The MIT Press.
- _____ (1998): Growth and decline of the military-industrial complex: The cases of Argentina and Brazil, *International Politics*, vol. 35, No. 1.
- Tecnologia & Defesa* (1999): Dificil criar: fácil de desaparecer, No. 82, São Paulo.
- The Daily Telegraph* (1999): BAe eyes 20pc stake in Embraer, U.K., 14 August (www.dailytelegraph.co.uk).
- The New York Times* (2000): Brazil's hot commodity? Not coffee or soccer, New York, 31 December.
- Thomke, S. and T. Fujimoto (2000): The effect of 'front-loading' problem-solving on product development performance, *Journal of Product Innovation Management*, vol. 17, No. 1.
- Trebat, T. J. (1983): *Brazil's State-Owned Enterprises: A Case Study of the State as Entrepreneur*, Cambridge, Massachusetts, Cambridge University Press.
- Veja* (2000): De cavalo a burro, 12 January.



Education and the labor *market in Latin America:* confronting globalization

Beverley Carlson

*Division of Production,
Productivity and Management,
ECLAC
bcarlson@eclac.cl*

This article analyses the challenges facing education in Latin America and its relation to labor market performance, against a background of severe long-standing income and social inequalities and now also the effects of globalization. It examines the degree to which higher educational attainment results in positive labor market outcomes (employment and earnings) and finds that, in spite of very large investments in education reform, the Latin American countries are falling behind their global competitors. Calculations made by the author of the education premiums in selected countries, by educational attainment and gender, show that labor market returns to education are positive or mixed but, in the case of unemployment, are often negative. The article suggests policies that could provide a more competitive labor force and more prepared human capital, and concludes with concrete proposals for confronting globalization.

I

Introduction

“Beginning in the mid-1970s, a new set of priorities began to influence education policy discourse around the world. The new priorities valued the development of individual, national and global competitiveness.... In education, this translated into a greater priority accorded to quality.... As a result of the new education priorities, policy makers have initiated reforms during the past twenty years that aim to achieve a better link between the products of the education system and the needs of the economy...”

(REIMERS, ed., 2000).

Education in Latin America has four major problem areas. The **level** of educational attainment has increased more slowly than in other regions in recent decades as a result of deficiencies in the scope of secondary education, with children leaving the school system early, especially before completion of their secondary education. The **disparity** in educational attainment is high because, although younger generations receive more education than older ones, within each generation there are major income, social class and location differences in educational achievement. The **returns** to education are low for the first years of school and non-university post-secondary education, but high for university education. They are also substantially lower in rural than in urban areas. Educational **quality** is much lower for students from low-income families, most of whom attend public schools and do not have access to better quality higher education. In short, education is profoundly stratified in Latin America: an effect that is perpetuating, rather than correcting, income inequalities.

The increase in recent decades in the average number of years of schooling of youth, as compared to their parents, has not sufficiently improved the opportunities of young people from poor social strata, who earn 30% to 40% less than youths with the same level of education but coming from households where parents have higher incomes (ECLAC, 1998). Countries, and particularly those with economies that need to become more knowledge-based, cannot afford in the

long run to exclude a large part of their population from access to quality education and learning resources. Furthermore, inequalities in societies raise problems of mutual mistrust in the workplace and in society as a whole. At the heart of the political debate is a growing awareness that the global changes promising to enhance prosperity also risk increasing inequalities and dividing societies (CERI (Centre for Educational Research and Innovation), 2001a). More and better higher education is a necessary but not sufficient condition for faster and more equitable growth. Macro stability and meso and micro remedial policy actions, together with institution-building efforts, are also needed if Latin American countries are to attain a better and socially more equitable long-term performance.

This article examines two pivotal education and labor market policy and performance questions. One, the degree to which countries in the Latin American region are catching up or falling behind their global competitors, in both developing and industrial regions, in the formation of human capital, with particular reference to upper secondary and technical education. Two, the degree to which higher educational attainment in Latin American countries results in positive labor market outcomes¹ including labor force participation, employment, unemployment, and earnings. It finds that, in spite of very large investments in education reform, Latin American countries are falling behind their global

□ This article is based on a text prepared as a support paper for the ECLAC document entitled *Globalization and development* (LC/G.2157 (SES.29/3)) presented at the 29th session of the Commission, held at Brasilia from 6-10 May 2002.

¹ It should be noted that the expression “labour market outcomes of education” is the standard and internationally accepted OECD terminology. It implies of course a causal relationship, which we can agree exists, but this in no sense means that the “labour market outcomes” discussed here are due only to education. As noted in the paper, performance in the labour market is subject to many factors, of which education is one of the most important.

competitors in these key educational areas and that the pattern of positive labor market returns to education, which is fairly consistent throughout the OECD countries, is much more mixed in the Latin American countries and in a number of cases is even negative. In order to examine these questions, the author calculates education premiums for selected Latin American countries, using data from two rounds of national household surveys, the first between 1993 and 1996 and the second in 1999 (Carlson, 2001). Finally, policy proposals regarding these questions and the means for achieving them are made.

The effects of globalization further complicate the already complex and fragile relationship between the supply and demand for labor within countries. Domestic labor markets are being increasingly buffeted by the growing influence of multinational enterprises. The impact of their highly centralized corporate decisions is felt simultaneously in many countries, especially in the case of job cuts. The massive job losses throughout 2001 in Latin American countries are living proof of the increasing exposure of domestic labor markets to international shocks and globalized decisions (Carlson, 2002). The point that this article makes is that obtaining more and better education is one of the most important actions that workers can take to prepare themselves to confront globalization. While this is not in itself sufficient, it is becoming more and more necessary.

Confronting globalization means realizing where job creation has taken place. As a result of a series of factors identified by Reinhardt and Peres (2000), employment growth in the last 30 years in Latin America has steadily been in services, which have accounted for 95% of net job creation in the region.² Overall, the employment share of the services sector exceeded 54% by 1997, with almost all of this increase

being at the expense of agriculture, while industry's share fell marginally. However, Katz points out that, due to the changing industrial production structure, the knowledge content of the jobs has declined, at least in that part that deals with engineering and innovation (Katz, 2000). While this may be true, multinational employers are at the same time placing more emphasis on quality labor, meaning more emphasis on basic competencies (reading, writing, communication and problem-solving skills).

Confronting globalization also means understanding the demands that the growing information and communications technology (ICT) and banking sectors will place on the supply and demand for labor. It means that workers must prepare themselves by building up competencies in order to be able to get and hold a job, or get a new job as soon as possible when job cuts take place and the demand for labor changes with the introduction of new technology. Innovation in ICT has accelerated to the point that a new technological generation is introduced every 18 months. This means that today, jobs may disappear as quickly as in one-and-a-half years, being replaced by others involving the latest technology. Another way to look at it is that for countries to compete actively for investment in ICT business they need to have highly skilled human capital that can adapt to quickly changing technology, as well as semi-skilled human capital of sufficient quality to produce good products reliably. The detailed ramifications of the effects of globalization on education and the labor market are beyond the scope of this article. The point being made here is simply that the globalizing economy places more importance than ever on education, training and basic competencies.

Finally, in order to understand the dynamics of education and the labor market in an increasingly globalized context and propose policies to deal with these problems, we need more and better quality data and also new data, especially about the Latin American and Caribbean countries. Too much of our information is based on research in the United States and the rest of the industrialized world. Latin American public and private research needs to invest more, modernize its instruments and broaden its methodologies.

² Reinhardt and Peres (2000), building on the work of Weller (2000), show that 70% of the new jobs were created in commerce, hotels and restaurants, in social, community and personal services, in informal micro- and small enterprises where productivity and wages are generally lower than in industry, and in other services such as telecommunications and banking.

II

Catching up or falling behind in human capital formation

The human capital component of the productivity and global competitiveness equation has to be seen from a number of perspectives. One of the main constraints in Latin America has been its insufficient supply of educated, trained youth entering the workforce. First, upper secondary graduation rates need to be raised further. Second, the quality of public education needs to be dramatically improved in order for countries and individuals to compete on an equitable basis. Third, post-secondary education has to be more specifically related to the needs of the job market and national productivity. In order for countries to compete in the global economy, especially where technical innovation is concerned, Latin American universities need to be able to supply a greater number of trained scientists and engineers, especially in those fields related to the current patterns of production specialization that are evolving in several sub-regions.

Economic development is increasingly linked to a nation's ability to acquire technical knowledge, and the process of globalization is speeding up this trend. Comparative advantages are coming more and more from technical innovation and the competitive use of knowledge in those areas in which countries excel. The proportion of goods with a medium-high and high level of technology content in international trade has gone up from 33% in 1976 to 54% in 1996 (World Bank, 1999), although trade data classifications do not reflect the declining content of the engineering component in automobile manufacturing in some countries where much of the local technological content has been replaced by outside "on-line" engineering. This is especially the case with assembly operations (*maquila*) in the automobile industry in Mexico. Recent ECLAC studies have shown that the current pattern of production specialization and trade involves *less* (rather than more) domestic knowledge content. Progressing to knowledge-based societies would therefore require a significant reversal of these patterns, towards more domestic engineering and knowledge content throughout the production structure, particularly in the rapidly expanding natural resource-based export sector (Katz, 2000).

1. Lagging competitiveness in the provision of skilled manpower

Most countries in the Latin American and Caribbean region are falling behind their main global competitors in providing the semi-skilled and highly skilled manpower that is essential for raising their productivity and maintaining a competitive edge in the global market. The last two decades of the twentieth century have seen the newly-industrializing Asian economies (NIAE)—China, Hong Kong, Malaysia, Singapore, South Korea and Thailand—overtake the Latin American region both in secondary and tertiary education. At the same time most of the OECD countries are rapidly widening the gap with the Latin American region.³ Not only are the Latin American countries showing smaller secondary and tertiary enrollment ratios than their competitors but these ratios are also rising at a much slower pace. The Latin American skill-gap is growing rapidly, and even the developing countries of East and Southeast Asia as a whole have now overtaken the Latin American region at the secondary level. At the present rate they will overtake the Latin American region even in higher education by the end of the first quarter of the 21st century (table 1).

In most OECD countries, almost everyone now goes on to upper secondary education and the great majority, nearly 80%, complete it, with Japan at 95% heading the list. In Latin America and the Caribbean, in contrast, only half go on to upper secondary education and, on average, less than a third complete it. Even in the NIAE countries, nearly 75% go on to upper secondary education. It is upper secondary education and technical education that provide the key to skilled jobs and commensurate wages for the great majority of students

³ It should be noted, however, that some Latin American and Caribbean countries have higher enrollment rates than the worst-performing OECD countries. Turkey, at both the secondary and tertiary levels, and Hungary and the Czech Republic at the tertiary level still appear to do worse than, for example, Chile, Argentina, etc. However, all the countries in the region are below all the other OECD countries at both the secondary and tertiary educational levels.

TABLE 1

Selected country groups: Gross enrollment in secondary and tertiary education, 1985 to 1997^a

Country groups	Gross enrollment ratios					
	Secondary education			Tertiary education		
	1985	1997	Increase in enrollment ratios (in % points)	1985	1997	Increase in enrollment ratios (in % points)
Latin America and the Caribbean	50.2	62.2	12.0	15.8	19.4	3.6
OECD countries	92.3	108.0	15.7	39.3	61.1	21.8
NIAE countries ^b	57.3	73.1	15.8	14.8	30.5	15.7
East and Southeast Asia ^c	41.5	66.3	24.8	5.4	10.8	5.4

Source: Calculated by the author on the basis of data from UNESCO (2000a).

^a 1997 is the latest year for which internationally standardized regional enrollment ratios can be calculated.

^b NIAE: Newly Industrialized Asian Economies (China, Hong Kong, Malaysia, Singapore, South Korea and Thailand).

^c Developing countries only, including the NIAE countries.

TABLE 2

Selected country groups: human capital formation and educational performance, 1998

Country groups	Duration of education		Tertiary education in natural sciences, engineering and agriculture, as % of total tertiary	
	Compulsory (years)	Secondary (years)	Enrollment	Graduates
	Latin America and the Caribbean	7.1	5.1	26.0	26.6
OECD countries	9.8	6.4	27.2	25.2
NIAE countries ^a	7.7	6.3	36.0	38.2
East and Southeast Asia ^b	7.3	6.1	31.6	32.2

Source: Calculated by the author on the basis of data from UNESCO (2000 a and b).

^a NIAE: Newly Industrialized Asian Economies (China, Hong Kong, Malaysia, Singapore, South Korea and Thailand).

^b Developing countries only, including the NIAE countries.

who do not go on to university, and it is this educational level that is inadequately provided in our region.

The duration of secondary education is also shorter in the Latin America and Caribbean region than in the other competing groups by between a year and a year-and-a-half, which makes a significant difference in the amount of knowledge that can be imparted at that level. The duration of compulsory education in the region is also significantly shorter, and in many countries in the region these apparent compulsory school years still consist mainly of only half-days. The proportion of tertiary students and graduates in Latin America and the Caribbean in the critical fields of engineering, natural sciences and agriculture is also considerably lower than in the Asian groups, although it is

comparable with the average proportion registered in the OECD countries (table 2).

2. Basic competencies for the workplace

"An untrained worker may have valuable talents, but those talents must be certified by the 'educational establishment' before a company can afford to use them"

(AKERLOF, 1970).

There is a growing recognition of the need to measure skill and human capital more meaningfully than by merely taking the number of years of educational attainment or fairly broad classifications of levels of educational attainment, which measure duration but not

content or quality.⁴ More than 20 countries have tried to define and measure acquired competencies through their participation in the International Adult Literacy Survey, which has collected high-quality internationally comparable information on the level and distribution of basic competencies in the adult population. The functional adult literacy data from these countries, which account for more than 50% of the world's gross domestic product, make an important contribution to an understanding of the demand and supply of skills in the current global, knowledge-based economy (OECD, 2000a).

These measurements show very dramatically that in every country surveyed low functional adult literacy is a much larger problem than previously assumed, at a time of increasing skill demands in the labor market. They also show that, across countries, higher levels of literacy skills in the workforce are associated with larger proportions of knowledge jobs in the economy. It should be noted that the concept of literacy now includes not only knowing how to read and write but also the basic skills needed for understanding and using information contained in texts and documents, carrying out arithmetical operations, and communication and problem-solving. The basic literacy skills positively influence the probability of being in a highly-skilled white-collar position and negatively affect the probability of being unemployed or occupying a blue-collar position, and this conclusion is supported by evidence from the study of occupational categories by industrial sectors. The impact of improved functional literacy, especially in highly-skilled white-collar occupations, differs according to the level of educational attainment of the individuals concerned, and the benefits accruing from improved literacy skills are even higher for workers with tertiary education than those with only secondary education.

Of the factors studied in the analysis of wages, educational attainment is one of the most important determinants of earnings in most countries, even when variations in the other factors are held constant. Literacy proficiency also has a substantial effect on earnings in many of the countries studied, although there are major differences among countries in the strength of these relationships. The effect of literacy skills on earnings depends in part on the differences in levels of education,

but in many countries literacy also has an independent, net effect on wages. There are large differences between countries in how much their labor markets reward education and how much they pay for skills and experience, as these rewards are amplified or attenuated by the relative conditions of supply and demand.

In this respect, the experience of Chile, as the first Latin American country to measure itself and publish its results, is sobering and shows the very large gap in basic competencies as well as the large internal inequalities that will need to be corrected. The message for the present and the future is the need to improve the quality and equity of public education and to inculcate the habit of lifelong learning in adults' working and private lives (Bravo and Contreras, 2001).

A number of countries have tried to combine basic competencies in the workplace with formal educational programmes. Australia has introduced national competence standards and Canada has developed a method for the assessment of prior learning and the setting of standards, both with the joint involvement of the educational community, business, labor and the federal and state governments. Prior learning assessments are based on the assumption that the acquisition of knowledge and skills may take place not only through formal education courses but also through work experience, community and volunteer work, and independent study. Adults who demonstrate that they have achieved a well-defined skill level may be given formal credits that will help them to enroll on a school or college course, or a certificate that can be used in the labor market.

France has established Assessment Centres and the United Kingdom has designed a system of National Vocational Qualifications (OECD, 1996). The UK system has had a profound impact on competence assessment and certification methods, covering not only the traditional fields of vocational training but also broad sections of the labor market and the working population. However, the OECD analysis used in this article still relies on the ISCED levels of educational attainment for the purpose of making international comparisons.

Attention to the incoming cohorts of workers constitutes an important planning priority for the future. The first global survey of the key skills of teenagers recently released by the OECD compares more than 250,000 15-year-olds in 32 countries (27 OECD countries) as regards their knowledge of reading, mathematics and science. Mexico and Brazil participated in this first Programme for International Student Assessment (PISA) and ranked last in all three areas, and significantly below

⁴ The main classification is the International Standard Classification of Education (ISCED-97), which is the internationally recognized standard for classifying levels of educational attainment (see table 7 and footnotes 6 and 7).

all other countries in mathematics and science, even though three of the countries participating (Poland, Russia and Latvia) have comparable levels of per capita GDP (OECD, 2001a). These outcomes reconfirm the need to better educate youth in the region, and point to the deficient areas. At the same time, it is important to undertake further comparative research and try to identify the relative importance of the various causes of poor performance, particularly in the case of countries with similar levels of educational investment producing very different levels of performance.

III

Secondary and higher education policies and the labor market: what is to be done?

The main challenge for the Latin American and Caribbean countries is to keep children in school up to their upper secondary graduation. Raising retention rates in the upper secondary level will have the greatest impact in the short term. Low transition rates from primary to lower secondary and lower secondary to upper secondary are the biggest problems currently confronting public education. The transition from school to work and the labor force participation of young people 15 to 29 years of age, both while they continue their education and after completion of their initial education, are also important issues in Latin American countries. Rising skill requirements of labor markets, an increase in unemployment in recent years and higher economic expectations of individuals and societies have given rise to growing regional concern with the need to put more emphasis on technical and vocational programmes in upper secondary and higher education.

1. Vocational and work-based training

Increasingly, upper secondary education is seen to be as much a route to obtaining skilled and well-paid employment as getting a place in a university. Rising skill demands are making an upper secondary qualification the minimum credential for successful labor market entry. The average situation in the OECD is that half of upper secondary students are now

In addition to preparing future workers, the public and private sectors need to be attentive to the retraining and productivity of older workers already in the labor force. The ability of older workers to learn new skills is an important determinant of their continuing productivity, and especially their ability to keep up with modernizing industrial and occupational structures. This is a critical labor market issue when one takes into account the significantly increasing longevity and demographic aging of the population in Latin America.

attending vocational technical or apprenticeship programmes, although Spain and Portugal, as well as Japan, do not follow this pattern (table 3). In the Latin American countries the main emphasis is still on general educational programmes. The exceptions are Chile and Argentina, where over 40% of upper secondary students attend technical and vocational courses (a higher figure than that for Spain, Portugal and Japan). Upper secondary technical education has important historical and cultural foundations, as may be seen from the similarity between Latin American countries and the two countries of the Iberian peninsula. In the OECD countries, an average of one-sixth of upper secondary students taking technical/vocational courses or serving apprenticeships receive training that is both school-based and work-based, although once again there are important exceptions like the United Kingdom, Japan and Portugal, where this category does not exist at all, or Spain, where it is very small.

One of the best examples of training for the labor market is the German dual apprenticeship system. Developing dual-system apprenticeship programmes at the upper secondary level that are suitably adapted to national circumstances could be a concrete way of expanding technical education in Latin American countries and improving the supply of the necessary skilled labor in the region. In Latin America, however, the dual-system apprenticeship programmes that are common in Germany, Switzerland and the Netherlands,

TABLE 3

Latin America and selected OECD countries: Enrollment in technical and vocational programmes at the upper secondary level (1999)^a

Country	Upper secondary graduates ^b	Distribution of enrollment at upper secondary level, by programme orientation		
		General	Technical/ vocational	Of which part work-based
Japan	95	74	26	c
Germany ^d	92	35	65	49
Netherlands	92	33	67	20
United Kingdom	..	33	67	c
Switzerland	83	35	65	57
OECD country mean	79	49	51	16
United States	78	..	..	..
Spain	73	69	31	5
Portugal	..	75	25	c
Peru ^d	57	76	24	0
Chile ^d	56	58	42	1
Brazil ^{d,e}	44	70	30	..
Argentina ^d	40	57	43	0
Uruguay ^d	..	81	19	..
Mexico	31	86	14	c
Paraguay ^d	31	84	16	c

Source: Calculated by the author on the basis of OECD (2000b and 2001b).

^a Includes public and private institutions and full-time and part-time students.

^b Upper secondary graduates as a percentage of typical age of graduation.

^c Not applicable.

^d 1998.

^e Brazil has a three-year single level secondary programme.

with their highly developed guild systems, hardly appear to exist except in Chile.⁵ Experimentation in this field should be encouraged in search of suitable "localized" ways of adapting the apprentice system to the idiosyncrasies of the Latin American societies. In Chile, for example, the lack of employers' insurance to cover accidents suffered by students in on-the-job work-study programmes is a major barrier to the willingness of firms to participate in such programmes, especially for small and medium-sized enterprises, which have the potential to offer many more work-study opportunities. A simple agreement establishing a government-backed insurance scheme would be an enormous step forward.

2. Raising retention rates in upper secondary education

In Latin America, the proportion of students who survive to graduate from upper secondary education is

⁵ For a comprehensive evaluation of Chile's dual-system experience, see Bravo and others (2001).

rarely more than half of the similar survival rate in the OECD countries, and they also spend fewer years being trained at that level. Each country will decide its own education priorities, but upper secondary education should be one of the priority concerns of countries that wish to be competitive in the global economy by raising national skill levels in a way that will not increase -and might even decrease- the overall inequality of the educational systems of the region. The Latin American countries are falling behind in the critical task of expanding upper secondary education and non-university tertiary education, which is the main means of producing a skilled labor force to man the industrial, agricultural and service sectors. It goes without saying that all individuals should have an equal opportunity to pursue education as far as they wish and that access to a full secondary education should be a basic right for all, as it already is in industrialized countries.

The Argentine educational situation neatly sums up the challenge. Argentina's educational system is one of the most advanced in the region, and in a number of aspects equals that of the OECD countries. However, it has very low retention rates. A recent cohort analysis

shows that out of 100 students entering primary school, 84 will enter the seventh grade, 76 will enter the ninth grade, 40 will enter the last year of secondary school, 35 will enroll in university and only seven will graduate. (World Bank, 2000).

Latin America needs to make a great leap forward in raising secondary graduation rates, providing technical training opportunities linked with secondary education, and improving the quality and relevance of higher education with special attention to university programmes in the natural and applied sciences and engineering. Higher education systems must adapt to meet the changing needs of industry and services. Effective labor market feedback mechanisms, such as tracer surveys and regular consultations with employers and alumni, are needed for the purpose of adjusting curricula. In Denmark, for example, industry representatives, including presidents of large companies, commonly sit on the departmental boards of universities to advise them on training and research priorities (Salmi, 2001) and this also occurs in Mexico's new two-year technological institutions (Castro and Levy, 2000).

3. Curing the de-professionalization of higher education

Castro and Levy describe what they call the "de-professionalization of higher education", by which they mean the result of large increases in enrollment producing more job candidates than the market can handle, so that graduates take up whatever jobs they can find because they cannot find jobs corresponding to their diplomas. Among secondary students who proceed directly to the job market, those who were in technical programmes take up technical occupations requiring more than primary education but where the specific skills that are required could be learned through work experience. Other students from both tracks obtain qualifications that allow entry into higher education that concentrates on professions that lead to specific jobs, e.g. law, engineering, medicine, etc.⁶ This remains the basic model under which most public policy is designed. However well it worked for many years, graduates at all levels now largely outpace the expansion of the labor market, and the neat assumptions of this model are breaking down.

⁶ See Castro and Levy (2000) for a clear-sighted analysis of higher education policies in Latin America and recommendations for change that will result in an educational system providing more flexible, relevant and efficient educational opportunities, more responsive to the needs of a globalizing labor market.

When graduates of higher education cannot find jobs related to their education, their professional degrees nevertheless help them gain better employment than that gained by those who do not have higher education, and they take over much of the market for occupations previously filled by secondary level graduates. Thus, because higher education degrees pay off, many graduates of technical schools disregard their technical skills and try to use their technical diplomas to enter higher education because the education premiums in terms of earnings for tertiary university graduates are significantly higher. However, this fact cannot be seen in isolation, particularly in Latin American countries, where higher educational attainment is frequently associated, at least at the present time, with higher unemployment. Although education is among the most importance considerations in improving micro policies in Latin American countries, education policies and actions need to be part of an integrated package of micro reforms, which should include on the demand side the correct environment for higher productivity job creation.

Castro and Levy propose two possible solutions to the problem of de-professionalization, each already being applied but needing more recognition and appropriate public policy to become effective. The first introduces "general higher education" as a formal higher education option to complement the specific so-called "professional education" options in the fields of law, economics and other professional studies leading to professional careers in these areas. The advantage this change provides is that it takes the pressure off the universities to teach students in professions that they do not intend or cannot be equipped to pursue, thereby reducing the resources needed to meet the demand for university training in these fields and providing a more realistic supply of graduates to those professions. The general higher education option develops skills in writing, reading, mathematics and problem solving and responds to broader humanistic, cultural, social, and political rationales for producing more educated citizens. It fits in well with a market for managerial and service-sector occupations in which the services sector alone accounted for 58% of the labor force in Latin America and the Caribbean in 1999 (World Bank, 2000). In effect, this option elevates what had been considered a secondary school responsibility to the level of higher education, in recognition of the increasing knowledge, reasoning capacity and judgment required for working in an increasingly knowledge-based economy.

The second solution is to elevate training for technical occupations to the post-secondary level, as

has been done with associate degrees at community colleges in the United States, diplomas at polytechnics (now university colleges) in the United Kingdom, and parallel forms in other industrialized countries. Secondary education would cease to carry the burden of technical or vocational skills that are not wanted by the students, giving them the option to enroll in the post-secondary option in order to seek the specific technical skills that they wish to develop for particular labor markets. These courses are growing faster than conventional four-year courses in industrial countries and in some Latin American countries like Argentina and Chile. At the same time, they allow secondary education to focus on its task of giving a higher quality general education to prepare students for the labor market and to carry out their roles as involved, informed citizens and parents.

In this author's view, however, Castro and Levy's proposal needs to be more flexible. Latin American countries must offer their students the option of technical/vocational training at the upper secondary level precisely because only a small proportion of these students continue with post-secondary schooling or higher education, either because they do not wish to or because they cannot afford to and must go to work. In many Latin American countries, the need to work is already a barrier to keeping young people in upper secondary education until they graduate. This raises a further and separate question that merits consideration in policy formulation: namely, the establishment of income subsidies for students to allow them to pursue their education, whether through means-tested grants, no-interest or low-interest educational loans, or work-study financing.

IV

Does more education lead to higher earnings?

A look at the evidence from education premiums

The impact of education and training on labor market performance is still imperfectly measured. Typically, wages are used as an indicator, as is done in the following series of analyses. This is based on the assumption that superior performance in the workplace will be rewarded by higher wages and that earnings differentials by levels of educational attainment are a measure of the financial incentives in a particular country to invest in further education (OECD, 1997). However, there are obvious limitations to this assumption. Earnings differentials may also reflect differences in the supply of and barriers to access to educational programmes at different levels. Wages are driven as much by occupational choice as by performance within an occupation, and the best teacher still earns less than a mediocre football player. Wage differentials by educational level also reflect the financial incentives in a country for investment in education (see the example of Argentina given later) as much as the effect of the education and training system on labor market success (Amjad, Reboani and Sziraczki, 2001).

Nonetheless, earnings data are one of the few labor market indicators that are regularly and reliably

collected and, in this analysis, countries are not compared directly to each other. Indexes of the earnings of other levels of education as compared with upper secondary education earnings, separately for men and women, were constructed for five Latin American countries –Argentina, Brazil, Chile, Paraguay and Uruguay– on the basis of the two latest household surveys carried out in each of these countries.⁷ Since these indexes are based on earnings differentials *within* a country, they exclude the effects of exchange rates and inflation, thus making possible a better comparison of earnings differentials among countries, although other explanatory variables like income differences between sectors remain. In order to understand better the more recent experience of younger workers in the labor market, it is useful to perform the same analysis for all wage earners (15 to 64 years) and for the younger age group (25 to 34). Tables 4 and 5 show the earnings premiums for these two age groups.

⁷ Analysis and calculations by the author, on the basis of special tabulations by the ECLAC Division of Statistics and Economic Projections of data from household surveys of the respective countries.

TABLE 4

Latin America (five countries): Education premiums in terms of higher earnings for persons aged 15 to 64, by level of educational attainment and gender, 1993-1999
(Index for upper secondary education = 100)

Level of educational attainment		Argentina		Brazil		Chile		Paraguay		Uruguay	
		1994	1999	1993	1999	1996	1999	1994	1999	1994	1999
Below upper secondary	Male	65	64	44	52	70	61	53	63	63	63
	Female	63	62	45	52	71	60	33	58	64	62
Upper secondary	Male	100	100	100	100	100	100	100	100	100	100
	Female	100	100	100	100	100	100	100	100	100	100
Non-university tertiary	Male	98	139	..	..	139	118	..	118	..	121
	Female	90	123	..	..	108	112	116	132	..	133
University tertiary	Male	166	203	259 ^a	270 ^a	296	279	228	217	188	196
	Female	176	177	233 ^a	272 ^a	224	224	189	214	173	181

Source: Calculated by the author on the basis of special tabulations of household survey data by the ECLAC Division of Statistics and Economic Projections.

^a Includes university and non-university tertiary levels.

TABLE 5

Latin America (five countries): Education premiums in terms of higher earnings for persons aged 25 to 34, by level of educational attainment and gender, 1993-1999
(Index for upper secondary education = 100)

Level of educational attainment		Argentina		Brazil		Chile		Paraguay		Uruguay	
		1994	1999	1993	1999	1996	1999	1994	1999	1994	1999
Below upper secondary	Male	72	71	53	55	64	72	75	64	71	72
	Female	69	63	48	56	64	60	64	59	60	55
Upper secondary	Male	100	100	100	100	100	100	100	100	100	100
	Female	100	100	100	100	100	100	100	100	100	100
Non-university tertiary	Male	98	131	..	..	127	132	..	100	..	130
	Female	96	137	..	..	119	128	102	132	..	110
University tertiary	Male	164	177	212 ^a	225 ^a	200	267	181	177	144	147
	Female	208	168	215 ^a	242 ^a	242	247	170	229	134	159

Source: Calculated by the author on the basis of special tabulations of household survey data by the ECLAC Division of Statistics and Economic Projections.

^a Includes university and non-university tertiary levels.

How do wages of all wage earners differ by level of education, separately for men and women? For the most part, there is a strong relationship between educational attainment and earnings of workers aged between 15 and 64 in the five Latin American countries studied. In all the countries in question, university graduates earn considerably more than upper secondary graduates, who were used as the benchmark for the education premium calculations. Chile and Brazil show the greatest university education premiums, although

the Brazilian figures include both university and non-university tertiary graduates, while Uruguay and Argentina show the smallest premiums. The current premiums range from 179% for men in Chile down to 77% for women in Argentina. Almost all these premiums increased in the relatively short period between the two surveys and are usually higher for men than for women.

There are also large education premiums for upper secondary graduates, although they are not as large as

those for university graduates. In Brazil the earning capacity of a student is nearly doubled by completing upper secondary education and in the other countries it is increased by at least a third. Completing upper secondary education is clearly recognized as the starting point for earning higher wages, and these premiums increased between the two surveys in Argentina, Chile and Uruguay. The premiums are also consistently higher for women than men, which is somewhat surprising but might reflect the growing demand for female secretarial and other service staff.

The differential earnings patterns for the young working population aged 25 to 34, as shown in table 5, are very different from those of the working population as a whole. The most significant difference is that the current education premiums for university education for this younger age group are still considerably lower than for the working population as a whole, as was also the case with the data from household surveys in the early 1990s. The education premiums of this younger age group have almost all gone up over the last five years but have not caught up with the overall education premiums, which have also increased. The main exception to this pattern is Argentina, where the last five years of economic crisis and severe recession are reflected in the dramatic decline in the returns to

education for young women workers with university education, which have fallen by 20% over that period.

The premiums for upper secondary education for young workers have not changed very much. For all countries these premiums are less than for the working population as a whole, probably because most of the young people who have not reached the upper secondary level will have completed the primary cycle and may have completed the lower secondary, whereas in the working population as a whole there will still be a large block which has not completed the primary level. The premiums are all higher for women than men (except in Brazil), and they are significantly higher in Chile and Uruguay.

To sum up, education premiums for the young working population aged 25 to 34 have almost all increased at all education levels, but three-quarters of them are still below those for the total working population with the same educational qualification. This is not all that surprising, as the older populations are also rewarded for experience. The biggest increases have been at the university level. It is recommended that these "returns to education" analyses be carried out on a regular basis and over longer time periods for as many countries in the ECLAC region as can provide *comparable* data from their national household survey programmes.

V

Are gender disparities being reduced? What does the evidence from earnings differentials tell us?

Although both men and women with upper secondary or tertiary educational attainment levels have substantial earnings advantages compared to those who have not completed their secondary education, there remain very large earnings differentials between men and women with the same level of educational attainment. Table 6 presents these male-female earnings disparities for the working population 15 to 64 years of age and also for the young age group 25 to 34 years of age in order to determine more precisely if these disparities might be diminishing.⁸

⁸ It would have been preferable to use the 25 to 29 age group, because it better represents recently acquired educational attainment levels and reflects the more recent education reform policies, but the survey samples were too small to make this comparison.

As might be expected and is common throughout the world, negative earnings disparities between men and women with the same educational qualifications exist in Latin America for all the countries analysed and at all educational levels. These disparities range from those observed in the case of young upper secondary graduates in Brazil, where on average women still earn only 44% of the average man's wage, to persons of the same educational level in Paraguay, where on average women now earn 75% of the average man's wage. The current earnings disparities are fairly consistent throughout the educational levels, as is their range (table 6).

What was not expected is the number of cases where these gender disparities have increased in the

TABLE 6

Latin America (five countries): Mean annual earnings of women as a percentage of mean annual earnings of men, by age group and level of educational attainment, 1993-1999

Level of educational attainment	Age group	Argentina		Brazil		Chile		Paraguay		Uruguay	
		1994	1999	1993	1999	1996	1999	1994	1999	1994	1999
Below upper secondary	25-34	66	62	51	46	77	60	59	68	56	52
	15-64		62		55		66		67		61
Upper secondary	25-34	70	69	55	44	76	72	77	75	65	68
	15-64		64		56		71		73		62
Non-university tertiary	25-34	72	72	..	..	63	70	64	..	62	57
	15-64		57		..		67		..		69
University tertiary	25-34	..	66	57 ^a	48 ^a	70	67	68	..	..	74
	15-64		56		56 ^a		57		72		58

Source: Calculated by the author on the basis of special tabulations of household survey data by the ECLAC Division of Statistics and Economic Projections.

^a Includes university and non-university tertiary.

young working population since the previous set of surveys three to five years ago. Of the 15 disparity calculations for young workers that it was possible to make for two points in time, these already large female-male earnings disparities have increased in 11 cases and decreased only in three. Even at the university level, the two disparities that it was possible to track over recent years, in Brazil and Chile, have got worse. At the same time, however, the earnings disparities by gender for the 25 to 34 age group are often less than the corresponding disparities among the total working population (age 15 to 64). Out of the 17 possible comparisons, the younger workers registered a smaller earnings disparity in 10 cases and a greater disparity in six. Although there has been a

generational improvement, the most recent trends among young workers are discouraging. What is particularly disturbing is the fact that earnings disparities by gender have increased at all educational levels.

In conclusion, the disparity between women's and men's earnings *among workers with the same educational qualifications* continues to exist and has even been growing in recent years. There has been a moderate generational improvement in this respect, but the recent worsening in the disparities among younger workers suggests that this generational change is not being transmitted to new entrants into the labor market, particularly in the context of an economic slowdown and increasing globalization.

VI

In Latin America, more education does not guarantee a higher probability of employment

Conventional wisdom holds that education is positively correlated with employment and earnings and that better-educated people are more likely to have jobs and, if economically active, less likely to be unemployed (Centre for Educational Research and Innovation (CERI), 2001b). Labor force participation rates almost

invariably rise with higher educational attainment, and this applies equally to the OECD and the Latin American countries (OECD, 2000a). Rates of earnings also usually rise in Latin America, although differentially, with higher educational attainment. This is to be expected, as both the OECD and Latin American economies are

TABLE 7

Latin America (five countries): Unemployment rates by level of educational attainment in 1998 for persons aged 25 to 64

Country		Unemployment by level of educational attainment			
		Below upper secondary (%)	Upper secondary and non-tertiary post secondary (%)	Tertiary type B ^a (%)	Tertiary type A ^b (%)
Brazil	Men	5.9	4.7	2.7	3.7
	Women	12.5	9.0	3.4	1.5
Chile	Men	4.7	4.1	5.6	2.4
	Women	3.6	5.0	7.7	2.3
Mexico	Men	1.7	2.0	2.1	2.4
	Women	3.3	4.6	1.9	2.6
Paraguay	Men	2.6	2.8	3.5	2.8
	Women	5.5	4.5	2.5	2.7
Uruguay	Men	5.4	5.2	..	1.4 ^c
	Women	12.8	8.7	..	2.7 ^c
OECD	Men	8.9	5.3	4.3	3.3
country mean	Women	10.0	7.6	5.2	4.6

Source: Calculated by the author on the basis of data from OECD (2000b).

^a Type B tertiary programmes are typically shorter than type A programmes and focus on practical, technical or occupational skills for direct entry into the labour market, although some theoretical foundations may be covered. They have a minimum duration of two years full-time equivalent.

^b Type A tertiary programmes are largely theory-based and are designed to provide sufficient qualifications to advance to research programmes and professions with high skill requirements. They have a minimum duration of three years full-time equivalent, although they typically last four or more years. They also include postgraduate programmes like a Master's degree.

^c Includes both type A and type B tertiary programmes.

becoming increasingly dependent on a stable supply of well-educated workers to further their economic development and maintain their competitiveness.

But the patterns in Latin American countries are not similar to those of the OECD economies in the case of unemployment (table 7). Only 8% of the national unemployment rates disaggregated by educational level and gender that go to make up this OECD average showed unemployment rates rising with higher educational attainment. In contrast, more than 40% (16 out of 28) of the available disaggregated national unemployment rates in the Latin American countries showed unemployment rates which **rose**, instead of falling, with higher educational attainment. This is not an isolated or new phenomenon. Earlier figures for 1996, which covered only three countries in the Latin American region, showed that half of the available disaggregated unemployment rates **rose** with higher educational attainment (OECD, 2000c).

There appears to be a serious mismatch in the region between the actual or perceived adequacy of working skills and the capacity of the labor market to

supply jobs that match those skills. This raises critical issues for policy makers in the region both on the education side and the labor market side. This is a very pertinent current issue in Latin America as a whole in view of its growing unemployment, now approaching 9% (Ocampo, 2001). It should be noted that this analysis does not compare unemployment rates *per se* but concerns the differentials in unemployment rates by level of education within each country.⁹ This within-country disparity analysis avoids many of the problems that occur when national rates are compared. It would be useful to attempt to estimate the degree of under-recording of unemployment in Latin American countries in order to sharpen the picture of the labor market situation.

⁹ Low unemployment rates in a country may reflect the under-registration of people looking for work, particularly if unemployment benefits are not provided or if the unemployment definitions that are used are restrictive. For a more detailed discussion of these issues in Latin America, see Weller (2000), OECD (2001c) and OECD (1997).

VII

Measurement: the key to evidence-based research

A key ingredient for informed policy-making is quantitative analysis, and the prerequisite for that is statistical measurement, whether from government, international or private sector sources. The data used in this article provide valuable comparable information about the status of education and its relation to labor market performance in the general population, which will be extremely useful for developing and monitoring major policies (for example, for determining the priorities in education reform). Despite their limitations, these data are sufficient to provide meaningful measurements for these broad purposes in countries with solid national household survey data that have been standardized into internationally comparable education and labor market indicators. But more work needs to be done to improve national household surveys and develop indicators in Latin American and Caribbean countries in order to make the determination of the education premiums accruing to different levels of education by age, gender and, as far as possible, occupation, a standard practice based on generally recognized methodologies. Increased investment in business registers and improved enterprise-level surveys with emphasis on the labor component are needed. At the simplest level this involves placing well-designed questions about the characteristics and quality of the labor force of firms within existing enterprise/industrial survey programmes of national governments in order to improve our understanding of the contribution of human capital to productivity and growth.

Important gaps still persist in education, training and labor statistics, which handicap the in-depth study of the relationship between work and education and training. National data collection programmes in Latin American countries do not provide the necessary micro data and analyses that are needed to understand education and labor market dynamics within countries and especially to promote actions in the short term. Measurement methodologies have not kept pace with innovations and evolution in the production sector. A great deal of turbulence lies underneath the often seemingly benign aggregate rates of employment, unemployment or earnings that may mask Schumpeterian processes of creative destruction and the impact of the business

cycle.¹⁰ While industry's overall share in employment has only changed marginally over the last 30 years (from 23.1% in 1970 to 21.4% in 1997, according to Katz), more highly-skilled local jobs with engineering and technological content have been systematically replaced by less-skilled jobs involving the assembly of imported components (Katz, 2000). Better measurement of these processes is needed in order to understand them more fully.

Getting and keeping a job is becoming harder in today's globalized world, yet not enough is known about the impact of free trade, market liberalization, national regulatory structures and other factors on the prospects for people of different levels of education and skills to stay in employment, with growing wages and job security. A great deal of further work is needed to examine the microeconomics of education, skills and the labor market. More advantage needs to be taken of private sector data, as for example by compiling information on job cuts, as is done somewhat more systematically in the OECD countries.

The research agenda needs to provide for proper monitoring of the performance of the education system, its students and adult competencies. Every country in the region, using accepted, standardized indicators, should be able to report on its education system and be able to compare itself with other countries in Latin America and the Caribbean and other countries and regions in the world. Likewise, every country in the region should strive to measure the basic competencies for the workplace of its adult population, using accepted

¹⁰ Schumpeter (1950) defined what he called a "process of creative destruction", asserting that the essential point of capitalism is that it is an evolutionary process of economic change that is never by its nature stationary. The net result is a process which "creatively destroys" existing structures (firms/employment) through competition from new commodities, new technologies, new sources of supply, and new types of industrial organization. He points out that this is not a question of price competition but is much more fundamental—the existing product/service is destroyed to be replaced by the new one. This is competition as we know it today in the information and telecommunications technology sector and which is exacerbated by the additional factors of concentration, firm size and globalization.

international standards, in order to find out where corrective action is needed. They should also strive to

establish systems of certification of the competencies of teachers, students and the labor force in general.

VIII

Conclusions and policy agenda

1. Conclusions

Although education is of the first importance in improving microeconomic policies in Latin American countries, education policies and actions need to be part of an integrated package of micro reforms, which include on the demand side the establishment of a suitable environment for the creation of higher-productivity jobs. In confronting globalization, it is employment (and unemployment, of course) that provides the nexus between the macroeconomic aspects of globalization, trade and other policies and the micro or human dimensions of globalization such as job creation, job security, and wage employment, which are the main channels through which incomes are determined and income distribution is changed. Add to this the related employment factors of social protection, access to quality education and training, and health care.

Despite very large investments in education reform, the Latin American countries are still falling behind their competitors in human capital formation, especially as regards the upper secondary level and technical education. The pattern of positive labor market returns to education, which is fairly consistent throughout the OECD countries, is much more mixed in Latin America, and in a number of cases it is even negative. In the OECD countries only 8% of the national unemployment rates by educational level and gender reflect unemployment rates that rise with higher educational attainment. In contrast, the comparable figure is more than 40% in the Latin American countries, where unemployment rates often **rise rather than fall** with higher educational attainment. There appears to be a serious mismatch in the region between the actual or perceived adequacy of working skills and the capacity of the labor market to supply jobs that match those skills. For those who do have jobs, however, there is a very clear and positive education premium, rising with the level of education. Thus, an upper secondary certificate makes a big difference but a university degree makes an enormous

difference, both for men and women and for older and younger workers alike (see tables 4 and 5).

We also see that there are still very large earnings differentials between men and women with the same level of educational attainment. An unexpected finding is that in the young working population these gender disparities have increased since the previous set of surveys three to five years ago. Thus, the disparity between the earnings of men and women with the same educational qualifications continues to be with us and has even been growing in recent years.

Obtaining more and better education is one of the most important actions that workers can take to prepare themselves to confront globalization. While this is not sufficient in itself, it is becoming more and more necessary. The globalizing economy places more importance on education, training and basic competencies and skills as key factors in investment, trade and competition for jobs and markets. For its level of development, Latin America is seriously deficient in its human capital. This, together with the fact that the region has one of the highest levels of income inequality in the world, makes it extremely difficult to improve education because education is not just what is learned in school but consists just as much of the educational capital built up at home and the social capital accumulated in daily life.

The disparity between the quality of private and public education is exemplified by the tests applied to eighth grade students in Chile in 2000. Although 60% of all students attend municipal schools, only 5% of these children figured in the highest achievement group, whereas 85% of the highest achievers came from private schools in well-off neighbourhoods, where the children already arrive at school with a "learning culture". (The remaining 10% came from State-aided private schools).

Equally worrying is Chile's performance in international tests that measure adult competencies. These measurements have shown very dramatically that functional illiteracy among adults is a much larger problem than was previously assumed, precisely when

the labor market is demanding increasing high levels of skills. Likewise, the performance of 15-year-olds in 2000 in Mexico and Brazil shows that the pattern of insufficient competencies in the adult population persists even in the case of the latest cohorts coming out of educational systems that have undergone significant reforms and received heavy financial investments. It is likely that other countries in the region have a similar or even worse performance. Until more countries measure and monitor their education systems and their student and adult competencies we can only point to the experiences of this limited set of countries which have participated in international education measurement programmes. We really need to have this important information for each and every country in the region.

Of the factors studied in the analysis of wages, educational attainment is one of the most important determinants of earnings in most countries, even when variations in the other factors are taken into account. This supports the proposal that the highest priority should be to retain students until they graduate from upper secondary school, since high school graduation is not only a benchmark of educational achievement in itself but also opens the way to tertiary education. Analysis of the premiums for education in terms of earnings demonstrate this very clearly for the five countries studied. We have also seen that, in the absence of other “quality factors”, employers use certification-based methods to choose who they will hire. Educational credentials such as high school graduation certificates, college degrees, etc., are therefore extremely important: even more so than experience alone.

2. A policy agenda for confronting globalization

The policy agenda should be based on the underlying principle of seeking greater equality, because it is the very severe inequity in the region —particularly in education and job opportunities— that makes change so difficult and holds countries back in global competition. The following proposals will enable the region to confront globalization, allow the countries to

grow in a sustainable manner, and equip individuals to maximize their potentials.

- Completion of upper secondary education by all students should be established as a priority goal. Universal access should be provided to formal secondary education that incorporates technical training, with opportunities for dual learning, part work-based, part school-based, with priority being given to the poorest students.
- To the extent that resources permit, improved access to tertiary education should be afforded to all segments of the population, through generous scholarships, student loans and work-study programmes, so that talented poor children can get to the best universities.
- “General higher education” should be introduced as a formal higher education option to complement the specific so-called “professional” options of law, economics and other courses leading to professional careers in these areas. General higher education fits in well with the market for managerial and service-sector occupations, which account for the majority of the labor force in Latin America and the Caribbean.
- The financing and efficiency of education systems should be improved and alternatives to public financing should be sought in the private sector.
- The business and industrial sectors should be brought in as active, engaged participants. Governments and the private sector should work together to unite the business and education sectors in an effort to implement effective school-based and firm-based training schemes. This involves identifying the thorny questions that set up barriers, and working to break them down.
- Macro reforms almost always take the front seat. It is at the micro level, however, that much more work is needed to deepen the reforms and provide a level playing field so that countries and their citizens can confront globalization. This is the region’s challenge for the future.

(Original: English)

Bibliography

- Akerlof, G.A. (1970): The market for lemons: Quantity, uncertainty and the market mechanism, *The Quarterly Journal of Economics*, vol. 84, No. 3, Cambridge, Massachusetts, Harvard University Press.
- Amjad, R., P. Reboani and G. Sziraczki (2001): Key issues in education and training statistics, in P. Garonna and others (eds.), *Achieving Transparency in Skills Markets*, Milan, Italy, Franco Angeli.
- Bravo, D. and D. Contreras (2001): *Competencias básicas de la población adulta*, Santiago, Chile, Ministry of Economic Affairs, Development and Reconstruction / University of Chile, Department of Economics / Production Development Corporation (CORFO).
- Bravo, D. and others (2001): *Formación dual: un desafío para Chile*, Santiago, Chile, University of Chile.
- Brazilian Geographical and Statistical Institute (IBGE) (1993): *Pesquisa nacional por amostra de domicílios*, Rio de Janeiro, Brazil.
- _____ (1999): *Pesquisa nacional por amostra de domicílios*, Rio de Janeiro, Brazil.
- Carlson, B. A. (1998): *Measuring labour market outcomes of education*, Household Surveys: Redesign of the Current Household Survey of Argentina. First meeting on Public Statistics of the Inter-American Statistical Institute (IASI), Buenos Aires, June.
- _____ (2001): *Education and the labour market in Latin America: why measurement is important and what it tells us about policies, reforms and performance*, "Desarrollo productivo" series, No. 114, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).
- _____ (2002): *Job losses, multinationals and globalization: the anatomy of disempowerment*, "Desarrollo Productivo" series, No. 132, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).
- Carlson, B. A. (ed.) (1999): *Social dimensions of economic development and productivity: inequality and social performance*, "Desarrollo productivo" series, No. 56, Santiago, Chile, ECLAC.
- Castro, C. and C. Levy (2000): *Myth, Reality and Reform: Higher Education Policy in Latin America*, Washington, D.C., Inter-American Development Bank (IDB)
- Centre for Educational Research and Innovation (CERI) (1998): *Human Capital Investment: An International Comparison*, Paris, Organisation for Economic Co-operation and Development (OECD).
- _____ (2001a): *Education Policy Analysis, 2001. Education and Skills*, Paris, OECD.
- _____ (2001b): *The Well-being of Nations: The Role of Human and Social Capital*, Paris, OECD.
- Department of Statistics, Surveys and Censuses (DGEEC) (1994): *Mano de obra. Encuesta integrada de hogares*, Asunción, Paraguay.
- _____ (1999): *Mano de obra. Encuesta integrada de hogares 97/98*, Asunción, Paraguay.
- ECLAC (1992a): *Social Equity and Changing Production Patterns: An Integrated Approach*, LC/G.1701/Rev.1-P, Santiago, Chile.
- _____ (1992b): *Education and Knowledge: Basic Pillars of Changing Production Patterns with Social Equity*, LC/G.1702/Rev.2-P, Santiago, Chile.
- _____ (1998): *Social Panorama of Latin America, 1997*, LC/G.1892-P, Santiago, Chile.
- Katz, J. (2000): *Reformas estructurales, productividad y conducta tecnológica en América Latina*, Santiago, Chile, Fondo de Cultural Económica/ECLAC.
- Ministry of Planning and Cooperation (MIDEPLAN) (1998): *Encuesta de Caracterización Socioeconómica Nacional (CASEN) 1996*, Santiago, Chile.
- _____ (2000): *Encuesta de Caracterización Socioeconómica Nacional (CASEN)*, Santiago, Chile.
- National Institute of Statistics (INE) (1994): *Encuesta continua de hogares*, Montevideo.
- _____ (1999): *Encuesta continua de hogares*, Montevideo.
- National Institute of Statistics and Censuses (INDEC) (1994): *Encuesta permanente de hogares*, Buenos Aires.
- _____ (1999): *Encuesta permanente de hogares*, Buenos Aires.
- Ocampo, J. A. (2001): *More Jobs, Better Jobs, Social Panorama of Latin America 2000-2001*, Santiago, Chile, ECLAC.
- OECD (1996): *Measuring what People Know: Human Capital Accounting for the Knowledge Economy*, Paris.
- _____ (1997): *Economic Surveys: Mexico 1996-1997*, Paris.
- _____ (2000a): *Literacy in the Information Age*, Paris.
- _____ (2000b): *Education at a Glance. OECD Indicators 2000*, Paris.
- _____ (2000c): *Investing in Education: Analysis of the WEI Indicators*, Paris.
- _____ (2001a): *Knowledge and Skills for Life: First Results from PISA 2000*, Paris.
- _____ (2001b): *Education at a Glance. OECD Indicators 2001*, Paris.
- _____ (2001c): *Economic Surveys: Brazil 2001*, Paris.
- Reimers, F. (ed.) (2000): *What can we learn from studying educational opportunity in the Americas, Unequal Schools, Unequal Chances: The Challenges to Equal Opportunity in the Americas*, Cambridge, Massachusetts, Harvard University Press.
- Reinhardt, N. and W. Peres (2000): *Latin America's new economic model: Micro responses and economic restructuring*, *World Development*, vol. 28, No. 9, Oxford, U.K., Pergamon Press, Ltd.
- Salmi, J. (2001): *Tertiary education in the 21st century: Changes and opportunities*, *Journal of the Programme on Institutional Management in Higher Education: Higher Education Management*, vol. 13, No. 2, Paris, OECD.
- Schumpeter, J. (1950): *Capitalism, Socialism and Democracy*, London, George Allen & Unwin Ltd.
- UNESCO (United Nations Educational, Scientific and Cultural Organization) (1997): *International Standard Classification of Education: ISCED-97*, Paris.
- _____ (2000a): *World Education Report 2000*, Paris.
- _____ (2000b): *UNESCO Statistical Yearbook 1999*, Paris.
- Weller, J. (2001): *Economic Reforms, Growth and Employment: Labour Markets in Latin America and the Caribbean*, Santiago, Chile, ECLAC.
- World Bank (1999): *World Development Report 1998/99. Knowledge for Development*, Washington, D.C.
- _____ (2000): *Poor People in a Rich Country. A Poverty Report for Argentina*, Washington, D.C.

Changes and *inequality in* Latin American *families*

Irma Arriagada

Social Development Division,
ECLAC
iarriagada@eclac.cl

The family –a key institution in people’s lives– tends to be examined as though it were static and immutable over time. This paper seeks to shed some light on the changes which have affected the family in a broader socio-economic and cultural context, highlighting the processes of modernization and modernity and their effects on families, by making a diagnostic study of families in the region which describes the changes that have taken place, the diversity of families in different socioeconomic strata, and their heterogeneous structures, according to their type and the stage reached in the family life cycle. In addition to showing the increasing economic inequality between families, the study also highlights the various types of cultural changes to which the family has been subjected, including demographic changes, the growing number of households headed by women, and the increasing participation of women both in the labour market and in the social and political domains.

I

Introduction

People place great trust in the family, seeing it as the institution of first resort in times of hardship or crisis. The family has been described as “a field of action where the most basic dimensions of human security are defined: the processes of personal physical reproduction and social integration” (UNDP, 1998, p. 192).

Most analyses and policy proposals accord a central role to the family in explaining individual behaviour and when designing policies to tackle a variety of social problems. At the same time, it is frequently held that changes in traditional family structures tend to be associated with social disintegration.

During the 1960s and 1970s, the prevailing development model stressed the need to strengthen the family, visualized implicitly or explicitly in terms of a single desirable model, and it was studied rather as an intermediary between individuals and public policies. The gap between this single standard family model and reality, compounded by the outdated approaches taken to the family in public policies, hindered proper analysis of the effects of such policies on families and their members. Thus, there is a striking mismatch between the importance given to the family in government discourse and the public utterances of civil and religious institutions and individuals,¹ on the one hand, and the scant attention paid to it in social diagnoses and public policies and the time it takes for legal aspects of the family to adapt to new social situations, on the other.

As a complex and dynamic institution, the family faces an additional paradox. On the one hand, it provides shelter and support in the face of changing

conditions that generate insecurity in the fields of work (e.g., unemployment, low wages); health (drug addiction, sickness and death); education (exclusion); and violence (crime). At the same time, the changes that families have undergone over time, compounded by the effects of external tensions and relations inside families, can generate major sources of internal insecurity such as changes in marital status (separation, divorce), migration and domestic violence. From this standpoint, the family is highly vulnerable to crises, yet it is also the institution most often turned to in dealing with them.

This article adopts a gender-based perspective: while the family is analysed as a field for the exercise of personal rights, individual family members interact with unequal and asymmetric power in it. It is interesting to note the new combinations of gender inequality, life cycles and income that are emerging, together with the new paradoxes that families display in the context of modernity and modernization tempered by exclusion which is typical of Latin American societies. This paper aims to shed light on the changes that have affected the family in a wider socioeconomic and cultural context, with special attention to the relations that exist between modernization and modernity and the changes taking place in the family. In order to do so, it makes a diagnostic study of Latin American families that describes the changes that have occurred and the diversity that exists among families in different social strata.

It is worth emphasizing that it is very difficult to carry out diagnostic studies and formulate policies on the family, because the very concept of the family is ideologically biased. This subject cannot be approached dispassionately, because unlike other social and economic subjects, all individuals have empirical knowledge of it, since they were born into and/or have formed a family themselves. The family is perceived as an immutable institution that performs functions which are essential to people's well being: functions that have remained constant through time. In many cases, knowledge, feelings and individual perceptions in relation to the family become stereotyped into uniform models and ideals that obscure the diversity of situations and experiences that exist in reality.

□ The author is grateful for comments made by Virginia Guzmán, Martín Hopenhayn, Miriam Krawczyk and Jorge Rodríguez, it being understood, of course, that any remaining errors or omissions are the author's responsibility. The household surveys were processed by Ernesto Espindola.

¹ For example, the 2000 World Values Survey found that 96% of respondents in Chile considered the family the most important aspect of their lives (Corporación Latinobarómetro, 2000), while an opinion survey conducted in Mexico in 1994 found that 85% of those interviewed considered the family “very important” (quoted in Salles and Tuirán, 1996).

Another problem in analysing the situation of families is the non-historical approach that is normally used. Among many other aspects, there are two basic time dimensions that need to be considered: the historical evolution of family structures associated with modernization and their individual development paths in different social classes; and the evolution of a given family through time as it passes through the family life cycle, taking account of the fluidity of family structures and the changes taking place in them (ranging, for example, from consensual unions, through marriage and divorce, to “blended families”).² These dimensions are difficult to

capture through traditional statistical data, which usually focus on different families at a single moment of time and do not recognize the category of blended family.

The data sources used for this diagnosis are the 1990 and 1999 household surveys. As these consider only two points in time, they cannot be used to analyse family evolution. Accordingly, this paper makes only a cautious analysis of aspects derived from the data used, supported by other sources including studies that illustrate aspects that have not been investigated in surveys of internal family organization, together with references of a more historical nature.

II

Modernity, modernization and the family

1. Family studies

The classic paradigms of sociological studies have stressed the family’s central role in the functioning of society –either invoking a structural-functionalist tradition that relates family matters to the stability of institutions and ultimately society itself, or from the Marxist perspective that perceives close links between changes in the family and developments in other social institutions such as private property, social class, industrial society and the State.

Classical sociology theory tried to identify a synchronic relationship between the organization of society and family structure, within the modern-traditional, urban-rural, secular-religious continuums developed by various sociologists interested in modernization processes (DANE, 1998). The functionalist studies of the family that began to appear in the 1950s focus on the nuclear family. Their predominant thesis postulates a progressive nuclearization of the family as societies modernize. The nuclear family was perceived as being organized on the basis of a clear differentiation between the sexes: men were seen as the economic providers through labour market activity, while women were responsible for matters concerning reproduction and the provision of domestic care for their menfolk, children and elderly

family members (Aguirre and Fassler, 1994). These roles were perceived as complementary. More recent studies from different social, cultural, psychological and gender perspectives revealed a much more complex reality, however, both historically and in terms of the modern family.

Studies in the Marxist tradition focused on the new organization of industrial production and its effects both on production and on family reproduction. The move from craft-based work in the home that generated family incomes, to commercial production in factories paying individual wages, gave rise to a large-scale debate in which the key analytical issue was the ways in which monogamous families related functionally to private property. In these studies, special attention was devoted to historical analysis of how families were constructed with different productive (male) and reproductive (female) roles, although this approach placed greater emphasis on analysing relations between the family and the social system than on internal relations within the family. Part of this theoretical tradition has been updated in feminist studies that revive the debate on productive and reproductive work and its interrelations with the economics (and sociology) of care-giving.³

The link between family change and modernization processes was thus recognized early in sociological analysis, in terms of the development of the nuclear

² In this article, the term “blended” family includes those resulting from divorce, marriage annulment or breakup of consensual unions and the formation of new relationships.

³ The economics of care-giving involves the provision of goods and services to take care of other people, particularly family members, usually by women.

family and individual income. Nonetheless, the associated concept of the patriarchal family was not addressed in depth in the leading theories on the family in vogue at the time, especially those in the North American structural-functionalist tradition.

More recently, and from the very start of gender studies, a more critical view has been taken of the asymmetries that exist between family members in terms of power, resources and negotiating capacity. In this respect, the greatest power is generally associated with whoever generates the family's monetary income, or the person that cultural norms expect to do so (usually the male head of household). Attention has also been drawn to the way the distribution of resources, power and time affects women's differential participation in the labour market, politics and public life generally, and the inequality between family members with different degrees of power on account of their sex and age has been highlighted, thereby demonstrating the persistence of gender asymmetries.

The sex and age of family members, and the stages of the family life cycle, are also important dimensions of household structure that need to be considered, both as regards decision-making and access to and use of the resources of the household.⁴ Consideration of the dominance relation that exists between men and women – not only within the family but also at work, in bureaucratic matters and in the media – gives the lie to the fantasy image of the “Eternal Feminine”, bringing the fact of male dominance as a historical constant into sharper relief (Bourdieu, 2000, pp. 126-127). The idea of the family as a sphere of private decisions has also been questioned, since decision-making is heavily influenced by the laws and by the economic, social, and population policies being applied. The family is highly susceptible to outside intervention.

Similarly, new studies on masculinity draw attention to the disservice done to women and men alike by a model that promotes rigidly defined roles. One of the most powerful guiding forces in men's lives is that work is what gives them autonomy, makes them providers and turns them into household heads and authorities in the family.⁵

The twentieth century patriarchal family makes a clear distinction between the public and private domains, with a sharp division of labour between men and women. The man is responsible for establishing a family, based on very clear structural relations of authority and affection towards his wife and children, which are legitimized in the outside world and enable him to provide for, protect and guide his family. Women, on the other hand, are expected to complement and collaborate with the husband/father (Olavarria and Parrini, eds., 2000). In most Latin American countries the law reflects this traditional family model, which displays a strong resistance to change.⁶

In Latin America, gender systems in urban mestizo societies were profoundly marked by the Spanish colonial legacy, which attached great importance to the separation between the public and the domestic domains, control of female sexuality, the concept of family honour, recognition by other men, and fatherhood as a means of asserting one's masculinity. Historically, class and ethnic differences intensified control over women's sexuality, allowing men the possibility of having relationships with women from different social groups according to different rationales and moral codes. On the other hand, the fragile nature of public institutions in those societies led to the domestic/public contrast being perceived in territorial terms: in the home or on the street. While the home is an ordered space where kinship relations and personal networks unfold, the street is an ambiguous space where personal desires override the common interest (Fuller, 1997). This patriarchal model of the family is currently being questioned both in public and in private, and there is a striking variety in people's representations, discourses and practices.

Thus, modern family studies see the interaction between gender, social classes and ethnic groups as central pillars of inequality which define very different conditions of life and structures of opportunities, while looking closely at the interrelations between individual time-frames, family cycles and social processes.

⁴ Different levels of ability or disability (physical or psychological impediments) also place family members in vulnerable situations. The American Psychological Association Presidential Task Force on Violence and the Family has documented the difficulty of measuring situations involving the abuse of elderly and disabled people in the family. www.apa.org/pi/aging.

⁵ Paternal authority in the family was one of the controversial issues addressed at the International Conference on Population and

Development in Cairo in 1994 and the Fourth World Conference on Women: Action for Equality, Development and Peace, held in Beijing in 1995.

⁶ Nonetheless, there have been a number of positive changes, such as the Responsible Parenthood Act recently passed in Costa Rica and the legislation against domestic violence passed in most of the countries of the region.

2. Modernity and modernization in Latin America – or modernity with exclusion

A widely debated and recurrent theme in sociology, in the industrialized and Latin American countries alike, concerns modernization and the social and economic processes that accompany it. The consideration of modernity, in contrast, mainly focuses on normative aspects, cultural dimensions and acceptance of the diversity of identities in pluralistic societies. In general these two processes have not evolved in the same direction. The relation between the processes of subjectivization (characteristic of modernity) and modernization has proven to be unpredictable, asynchronous and at times contradictory (UNDP, 1998).

The distinguishing aspects of modernity include the changes which have occurred within the family and the dimensions most closely related to social identity processes that tend to generate increasing autonomy—especially the changing social roles of women, as discussed below.

The distinction between the processes of modernization and modernity is analytical, for the two concepts are closely interrelated. Some dimensions are shared—for example, the progressive secularization of collective action, which began with the separation of powers between the State and the Church, but later, in the case of the family, involves recognition of the right to divorce, which is no longer condemned by religious authorities but seen as a “reflexive” personal choice.

Modernization processes and their effects on families include the following:

- *Changes in production processes*: these include economic growth generated by industrialization, by the transition from rural to urban work, and, today, by the development of pre-eminently market-based global service economies.
- *Changes in demographic structure*: rapid urbanization processes, longer life expectancy, lower birth rates and shrinking family size, reflected in changes in the population-age pyramid and family structure.
- *New patterns of work and consumption*: families have increasing access to the consumption of goods and services and there are changes in the forms of work: expansion of the industrial and service sectors, of paid female work, of informal-sector employment and of job instability.
- *Massive but segmented access to social goods and services such as education, social security and*

health care: the coverage of the services is expanded, but there is also greater social fragmentation and inequality due to the different qualities of services supplied.

These changes in basic living conditions caused by the large-scale processes related to globalization and modernization—especially urbanization associated with industrialization, the growth of female employment, new consumption patterns and new forms of labour market participation—have a key influence on the organization of families and the way they perceive themselves.

With regard to modernity,⁷ other aspects are taken into account, such as the following:

- *Promotion of social and individual freedom (individualization)*: this involves expansion of the rights of women and children; questioning of the patriarchal system within the family; profound changes in the areas of intimacy and sexuality; and a search for new identities (Giddens, 1992).
- *Progress of the social dimension in the development of individual potential*, to the detriment of the importance accorded to the family.
- *“Reflexivity”*: This refers to the fact that most aspects of social activity are continuously being reassessed in the light of new information or knowledge (Giddens, 1991b). The family is not exempt from this reflexive approach, which changes people’s courses of action and is particularly striking in the case of women (specifically in the feminist movement), representing the point at which male domination breaks down (Bourdieu, 2000).
- *The spread of democratic attitudes*: defence of diversity and increased tolerance; broadening of citizenship to include other social sectors such as ethnic groups, women, young people and children.
- *Progressive secularization of collective action*: as more and more people distance themselves from religion-based codes of behaviour, individual ethics are gaining force, especially with regard to the exercise of reproductive rights and sexual morality.
- *Democratic representation in government*, marked by the presence of different social attitudes and values.
- *Spread of a formal and instrumental rationale*.

⁷ See Calderón, Hopenhayn and Ottone (1993); Giddens (1992, 1991a and 1991b); UNDP (1998) and Wagner (1997).

— *Generation of increasingly multicultural societies embracing diversity in life styles and family forms and structures.*

In brief, modernity in the family is likely to be reflected in the exercise of democratic rights and autonomy among family members, together with a fairer distribution of labour (domestic and social), opportunities and family decision-making. This implies a new relationship based on asymmetries tempered by democratic principles (Salles and Tuirán, 1996).

Some elements of modernization processes in Latin America have not developed fully, resulting in small groups being included in social and material benefits while large population sectors are left out. Many of the changes associated with modernization have been carried out in a segmented fashion without being accompanied by the processes characteristic of modernity, especially as regards the cultural and identity dimensions of those changes.

Modernity is essentially a post-traditional order, characterized by increasing diversity of life styles and modes of living, with heterogeneous influences affecting habits, values, images, and modes of thought and entertainment. This is boosted by globalization processes, which have affected the social links between groups and have had powerful effects on the more personal aspects of our experience, where the security that traditions and customs used to provide has not been replaced by the certainty of rational knowledge (Giddens, 1991b). Accordingly, the changes in the family caused by the processes of modernization and modernity become a breaking point in the private-public dichotomy and give rise to emerging forms of family life that redefine the relationship between the family and society.

3. The present Latin American context and its impact on families

From a social and cultural standpoint, there are a number of worrying aspects in the current Latin American situation, where there has been a relative deterioration in economic and distributive terms which affects families differentially. The situation is made worse by the economic slowdown and the greater volatility of growth. In 2001, the gross domestic product grew by less than 0.5%, and a figure of 1.1% is predicted for 2002 –far below the 6% growth rate that ECLAC deems necessary to reduce poverty in the region. As stated recently, Latin America has suffered two lost

decades in terms of poverty and social inequality (Ocampo, 2001). Since the debt crisis and the structural adjustment programmes applied in the region, the burden of change has been disproportionately borne by poor families. Although the percentage of Latin American families living in poverty decreased from 41% to 35% between 1990 and 1999, their absolute number grew by an additional 11.2 million people. In the year 2000, poverty affected 211.4 million Latin Americans, of whom over 89 million were indigent. Poverty continues to afflict children and adolescents relatively more. In 1999, 59% of children between 0 and 5 years of age were poor, while 61% of those between 6 and 12 years of age were in that situation, reflecting the fact that poor families tend to have more children (ECLAC, 1999, 2000a and 2001).

At the same time, the productive system has generated severe inequality and heterogeneity as regards access to basic goods and services such as education, health care and social security. This is the result of an unequal supply of jobs, burgeoning privatization, more expensive basic services and increasing concentration of income. Although many Latin American countries enjoyed economic growth in the 1990s and were thus able to increase their social expenditure (which rose from US\$ 360 to US\$ 540 per capita between 1990 and 1999 in the region as a whole), generally speaking income distribution did not improve. In the same period, of the 16 Latin American countries for which data are available, only four saw their income distribution improve, another four registered no change, while eight suffered a deterioration. Costa Rica and Uruguay are the countries with the least income inequality in the region (ECLAC, 2001).

Alongside these processes, the expansion of the working-age population has generated simultaneous trends towards precarious employment and open unemployment in the region. Between 1990 and 1999 the number of unemployed grew by 10% per year to account for 8.6% of the work force by the end of the period. The rate was higher among urban population groups, where it reached 10.8%, and the situation was aggravated by the fact that in some cases the average duration of unemployment also increased (ECLAC, 2001). Unemployment is higher among the poorer population segments, those with less education, young people and women. Another worrying aspect is the contradiction between the increase in structural unemployment and the economic growth registered, with all the damage that this causes to family security and stability.

Recent trends also reveal the deteriorating situation and impoverishment of the middle-income groups. Faced with increasing unemployment, more and more family members (especially women, young people and children) are finding work in traditionally precarious and low-productivity sectors. The entry of women into low-paid jobs offering them no chance of improving their employment prospects suggests that, while paid employment is a way of enhancing their living standards and gaining greater self-sufficiency, it has the disadvantage that it further increases the total workload borne by women, who have to divide their responsibilities

between the family and their job, while receiving little support from their partner or from social institutions.⁸

In addition to this deterioration in economic and labour aspects, there has been a revolution in expectations, fuelled by the mass media, which has increased the sense of frustration at the widening gap between the growing desires for consumption and the real possibility of obtaining the goods desired. Inequality in the region is growing and differences are widening, and this severely hinders the possibilities of the social integration of families and further aggravates the sources of differences between them.

III

The main changes in Latin American families

Latin American families have been changing both in image and in reality. Academics and policy-makers alike agree that families have been confronting crucial changes,⁹ including demographic shifts, growth in the number of households headed by women, and an increasing number of women entering the labour market.

There have also been changes in symbolic aspects, reflected in new types of families and family relationships, in the context of societies undergoing continuous processes of change that question traditional family roles and raise new challenges and tensions for their members.

It has been asserted that all three dimensions of the classic definition of the family –sexuality, procreation and cohabitation– have changed profoundly and have begun to evolve in different directions, resulting in a growing multiplicity of family and cohabitation models (Jelin, 1998). It is generally agreed that most of the changes in family structure are gradual and are influenced by family location (urban versus rural), social class and the various experiences that Latin American societies have gone through (Salles and Tuirán, 1997). Other changes have been very dynamic, however, including the extremely rapid evolution of the

social roles of women both within and outside the family, the increase in their labour market participation, and the growing number of households headed by women.

1. Demographic changes

The first demographic transition –involving a reduction in mortality and fertility rates and an increase in life expectancy– has had major effects on the family, particularly in Latin America. Longer life expectancy has lengthened the duration of life as a couple,¹⁰ while also increasing the number of single-person households, families made up of older adults and households with no children.¹¹

Average family size has shrunk because couples are having fewer children and births are being spaced more widely apart. The number of multi-generational families is falling, while single-person households are on the rise. Migration, which may occur for a variety of reasons (economic considerations, armed conflict, among others), is another factor.

⁸ This is particularly true of poorer women. Mothers with higher incomes can hire domestic servants for their homes or private services to take care of their children.

⁹ For more statistical data on households and families, see Arriagada (2001).

¹⁰ In Mexico it is estimated that husband/wife roles can span up to 40 years of peoples' lives (Ariza and De Oliveira, 2001). In countries such as Argentina, Uruguay and Chile the period could be even longer, barring separation or divorce.

¹¹ At present, one in every four Latin American households contains at least one older adult (ECLAC, 2000a); this increase in the number of older persons means an increase in the care-giving work performed by women in their homes.

By the 1990s, fertility rates (including those among adolescents) had fallen in most Latin American countries. Since then, however, they have stabilized and in some cases (Argentina, Chile, Panama and Uruguay) there has been an increase in adolescent fertility rates, which reflects the fact that different countries are at different stages in the demographic transition. The highest adolescent fertility rates are in the poorest population groups, among teenagers with little schooling, in rural areas and in areas with high concentrations of indigenous people (ECLAC, 2000b; Guzmán and others, 2001).

In some of the region's socially more developed countries (such as Argentina, Chile and Uruguay), models of sexual, nuptial and reproductive behaviour that are widespread in developed countries are beginning to take root among higher-income and more educated social groups. These include later marriage and reproduction among young people with high levels of schooling, and higher rates of divorce and cohabitation among middle-income groups.¹² The consolidation of these patterns in Europe has led some authors to suggest that they represent a second demographic transition.

This second transition is associated with a profound change in values, closely related to Giddens's concept of late modernity (Giddens, 1991a and 1992), although demographers studying this subject have preferred to associate it with "post-materialist values" (Inglehart, cited by Van de Kaa, 2001) and, more recently, with post-modernization and post-modernity (Van de Kaa, 2001). Apart from fertility indices that are well below replacement levels, this second transition includes the following features: i) an increase in celibacy and voluntarily childless couples; ii) postponement of first union; iii) later birth of the first child; iv) consensual unions increasingly seen as an alternative to marriage; v) an increase in the number of children born and raised out of wedlock; vi) greater frequency of marital breakdown (divorce); and vii) diversification of family structures.

Some of these features have a long history in Latin America, and their existence has less to do with

modernity than with exclusion and even with traditionalism. This is true of consensual unions and marital abandonment, for example. In short, certain socio-demographic phenomena affecting Latin American families conceal differentiated and specific determinants, directions and consequences that depend on the socioeconomic group in which they occur.

2. New types of families

New family structures, such as childless couples and households with no conjugal nucleus, have emerged in Latin America alongside traditional forms, while households headed by women continue to grow in number. This may reflect the existence of new structures typical of modernity. Box 1 describes the types of families and households that can be identified on the basis of the data from household surveys.

With regard to the household types that can be construed from the survey data, between 1986 and 1990 the vast majority of households were nuclear, followed in order of frequency by extended families and single-person households (the latter category having grown in all the countries except Panama), households with no nucleus, and lastly composite families (table 1). The data for extended families may conceal other secondary nuclear families involving offspring that have not yet managed to set up their own families, especially adolescent mothers, for example.

As separation and divorce have become more common, blended families have emerged as a new and growing phenomenon in the region. These result from divorce, separation, widowhood or breakup of cohabitation and the formation of new unions. The existing statistical categories are unable to measure the number of families of this type, however, and they are considered as two-parent nuclear families.¹³

Although nuclear families continue to be the norm in Latin America in both urban and rural areas, the wide variety of situations that they reflect make it desirable to study the internal configuration of such households in greater depth. Although two-parent nuclear households are still the most common form, single-parent families—usually headed by women—are on the

¹² In Chile, for example, between 1980 and 1999 the average age at marriage rose from 26.6 to 29.4 years among men and from 23.8 to 26.7 years of age among women. During the same period the number of marriages decreased, annulments increased, birth rates diminished and the number of children born out of wedlock rose. In 1999, 47.7% of children were born out of wedlock, whereas in 1990 the figure had been only 34.3% (SERNAM, 2001).

¹³ Blended, reconstituted, reformed or new families are difficult to quantify through household surveys, since the questionnaires generally do not ask whether the family concerned corresponds to a first or subsequent marriage, and they make no distinction between children and stepchildren. Such households are therefore recorded as two-parent nuclear families.

Box 1
FAMILY AND HOUSEHOLD TYPES CONSTRUED FROM HOUSEHOLD SURVEYS

The following types of households are distinguished in this study:

- *Single-person households* (households consisting of only one person);
- *Non-nuclear households* (i.e., without a conjugal nucleus or parent-child relationship, although other kinship ties may exist).

The types of families distinguished include:

- *Nuclear families* (one or both parents present, with or without children);
- *Extended families* (one or both parents present, with or without children and other relatives or non-relatives); and
- *Composite families* (one or both parents, with or without children, with or without other relatives and non-relatives).

Families may be either *single-parent* (i.e., with only one parent present, usually the mother), or *two-parent* families (both parents present); they may or may not have children.

TABLE 1

Latin America (17 countries): Types of urban households, around 1986 and 1999
(As a percentage of total households)

Country		Types of households and families					Total
		Single-person	Nuclear	Extended	Composite	Non-nuclear households	
Argentina	1986	11.3	71.9	12.3	0.4	4.1	100.0
	1999	15.5	67.2	11.7	0.4	5.2	100.0
Bolivia	1994	7.6	71.2	15.7	1.7	3.8	100.0
	1999	8.7	71.5	15.4	0.3	4.1	100.0
Brazil	1987	6.9	76.8	11.2	1.1	4.0	100.0
	1999	9.2	69.2	16.8	0.8	4.0	100.0
Chile	1987	6.4	61.6	26.0	1.6	4.5	100.0
	1998	7.5	65.1	22.1	1.1	4.2	100.0
Colombia	1986	5.0	68.6	18.8	2.3	5.3	100.0
	1999	6.7	60.1	25.2	2.3	5.7	100.0
Costa Rica	1988	4.4	68.2	19.3	3.2	4.9	100.0
	1999	6.2	68.4	18.4	2.5	4.5	100.0
Ecuador	1999	6.0	63.0	22.9	3.5	4.6	100.0
El Salvador	1997	7.1	55.0	28.7	2.5	6.7	100.0
Guatemala	1998	4.3	63.2	26.6	1.8	4.1	100.0
Honduras	1994	3.4	58.2	29.1	4.7	4.7	100.0
	1999	5.5	53.9	29.9	5.2	5.5	100.0
Mexico	1984	5.2	70.3	19.2	0.7	4.6	100.0
	1998	7.5	72.8	16.7	0.2	2.8	100.0
Nicaragua	1997	4.4	57.0	29.0	4.7	4.9	100.0
Panama	1986	12.0	61.0	14.2	5.9	6.9	100.0
	1999	9.6	58.4	24.6	1.4	6.0	100.0
Paraguay	1986	6.0	53.0	28.7	7.5	4.8	100.0
	1999	8.8	57.7	24.2	3.7	5.6	100.0
Dominican Rep.	1999	8.3	53.9	29.8	0.7	7.3	100.0
Uruguay	1986	11.9	63.3	17.2	1.4	6.2	100.0
	1999	16.6	62.7	14.5	1.2	5.0	100.0
Venezuela	1986	4.5	56.4	31.2	2.6	5.3	100.0
	1999	5.2	56.2	31.8	2.2	4.6	100.0

Source: ECLAC, on the basis of special tabulations of household surveys of the countries concerned.

increase, as are childless nuclear families, usually consisting of older adults whose children have already set up their own homes. Statistical categories need to be altered to capture new social realities, especially changes in family structures, and specific modules are also needed to take account of historical situations reflecting different family cultures, as in Caribbean countries (box 2).

Regardless of their magnitude and statistical invisibility, new family structures (e.g., blended families, childless families, non-nuclear families and single-person households) are beginning to appear more and more often in the media, and this is changing society's image of the range of family types to be found in the region and suggesting new possibilities for building families in the future.

3. Households headed by women

Here too, the analytical difficulties raised by the concept of "head of household" as defined in censuses and household surveys are worthy of note. The concept of the household includes the concept of family, so that while all families are households, not all households are families. For a household to be considered a "family", at least one of its members needs to have a kinship relationship with the person claiming to be the head of the household surveyed.

Traditionally, census and household survey measurements have considered the head of household to be the person in the conjugal nucleus who is recognized as such by the other members, regardless of the actual situation with respect to decision-making or economic contribution. The fact that censuses and surveys do not admit shared headship leads to a sexist bias, because when there is both a head of household and a spouse, the man is considered the head of the household and the wife the spouse, yet when the household is headed by a woman, the assumption is that there is no male spouse.

Thus, the subjective nature of the definition reflects cultural expectations regarding decision-making authority or ownership of assets, mediated through social mores that categorize men's and women's roles as economic actors and breadwinners and as care-givers and child-raisers, respectively (Gammage, 1998).

Three types of household can therefore be distinguished, depending on the sex of the head of household and the presence or otherwise of a spouse: two-parent, single-parent headed by a man, and single-parent headed by a woman.¹⁴ Given the shortcomings in the definition of head of household mentioned above, a number of suggestions for avoiding a sexist bias have proposed simultaneous consideration of *de jure* and *de facto* female/male headship (Gammage, 1998), thereby linking up the *de jure* concept normally used in censuses

Box 2

CARIBBEAN FAMILY TYPES

Unlike many societies, in the Commonwealth Caribbean countries marriage is not the only type of family union prevailing, and it does not necessarily indicate the start of child-rearing. At least three types of family union can be identified:

1. *Marriage*, which involves a legal commitment and cohabitation;
2. *Consensual unions*, in which the partners share a common home but there is no legal commitment between them; and
3. *Unions involving regular visits ("visiting unions")*, in which there is a regular sexual relationship but neither cohabitation nor legal commitment. This type of union should be distinguished from casual relationships, where there is no stable relation.

The raising of children may be a feature of any of these situations.

Source: Massiah, 1990.

¹⁴ By definition, only in the nuclear conjugal two-parent case is a childless household classified as a family. In the absence of either a husband or wife, the household is only considered a single-parent family when it includes children of the head of the household. Non-

family households include single-person and non-nuclear households headed by either a man or a woman. It is recognized, however, that many non-nuclear households do involve kinship relations.

and surveys with the *de facto* concept determined on the basis of who makes the greater economic contribution to family income. When this is done, it reveals some interesting relations between the two types of female-headed household.

A comparison based on the *de jure* and *de facto* criteria shows that women are more "invisible" in the traditional manner of defining the head of household. In all Latin American countries the percentage of households whose main economic contribution is provided by a woman is greater than the percentage recognized as headed by women, except in Nicaragua, where the figures are the same (table 2).

The number of households headed by women (whether *de jure* or *de facto*) has continued to grow steadily since the early 1990s,¹⁵ so that this group now accounts for between a quarter and one-third of all households, depending on the country. According to

¹⁵ Between 1990 and 1999, the number of households headed by women increased in 14 countries and remained constant in two (ECLAC, 2001, p. 151).

the *de jure* criterion, the highest percentages of households headed by women were reported in Nicaragua (35% in 1998) and in the Dominican Republic and Uruguay (31% in 1999). The incidence of extreme poverty is also consistently higher among such households: in 13 out of 17 countries, indigence rates were higher in households headed by women than in households generally. In Costa Rica and the Dominican Republic, over half of all indigent households were headed by women. It is remarkable that analyses, measures and policies fail to consider the situation of households with *de facto* female headship, which clearly demonstrates the breakdown of the traditional family model in which the man plays the role of head of household and breadwinner.

4. The family life cycle

Latin America has seen profound changes in the distribution of families at each stage of the family life cycle. This is the result of major demographic changes, especially the fall in birth rates that occurred during

TABLE 2

Latin America (17 countries): Households headed by women on a *de jure* and *de facto* basis
(Percentages)

Country	Year	Households headed by women on a <i>de facto</i> basis (in which a woman is the main economic provider) (1)	Households headed by women <i>de jure</i> (2)	Difference (1- 2) (in % points)
Argentina	1999	33	27	+6
Bolivia	1999	28	21	+7
Brazil	1999	33	25	+8
Chile	1998	28	24	+4
Colombia	1999	36	29	+7
Costa Rica	1999	30	28	+2
Ecuador	1999	27	20	+7
El Salvador	1997	38	31	+7
Guatemala	1998	30	24	+6
Honduras	1999	36	30	+6
Mexico	1998	27	19	+8
Nicaragua	1998	35	35	0
Panama	1999	30	27	+3
Paraguay (Asunción)	1999	33	27	+6
Dominican Rep.	1997	32	31	+1
Uruguay	1999	36	31	+5
Venezuela	1999 ^a	30	27	+3

Source: ECLAC, on the basis of special tabulations of household surveys of the countries concerned and www.eclac.cl/mujer/proyectos/perfiles/comparados/hogar7.htm

^a Nationwide total.

the 1970s. Thus, although families whose eldest child is under 12 years of age are still the largest group, the number of families whose eldest child is over 13 has increased faster (Arriagada, 1998). Another important phenomenon affecting the length of the family life cycle and the number of years of marriage or cohabitation is increased life expectancy at birth. This explains the increase in the number of households consisting of a single elderly adult, especially widows, in countries which are at an advanced stage of the transition.

For 1995/2000, life expectancy in Latin America was estimated at 73 years for women and 67 years for men, albeit with large variations between countries at different stages in the demographic transition. Between 1985/1990 and 1990/2000, the average life expectancy for Latin American men and women increased by three years, with the lowest figure corresponding to Haiti (57 years) and the highest to Costa Rica (77 years). There is also a 20-year difference between Haiti and Costa Rica in the life expectancy of women, estimated at 59 and 79 years respectively (CELADE, 1999).

Bearing in mind that the genetic potential of women causes them to live longer than men, the wide range of differences between the life expectancy of men and women in Latin American countries is somewhat surprising. As suggested by Sen (1991), inter-country differences in the life-expectancy of men and women probably reflect levels of abandonment of women and discrimination against them in terms of basic health care and nutrition. Estimates for 1995/2000 suggest that the best living conditions for women are to be found in Brazil, where there is an eight-year difference between women's and men's life expectancy. The worst conditions are in Bolivia, where the difference is only three years.¹⁶

Other aspects relating to changes in the stages of the family cycle include a reduction in the number of children and an increase in the age of marriage in nearly all countries that have such information available. There have also been slight increases in the ages at which the first sexual encounter, the first union and the birth of the first child occur (ECLAC, 2000b). These developments correspond to the second demographic

transition. Here again it is worth noting that women with relatively more education tend to postpone their first sexual relationship, first union and first child. Some countries in the region report that a large percentage of women between 15 and 49 years old did not want to have more children when they last became pregnant. This proportion is much higher among women belonging to the poorest strata (income quintile 1) than those in the wealthiest (quintile 5). Bolivia and Peru display notably large differences between quintiles 1 and 5 (33% and 32%, respectively), which suggests a deficit area in the coverage of reproductive health care services among the poorest female population groups (table 3).

5. Poverty and inequality among families

Between the 1980s and 1999 average household size decreased in all the Latin American countries.¹⁷ The heterogeneity of the individual country situations is explained by their different histories and the fact that they are at different stages in the demographic transition. Uruguay has the smallest average household size (3.2 persons in 1999), while Honduras is at the opposite extreme with 4.8 persons per household. Household size also varies greatly with income. The smallest difference between the poorest and wealthiest quintiles was 1.4 persons in the Dominican Republic and 1.5 in Costa Rica. The largest differences in household size were found in Guatemala and Mexico (2.8 and 2.7 persons, respectively). Countries at different stages in the demographic transition, such as Costa Rica and the Dominican Republic, display very little variation between income strata, suggesting that these two countries have more widely shared cultural patterns in terms of ideal family size, and probably more equal access to knowledge and use of contraceptive methods across income groups. Possibly this is not the case in Guatemala and Mexico, where there are large differences in family size between the wealthier and poorer population segments, as well as major cultural and ethnic diversity.

The structure of Latin American families varies greatly according to income level. For example, to set up a single-person household requires a level of economic resources not available to everyone who

¹⁶ Normally, the difference in life expectancy between the sexes in developed European countries is around six years. The larger difference in Brazil can partly be explained by higher mortality among the young male population due to accidents and violent deaths (homicides). In 1994 the male death rate from homicides was 54.8 per thousand inhabitants, whereas the equivalent figure for women was 5.2 (Arriagada and Godoy, 1999).

¹⁷ In the 17 Latin American countries for which data are available, average household size decreased between 1986 and 1999. Although household size is larger in the poorest quintile, it too decreased during this period (Arriagada, 2001).

TABLE 3

Latin America (7 countries): Percentage of women between 15 and 49 years of age who did not want to have more children when they last became pregnant, by family income quintiles, 1996
(Percentages)

Country	Family income quintiles				
	Year	Total	Q1	Q5	Q1 - Q5
Bolivia	1997	33.3	46.7	13.6	33.1
Brazil	1996	23.2	29.4	17.8	11.6
Colombia	1995	22.6	32.8	14.7	18.1
Guatemala	1995	13.5	14.6	13.9	0.7
Haiti	1995	36.2	34.5	31.5	3.0
Nicaragua	1998	18.3	20.3	13.7	6.6
Peru	1996	36.9	51.8	19.5	32.3
Dominican Republic	1996	10.8	16.3	5.3	11.0

Source: ECLAC (2000b).

would like to live alone. At the other extreme, a larger percentage of poor families are extended and composite. The number of children marks the difference between nuclear families in the poorest quintile and those from the wealthiest one. While no direct temporal cause-effect relationship can be established (Does having more children prevent families from overcoming poverty, or does poverty cause people to have more children?), there is a significant correlation between family income and family structure. This correlation has two dimensions: poor households usually have a larger number of economically dependent children, yet they also tend to have fewer economic providers.

The incidence of poverty also varies according to the stage of the family life cycle. A typology has been developed of the various stages through which family households can pass. Although the classification is basically empirical and corresponds to a cross-section in time, it is considered to come close to the conceptual differences between the initial stage of starting a family (children start arriving), the consolidation stage (child-bearing ceases), and finally the departure of the children (they "leave the nest" or set up their own households). Unlike an earlier typology,¹⁸ this one is based on the age of the youngest child, since younger children generate more domestic chores in the home (box 3 and table 4).¹⁹

¹⁸ See Arriagada, 1997.

¹⁹ The existence of blended families complicates this typology, because families that have interrupted one family life cycle (as a result of separation and divorce) and started another (new unions) may have families with children that are much older or much younger.

The majority of Latin American families are in the expansion and growth stage, with youngest children under 12 years of age. Countries in advanced stages of the demographic transition, such as Argentina, Chile, Panama and Uruguay, have more families located in the consolidation and departure phase, where the youngest child is 13 or older, or in the "empty nest" category, i.e., older couples without children. These trends can be assimilated to late modernity.

The highest rates of poverty in all countries (with the sole exception of Bolivia) occur in the expansion and growth stage, where the youngest children are 12 years old or under. In Bolivia, poverty is more prevalent among families in the initial cycle, i.e., with children under six years of age (table 5). This information should alert policy-makers to aspects that need to be considered in public policies to reduce poverty.

6. Transformation of the social roles of women

It has been argued that changes in the organization of the economy, in processes of constructing individual identity, in culture, and in newly appropriated ideas on liberty, autonomy, rights and political participation have all influenced the system of gender relations. Changes in the daily interaction between men and women, and the pressure exerted by women's organizations on public agendas and political power, have helped to undermine the rules that traditionally regulated behaviour in the domains of the family, intimacy and sexuality, and the other key social institutions of modern life (Guzmán, 2002).

In particular, the massive entry of women into the labour force has changed traditional patterns of home life in Latin America. Taking the region as a whole,

Box 3

FAMILY LIFE CYCLE TYPOLOGY, BASED ON HOUSEHOLD SURVEYS

1. *Young couple without children*: couples who have not had children, in which the woman is under 40 years of age.
2. *Starting the family*:^a families with children all under six years of age.
3. *Expansion or growth cycle*: families whose youngest children are 12 years old or younger.
4. *Consolidation and departure*: families whose youngest children are 13 or older.
5. *Older couple without children (empty nest)*: couples without children, where the woman is over 40 years of age.

^a By way of example, the “starting the family” stage only includes families with children all under 6; if a family has one child aged 5 and another aged 11, it will be classified in the “expansion or growth” stage.

TABLE 4

Latin America (15 countries): Family life cycle in urban areas, 1999
(Percentages)

Country	Year	Stage in family life cycle ^a					Total
		Young couple with no children	Start of family	Expansion or growth	Consolidation and departure	Older couple without children	
Argentina	1999	4.0	10.4	34.5	38.2	12.8	100.0
Bolivia	1999	2.5	14.4	50.9	27.5	4.9	100.0
Brazil	1999	5.7	13.4	36.7	35.7	8.5	100.0
Chile	1998	3.0	10.2	39.0	39.5	8.2	100.0
Colombia	1999	3.9	13.2	40.6	37.1	5.1	100.0
Costa Rica	1999	4.3	10.6	42.3	36.2	6.5	100.0
Ecuador	1999	3.7	13.1	43.5	33.5	6.2	100.0
Guatemala	1998	2.1	10.1	47.6	34.4	5.9	100.0
Honduras	1999	3.4	14.0	48.3	31.2	3.1	100.0
Mexico	1998	3.8	13.4	44.0	33.4	5.4	100.0
Panama	1999	4.1	10.3	36.2	41.8	7.6	100.0
Paraguay	1999	3.7	15.1	47.7	28.2	5.2	100.0
Dominican Republic	1997	6.8	15.5	38.4	34.0	5.3	100.0
Uruguay	1999	4.2	8.9	29.6	38.5	19.0	100.0
Venezuela ^b	1999	2.7	9.7	44.0	39.2	4.3	100.0

Source: ECLAC, on the basis of special tabulations of household surveys of the countries concerned.

^a Start of family: families with children under six years of age.

Expansion or growth: families whose youngest children are 12 years old or younger.

Consolidation and departure: families whose youngest children are 13 or older.

^b Nationwide total.

female activity rates rose from 39% in 1990 to 44.7% in 1998 (Abramo, Valenzuela and Pollack, 2000), albeit with big differences according to country, area of residence, age and educational level. Although the highest employment rates are seen among women with more education, as Latin American households grapple with ever-greater financial difficulties less-educated women are also entering the labour market in ever larger numbers. As a result, more family members now contribute to household income (including women, teenagers and children), marking the demise of the

single-breadwinner system in the most socially vulnerable households. Increased labour market participation by women – whether rich or poor – offers them the chance of greater autonomy and participation in other social domains.

Thus, although demographic changes have been very gradual, women have continued to join the labour market at an ever-increasing rate. A number of studies have shown that during the 1990s the largest percentage of new female entrants have been women in the most demanding stages of the reproductive cycle (i.e., when

TABLE 5

**Latin America (15 countries): Incidence of poverty in urban areas,
by stage of family life cycle, 1999**

Country	Year	Stage in family life cycle ^a					Total poverty
		Young couple with no children	Start of family	Expansion or growth	Consolidation and departure	Older couple without children	
Argentina	1999	1.7	18.5	32.6	12.8	9.3	19.4
Bolivia	1999	19.0	54.2	53.8	30.0	28.5	45.2
Brazil	1999	13.9	38.4	41.7	18.9	9.6	28.8
Chile	1998	4.7	19.9	27.4	12.3	6.2	18.2
Colombia	1999	16.9	53.8	59.6	37.3	29.6	47.4
Costa Rica	1999	3.8	10.7	20.8	11.6	20.8	15.6
Ecuador	1999	32.1	59.5	68.6	53.6	50.1	59.9
Guatemala	1998	17.7	35.6	49.8	32.2	34.0	40.7
Honduras	1999	46.8	67.0	73.7	63.5	58.7	68.2
Mexico	1998	14.8	32.5	42.8	25.8	23.7	33.7
Panama	1999	4.4	22.8	34.2	14.4	14.6	22.0
Paraguay	1999	12.0	45.0	56.2	32.7	34.6	45.1
Dominican Rep.	1997	9.5	29.6	42.6	30.0	25.2	33.1
Uruguay	1999	1.6	9.9	14.8	3.5	1.2	6.9
Venezuela ^b	1999	13.7	45.5	55.3	35.9	37.0	44.8

Source: ECLAC, on the basis of special tabulations of household surveys of the countries concerned.

^a Start of family: families with children under six years of age.

Expansion or growth: families whose youngest children are 12 years old or younger.

Consolidation and departure: families whose youngest children are 13 or older.

^b Nationwide total.

they have small children). The economic contribution of women who undertake paid work helps keep many households above the poverty line (ECLAC, 1995; Arriagada, 1998).

The contribution of an additional income marks the difference between households in the poorest and wealthiest quintiles. Households with more than one breadwinner most often consist of two-parent families, extended families or composite families. By their very nature, a smaller percentage of single-parent families have multiple income-earners, since in this case additional incomes can only come as a result of sons or daughters entering the labour market. In the 1990s, nearly all countries saw an increase in the number of households with more than one breadwinner, both in the poorer quintiles and among those that were better off.

Participation in public life is giving rise to new perceptions of women's roles and affords them greater autonomy with respect to their families. This cultural change can be seen in a tendency for motherhood to become a matter of choice; later first marriages; lower fertility rates; conflicts between two-career couples, and the need to balance domestic chores with paid employment. As pointed out by Sen (1990 and 1991), the distribution of the co-benefits of the family is likely

to be less unfavourable for women if: i) they can earn an income outside the home; ii) their work is recognized as productive (this is much easier to achieve with work outside the home); iii) they possess some economic resources and have assets they can fall back on; and iv) there is an understanding of the ways women are deprived of these benefits and a recognition of the possibilities for changing the situation.

These changes are not all in the same direction. Although total fertility has decreased, the demographic risks connected with the increase in teenage fertility and unplanned pregnancies persist, while new ones have also been generated (stemming from the spread of AIDS, for example). It has been noted that the persistence of demographic risks is due to a complex combination of traditional forms of behaviour (early union and pregnancy in the case of teenage fertility among low-income groups), together with classical phenomena of social and economic exclusion, such as lack of access to contraceptive methods, in the case of unplanned pregnancy (CELADE, 2001), and other factors relating to youth culture. Women's autonomy—a key element in the measure of modernity achieved in education, in the economic domain and in political participation—is eclipsed in the face of demographic risks.

The expansion of citizenship for Latin American women would also seem to be contradictory and elusive, for while there have been significant achievements in terms of political and civil rights, progress on economic, social and cultural rights has lagged behind. Despite these shortcomings, women's access to decision-making has improved at certain levels of the State machinery and also in political parties in some countries. Although information in this respect is sparse, there has also been a significant increase in women's participation at the technical levels of the public sector and in certain areas of the judiciary (ECLAC, 1999).

Rapid social, economic and cultural changes have an impact on family relationships, attitudes and social practices, since the new opportunities (such as greater autonomy, the possibility of choice with regard to childbearing, and economic independence for women) coexist with traditional patterns of behaviour, such as subjective dependency, teenage pregnancy and gender-based division of labour in domestic chores.

7. Cultural changes

Cultural concepts and images regarding male power continue to prevail in the social domain, along with behavioural patterns based on those images. This helps to explain the inconsistencies that exist between the traditional discourse and new family practices. Nonetheless, certain dimensions of modernity have been emerging, such as redefined conjugal roles, in which the principle of equality is gradually gaining acceptance, in keeping with the growing economic contribution made by women and children to the household. Changing parent-child relationships reflect a strengthening of the rights of the child and less emphasis on relations of hierarchy and submission. New individual choices are emerging, made possible by access to economic resources (non-nuclear and single-person households). The institution of the nuclear family centered on paternal authority and supported by the entire set of social institutions is being called into question by a number of interrelated processes, including: changes in the organization of work in a global information economy; higher levels of education and female labour market participation; increasing control over the spacing and frequency of pregnancies; circulation of people and ideas between different societies and lifestyles; and greater awareness among women themselves (Guzmán, 2002).

Incipient processes of "individualization" are also emerging, in which personal rights take precedence over family ones, and personal fulfilment overrides family

interests. In these processes of cultural change, globalized images of different family types have fuelled the move towards individual rights and autonomy, along with changes in models of sexuality and intimacy, especially among adolescents, and a greater emphasis on peer culture (in which young people identify first and foremost with other young people). A recent study in Chile claims that young people see family relations as problematic. They believe this affects them negatively, and they blame parental attitudes for this. Authoritarianism, mistrust and a lack of care and affection are the most frequent complaints made by children about their family environment and situation (UNDP, 2002).

A number of changes in domestic relationships can be identified. A case study conducted in Mexico City and Monterrey shows that women today have greater decision-making power on reproductive issues (use of contraceptives, attending clinics) than in other areas of family life, compared to earlier studies. The gender-based division of labour for domestic chores shows little change; and domestic violence persists in a variety of forms, together with a strong tendency for men to restrict women's freedom to carry various types of activities. A large proportion of women still have to obtain permission to undertake paid work, join associations or visit friends and family, and there are still areas of exclusive male decision-making, such as the purchase of goods and where to live. Men and women have strikingly different perceptions of the various issues covered in the survey: in Mexico City, for example, the existence of domestic violence is perceived less clearly by men than by women — 16% compared to 33%, respectively (García and De Oliveira, 2001).

A study in Argentina which analysed two generations of families with two providers concludes that "the division of labour has moved from the traditional model of segregated roles, to a transitional one ... The intergenerational transition has not been uniform, as paternity gained many more supporters than domesticity. In other words, men increased their participation in child care much more than in housekeeping chores, which remain largely a female preserve. Although women have not cut back on their major participation in domestic and maternal chores, they have begun to encroach on traditionally male activities in the home" (Wainerman, 2000, p. 149).

Latin American families have undergone major changes, although these have been more marked in some areas than in others. Patriarchal authority is being called into question, and very incipient democratic models of family reconstruction are emerging. This is

increasingly necessary, since families provide psychological security and material well-being to their members in a world characterized by the individualization of work, the breakdown of civil society and the loss of legitimacy of the State. Nonetheless, the transition to new family forms entails a fundamental redefinition of gender relations in all societies (Castells, 1996). Unlike developed countries, Latin America displays glaring inequalities between families of different economic levels. Public-policy formulation therefore needs to consider the fact that

the family structures of poorer households prejudice their chances of escaping poverty, since they tend to be at the expansion stages in the family life cycle, with fewer economic providers and a larger number of members to provide for. These socioeconomic differences are compounded by gender and ethnic inequalities. These are fundamental issues when formulating policies and programmes aimed at democratizing Latin American families, which need to alter the current balance of men's and women's rights and obligations in the family domain.

IV

Conclusion

Within the framework of the very *sui generis* modernization and modernity taking place in Latin America, this article has attempted to analyse a number of dimensions of the cultural, social and demographic changes that families in the region have undergone, against a general backdrop of inequality in terms of gender and class. Findings relating to family structures and home life cast doubt on the dominant traditional image, revealing the existence of a wide diversity of situations. Because of their systemic nature, gender inequities permeate the social fabric, so overcoming them requires changes in other mechanisms that perpetuate social inequality: hence the analytical importance of an approach that focuses on the overlap between this and other systems of inequality, relating to class, ethnic origin or life cycle (Ariza and De Oliveira, 2000; Salles and Tuirán, 1997).

In a context of modernization without modernity, family change does not follow a single line but unfolds along a variety of paths heading in different and sometimes opposite directions. The analytical frameworks used to study the subject reveal a number of limitations in approach and public-policy design, often due to the assumption that there is a single desirable family model.

In many discourses, the family is seen as the final bastion against the vicissitudes of modernity, overlooking the fact that the great demographic, social and economic changes it has undergone prevent it from adequately performing the functions demanded of it, which have also changed too. This suggests the existence of unresolved traditional problems,

compounded by new challenges which families need additional cognitive, material and sociability resources to address (Güell, 1999). Modernity itself involves the possibility of accepting new forms of family structure and functioning that afford autonomy and reflexivity in decision-making for all members. The fact that these processes of reflexivity, which often take place privately, are not being adequately reflected in public debate further widens the gap between people's representations, discourses and practices.

With regard to family forms and functions in a Latin American setting of highly varied modernity, domestic gender inequalities are being rebuilt in the wake of the other changes taking place. These include a dual workload for women, the persistence of domestic violence, and more limited autonomy for women.

At the same time, the separation of sexuality from reproduction, so that motherhood is now a matter of choice, has increased women's possibilities of gaining access to better labour market opportunities (albeit often in precarious forms of employment) and taking part in social and political activities. On the other hand, the stages of the demographic transition tend to overlap even in a given country, depending on whether one is considering sectors of high socioeconomic level or extreme poverty. The social, economic and demographic changes taking place in Latin America display a number of basic pillars around which old forms of inequality are reproduced and new ones are created which require an integrated multidimensional approach to overcome.

(Original: Spanish)

Bibliography

- Abramo, L., M.E. Valenzuela and M. Pollack (2000): *Equidad de género en el mundo del trabajo en América Latina. Avances y desafíos cinco años después de Beijing*, Santiago, Chile, International Labour Organisation (ILO).
- Aguirre, R. and C. Fassler (1994), *¿Qué hombres? ¿Qué mujeres? ¿Qué familias?, Familias siglo XXI*, "Ediciones de las Mujeres" series, No. 20, Santiago, Chile, ISIS International.
- Ariza, M. and O. de Oliveira (1997): Formación y dinámica familiar en México, Centroamérica y el Caribe, *Ibero-Amerikanisches Archiv Zeitschrift für Sozialwissenschaften und Geschichte*, vol. 23, No. 1-2, Berlin, Sonderbruck.
- _____ (2000): *Género, trabajo y familia: Consideraciones teórico-metodológicas*, Mexico City, unpublished.
- _____ (2001): *Familias en transición y marcos conceptuales en redefinición*, Papeles de población, vol. 7, No. 28, Mexico City, Centro de Investigación y Estudios Avanzados de la Población, Universidad Autónoma del Estado de México (UAEM), April-June.
- Arriagada, I. (1997): *Políticas sociales, familia y trabajo en la América Latina de fin de siglo*, "Políticas sociales" series, No. 21, LC/L.1058, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).
- _____ (1998): Latin American families: convergences and divergences in models and policies, *CEPAL Review*, No. 65, LC/G.2033-P, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).
- _____ (2001): *Familias latinoamericanas. Diagnóstico y políticas públicas en los inicios del nuevo siglo*, "Políticas sociales" series, No. 57, LC/L.1652-P, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), United Nations publication, Sales No. S.01.II.G.189.
- Arriagada, I. and L. Godoy (1999): *Seguridad ciudadana y violencia en América Latina: diagnóstico y políticas en los años noventa*, "Políticas sociales" series, No. 32, LC/L.1179-P, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), United Nations publication, Sales No. S.99.II.G.24.
- Bourdieu, P. (2000): *La dominación masculina*, Barcelona, Editorial Anagrama.
- Calderón, F., M. Hopenhayn and E. Ottone (1993): *Hacia una perspectiva crítica de la modernidad: las dimensiones culturales de la transformación productiva con equidad*, Documento de trabajo, No. 21, Santiago, Chile, ECLAC.
- Castells, M. (1996), *The Information Age: Economy, Society and Culture*, vols. 1, 2 and 3, Blackwell Publishers Inc., Cambridge, Massachusetts.
- CELADE (Latin American and Caribbean Demographic Centre) (1999), Latin America: Economically Active Population 1980-2025, *Demographic Bulletin*, vol. 32, No. 64, LC/DEM/G.188; LC/G.2059, Santiago, Chile, July.
- _____ (2001): Presentation on socio-demographic vulnerability, Thirty-third Meeting of the Presiding Officers of the Regional Conference on Women in Latin America and the Caribbean, Port of Spain, 9 October.
- Corporación Latinobarómetro (2000), *Latinobarómetro 2000*, Santiago, Chile.
- DANE (Departamento Administrativo Nacional de Estadística) (1998), *La familia colombiana en el fin de siglo*, Santafé de Bogotá, Colombia.
- ECLAC (1995): *Social Panorama of Latin America, 1995*, LC/G.1886-P, Santiago, Chile. United Nations publication, Sales No. E.95.II.G.17.
- _____ (1999): *Social Panorama of Latin America, 1998*, LC/G.2050-P, Santiago, Chile. United Nations publication, Sales No. E.99.II.G.4.
- _____ (2000a): *Social Panorama of Latin America, 1999-2000*, LC/G.2068-P, Santiago, Chile. United Nations publication, Sales No. E.00.II.G.18.
- _____ (2000b): *Juventud, población y desarrollo: problemas, oportunidades y desafíos*, "Libros de la CEPAL" series, No. 59, LC/G.2113-P, Santiago, Chile. United Nations publication, Sales No. S.00.II.G.131.
- _____ (2001): *Social Panorama of Latin America, 2000-2001*, LC/G.2138-P, Santiago, Chile. United Nations publication, Sales No. E.01.II.G.141.
- Fuller, N. (1997), *Identidades masculinas. Varones de clase media en el Perú*, Lima, Catholic University of Peru/Fondo Editorial.
- Gammage, S. (1998): *The Gender Dimension of Household Poverty: Is Headship Still a Useful Concept?*, Washington, D.C., International Center for Research on Women (ICRW), unpublished. This text was presented in the same year at the Twenty-first International Congress of the Latin American Studies Association (LASA), held in Chicago.
- García, B. and O. De Oliveira (2001), *Las relaciones intrafamiliares en la ciudad de México y Monterrey: visiones masculinas y femeninas*, paper presented at the Twenty-third International Congress of the Latin American Studies Association (LASA), Washington, D.C., 6-8 September.
- Giddens, A. (1991a), *The Consequences of Modernity*, Stanford University Press.
- _____ (1991b): *Modernity and Self-Identity: Self and Society in the Late Modern Age*, Stanford University Press.
- _____ (1992): *The Transformation of Intimacy: Sexuality, Love and Eroticism in Modern Societies*, Stanford University Press.
- Güell, P. (1999): *Familia y modernización en Chile*, paper presented at the Comisión de Expertos en Temas de Familia, Santiago, Chile, National Women's Service (SERNAM), December.
- Guzmán, J.M. and others (2001): *Diagnóstico sobre salud sexual y reproductiva de adolescentes en América Latina y el Caribe*, Mexico City, United Nations Population Fund (UNFPA).
- Guzmán, V. (2002), *Las relaciones de género en un mundo global*, "Mujer y desarrollo" series, No. 38, LC/L.1729-P, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), United Nations publication, Sales No. S.02.II.G.40.
- Humphries, J. (ed.) (1999), Special issue on the family: Introduction, *Cambridge Journal of Economics*, vol. 23, No. 5, Oxford, Oxford University Press, September.
- Jelin, E. (1994): Las familias en América Latina, *Familias siglo XXI*, "Ediciones de las Mujeres" series, No. 20, Santiago, Chile, ISIS International.
- _____ (1998), *Pan y afectos. La transformación de las familias*, Buenos Aires, Fondo de Cultura Económica.
- Massiah, J. (1990): Defining women's work in the Commonwealth Caribbean, in I. Tinker, *Persistent Inequalities. Women and World Development*, New York, Oxford University Press.
- Milardo, R. (2000): The decade in review, *Journal of Marriage and the Family*, vol. 62, No. 4, Minneapolis, Minnesota, National Council on Family Relations, November.

- Ocampo, J.A. (2001): Panorama social preocupante, *El Mercurio*, Santiago, Chile, 27 September.
- Olavarría, J. and R. Parrini (eds.) (2000): *Masculinidad/es: identidad, sexualidad y familia. Primer encuentro de estudios de masculinidad*, Santiago, Chile, Latin American Faculty of Social Sciences (FLACSO)/University of the Academy of Christian Humanism.
- Salles, V. and R. Tuirán (1996): Mitos y creencias sobre vida familiar, *Revista mexicana de sociología*, vol. LVIII, No. 2, Mexico City, Institute of Social Research, National Autonomous University of Mexico, April-June.
- _____ (1997): The family in Latin America: A gender approach, *Current Sociology*, vol. 45, No. 1, London, Sage Publications, January.
- Sen, A. (1990): Gender and cooperative conflicts, in I. Tinker, *Persistent Inequalities. Women and World Development*, New York, Oxford University Press.
- _____ (1991): Faltan más de 100 millones de mujeres, *La mujer ausente. Derechos humanos en el mundo*, "Ediciones de las Mujeres" series, No. 15, Santiago, Chile, ISIS International.
- SERNAM (Servicio Nacional de la Mujer) (2001): *Mujeres chilenas. Estadísticas para un nuevo siglo*, Santiago, Chile.
- Théry, I. (1998): *Couple, filiation et parenté aujourd'hui. Le droit face aux mutations de la famille et de la vie privée*, Paris, Editions Odile Jacob, April.
- UNDP (United Nations Development Programme) (1998): *Desarrollo humano en Chile. Las paradojas de la modernización*, Santiago, Chile.
- _____ (2002): *Desarrollo humano en Chile. Nosotros los chilenos: un desafío cultural. Informe de Desarrollo Humano en Chile en 2002*, Santiago, Chile, May.
- Valdés, T. and I. Palacios (1999): *Participación y liderazgo en América Latina y el Caribe: indicadores de género*, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC).
- Van de Kaa, D.J. (2001): Postmodern fertility preferences: From changing value orientation to new behavior, R. Bulatao and J. Casterline (eds.), *Global Fertility Transition*, Population Council, New York.
- Viveros, M. (1997): *Entre familia y trabajo. Las trayectorias sociales de las parejas de doble carrera (un estudio de caso colombiano)*, paper presented at the IV Conferencia Iberoamericana sobre Familia, Cartagena de Indias, Colombia, 8-12 September.
- Wagner, P. (1997): *Sociología de la modernidad. Libertad y disciplina*, Barcelona, Editorial Herder.
- Wainerman, C. (2000): División del trabajo en familias de dos proveedores. Relato desde ambos géneros y dos generaciones, *Estudios demográficos y urbanos*, vol. 15, No. 1, Mexico City, El Colegio de México, January-April.



Infrastructure

to support

the digital economy

in Chile

Rossella Cominetti C.

Former head of the Economic Regulation Department, Office of the Undersecretary for Telecommunications (SUBTEL), Ministry of Transport and Telecommunications, Chile
rcominetti@indap.cl.

This article presents a model for dealing systematically with the different matters associated with policies for developing the infrastructure necessary to support a digital economy, identifying the roles of the State and the private sector in this respect. It also describes the main initiatives taken in terms of creating and improving the infrastructure and content in the case of Chile, which illustrates the recent progress made in developing the country's digital economy and the challenges still pending in this field. There is general agreement that Chile must move closer to those countries already incorporated into the information society, and it must do so quickly and promptly. This study helps to identify the main factors for evaluating the policy aimed at promoting access to the digital economy, which is one of the central pillars for designing policies to advance toward the information society.

I

Introduction

The origination of a new model in the telecommunications industry, arising from the digitisation of signals and the development of the Internet, has set the stage for a radical transformation of economic and social relations on a more efficient and democratic basis which will improve competitiveness, participation and equality. In particular, the replacement of traditional mechanisms for carrying out transactions, administrative procedures and communications in general with methods that make intensive use of information technologies is giving rise to what has been called the “new digital economy”, whose benefits in terms of productivity make it necessary to include the economic agents in this network promptly and massively. At the same time, the externalities and opportunities in terms of human capital associated with access to and use of the new technologies pose various challenges to public policy.

There is a general consensus that a tardy involvement in these information and communications technologies would not only mean missing out on many of the opportunities offered by access to information—larger markets, lower production costs, better training—but also a possible decline in the position achieved by the traditional economy. In this sense, information technology has become a decisive factor in economic growth, and its insufficient development can cause a widening of the gap with respect to countries that enter the digital economy more quickly. At the national level, massive access by the population to the Internet can help to reduce inequalities that limit equitable access to the benefits of economic growth.

Faced with this new phenomenon, it is essential to speed up the expansion of access to and use of the Internet as a tool for information, transactions, administrative procedures and the provision of social services (for example, education and health care) and thus build a non-exclusive pattern of sustained growth that helps to improve the quality of life of all citizens. In order to do this, it is essential to coordinate the efforts of the different actors involved, that is to say, the State, companies, content providers, universities, non-governmental organizations and the community itself.

In the development of information infrastructure, the main task of the State is to create a system of

incentives to ensure both appropriate levels of access to the networks and the provision of suitable content. To this end, the authorities should:

- Promote universal access to the Internet.
- Eliminate barriers that interfere with access to and use of the network.
- Establish the necessary conditions to ensure investment in the support infrastructure required by the digital economy and its contents.
- Ensure the development of human resources compatible with the requirements of the new digital economy.
- Become a catalyst in the use of the Internet, by modernizing the public apparatus.
- Coordinate the actions of the public and private sectors and of non-governmental organizations in order to ensure an efficient effort and take advantage of the synergies among these actions.

Chile was the first Latin American country to introduce the Internet: in January 1992, the first connection was made, in the university sphere. In 1998, in view of the general perception that although the country had achieved some important successes in telecommunications, its performance in terms of the Internet was weaker than that of other countries in the region, a Presidential commission was formed to identify actions to advance further in use of the Internet in Chile. Later, the administration that took office in March 2000 assigned high priority in the public policy agenda to the issue of access to information technologies and the Internet. In his annual speech to Parliament in May of that same year,¹ the President of the Republic himself said that “Chile must take the lead among countries using information technologies, especially the Internet, as the engine driving new progress: progress based on companies’ flexibility and not their size, on people’s intelligence and not geographic proximity, on cooperation and not antagonism”. To apply this guideline and give

¹ For the complete speech, in Spanish, see <http://www.presidencia.cl/cuenta/index.htm>.

continuity to previously created commissions, the Commission on New Information and Communications Technologies was formed. This multidisciplinary, intergovernmental entity includes representatives of several ministries and public bodies empowered to deal with new information and communications technologies, and its mission is to ensure the development of these new technologies in Chile.

This article analyses the policies for developing the necessary infrastructure for the integration of Chile and all its citizens into the information society and evaluates the progress made in this direction. It is

organized in three sections plus the present Introduction. Section II provides a simple model for conceptualizing policies for developing support infrastructure for the digital economy and identifies the basic elements that should be taken into account in them. Section III examines and evaluates the main policy measures recently applied by Chile in this area. Finally, section IV reviews the main challenges to be met in order to continue to develop infrastructure for access to the digital economy and thus help to place the country among those forming part of the information society.

II

Support infrastructure for the digital economy

The new information and communication technologies (ICTs) and the development of the Internet are key elements in the transformation that traditional forms and mechanisms for the exchange of information are currently undergoing: a transformation which has expanded to include exchanges of goods and services, giving rise to the terms “digital economy” or “new economy”.

The concept of the digital economy mainly refers to the replacement of mechanisms for commercial transactions. The way such transactions are carried out has undergone substantial changes over time, each permitting significant reductions in transaction costs. The systems used have progressed from barter to the use of money, and from money in its different forms to exchanges in virtual space through devices connected to the Internet, making it possible to avoid the transaction costs associated with intermediation. The new economy does not involve disappearance of the traditional economy: only the market changes, with suppliers and purchasers meeting in a virtual space to exchange goods and services generated in the traditional economy.

There are two basic requirements for the success of network-based transactions:

i) Infrastructure: There must be an infrastructure to transmit information, making possible an electronic meeting between suppliers and purchasers; an infrastructure providing the necessary means for agreements to be accepted by the parties involved; and

an infrastructure for transporting the electronically traded goods from the supplier to the purchaser.

ii) Content: The information needed for suppliers and purchasers to be fully aware of the terms of the transaction must also be available.

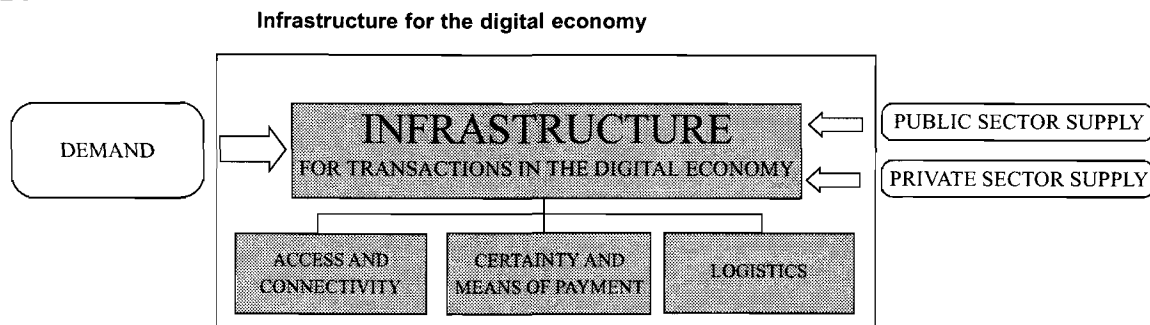
The absence of or limitations to one of these two components will inhibit the success of network-based transactions. It is therefore essential to ensure the harmonic development of both.²

The concept of the information infrastructure is illustrated in figure 1, which shows the supply of content offered by the public and private sectors, along with the demand for goods, services or information provided by both sectors. For electronic transactions to take place, a support infrastructure is necessary to facilitate interaction between suppliers and purchasers, thus making possible transactions in the digital economy.

The concept of a support infrastructure for the digital economy includes the whole set of elements necessary to guarantee the success of transactions across

² One of the central elements in the diagnosis made in 1998 by the Presidential Commission on New Information and Communications Technologies was the identification of a vicious circle between these two components. The commission found that on the one hand the limited development of infrastructure and lack of interest in operating across networks arose from the lack of content, while on the other hand the lack of content was due to the low penetration of Internet in households and companies. This diagnosis permitted the identification and implementation of significant projects that helped to break this vicious circle, among them, the incorporation of the State itself into the network.

FIGURE 1



information networks. The three basic elements are: access infrastructure, means of payment and certainty, and distribution infrastructure. With the Internet and the advent of highly competitive, globalized markets, if any of these three elements do not operate promptly and well, opportunities to create added value at the country level can be frustrated. The existence of an adequate supply and demand for goods and services in this virtual market place is also essential, so that a number of measures need to be taken to maximize the potential benefits of these new technologies.

Figure 1 shows how to order policies for encouraging trade through digital media. Several measures can be identified in this respect, involving:

- Strengthening the demand for goods and services traded over the net.
- Developing the access infrastructure.
- Developing the infrastructure designed to provide the means of payment and the corresponding certainty.
- Developing logistical infrastructure.
- Strengthening the supply of goods and services traded on the net.

1. Strengthening demand for goods and services traded over the net

A variety of measures can be applied to develop Internet-related capabilities. They involve not only mastering the devices connected to the Internet, but also strengthening English language skills, since today around 78% of websites and 96% of e-commerce sites use English. Moreover, to make the Internet more attractive than traditional methods for exchanging information, different incentives can be established, such as tax exemptions for electronic commerce³ or

³ Such as those recently applied in the United States through Law HR 1054.

measures to simplify or expedite administrative procedures.⁴

2. Developing the access infrastructure

The access infrastructure consists of the telecommunications media and other devices needed to gain access to or connect to networks and to transmit information in such a way as to permit two-way electronic communication among the actors generating the information and its users.

All policies designed to encourage the development of telecommunications networks and devices to permit non-exclusive, efficient and competitive Internet access and data transmission belong to the area of the access infrastructure. It therefore involves the application of regulatory and policy measures that promote the rapid absorption of new technologies and competition in the telecommunications market, thus making Internet access cheaper, as well as policies for creating infrastructure to serve vulnerable or isolated sectors.

3. Developing infrastructure to ensure certainty and security

An essential element in any transaction is money, that is to say, the means of payment accepted by the parties involved. Basic requirements for this acceptance include the security of the means of payment employed and certification of transactions. Similarly, security regarding the agents involved in a transaction is essential, and this involves their digital identity, along with trust in the inviolability of the private data transmitted across the network.

In this sphere, conditions must be generated that guarantee protection of the digital identity, by providing

⁴ Such as those applied in Chile and Brazil for tax declarations.

full security for the information moving through networks by means of systems of authentication, certification, privacy and security to deal with any information technology incidents.

4. Developing the logistical infrastructure

This area of infrastructure includes policies to guarantee the timely and efficient delivery of goods or services acquired electronically. Measures to be applied in this respect include the creation of “back office” logistical systems that minimize dispatch times through efficient inventory management and proper organization of the distribution industry to ensure the timely and informed delivery of goods to users.

5. Strengthening the supply of goods and services

The potential benefits of Internet use depend very much on the network content being of interest to users; consequently, the relevant policies must be designed to stimulate this content. The public sector can become a catalyst for the use of the Internet by stimulating access to public services through the Internet.

In this respect, the main challenge facing this sector is to move the State into the virtual arena so as to bring public services closer to people, while for the private sector the challenge is to develop suitable content on the network, especially by aiding small and medium-sized firms, which often find it more difficult to participate in a system based on virtual supply.

III

Information infrastructure development policies in Chile

This section describes the main policies applied in Chile to stimulate the development of support infrastructure for the digital economy and evaluates the country’s status in terms of access and connectivity infrastructure.

The Chilean strategy has been to minimize the regulations applied to the industry, to promote more Internet connections, and to develop close private-public cooperation in the various bodies engaged in the preparation of measures to favour development of the Internet. Right from the start, the Presidential commission on new information and communications technologies began to work closely with the private sector, which was considered to be a leading actor in the country’s integration into the information society. Later, in May 2001, the Public-Private Alliance was formed. This body, coordinated by the public sector⁵ and made up of companies from the telecommunications and information technology, financial, transportation and postal sectors, was organized to design and establish instruments and projects to encourage the development of infrastructure for access, security and certainty, and distribution.

In this same sense, the government has given high priority to private sector participation in the development of the Internet, by organizing several missions, led by the President of Chile and made up of ministers and leading private sector actors, to establish contacts between Chile and key centres of the technology and information industry. These included, for example, the missions to Silicon Valley and Sweden in 2001. Results from these missions include the creation of the Fundación País Digital (Foundation for a Digital Country), a private sector initiative; the start-up of a project to create a technology park in Valparaíso; and above all, consensus about the importance of a joint effort to position the country in terms of the new technologies.

A description of the main policies applied in the different areas of information infrastructure in Chile follows, with examples from specific programmes.

1. Strengthening demand for goods and services traded on the network

The policies in this field are aimed primarily at training human resources in efficient use of Internet. The demand for information infrastructure is closely tied to the quality and relevance of the contents available

⁵ Specifically, by the Special Information Infrastructure Unit created by the SUBTEL (Department of Telecommunications). See (in Spanish) www.chilefuturo.cl.

on the network. Thus, the experience with community "telecentres" indicates that a key element in their success and sustainability is the creation of local content interesting to local people, whose greater or lesser mastery of the computer is a decisive factor in the use of these telecentres. Training has proved to have a direct impact on boosting demand for Internet navigation hours.

In terms of human resource training, several initiatives to reinforce demand for these technologies have been implemented. In the public sector, a training programme in information technologies has been set up for public employees throughout the country; a technology transfer laboratory has likewise been established; and the modification of the curricula of technical institutes to deal with the new requirements associated with information infrastructure is being studied (these institutes receive 40% of all secondary school students).

Likewise, at the level of small and medium-sized firms, an Internet training programme for companies has been created (www.corfo.cl). This programme seeks to make businessmen see the Internet as a means of improving their competitiveness, expanding markets and making possible new business opportunities. It is designed to train people with different levels of needs for Internet skills, in accordance with the stage reached by the companies concerned in the process of absorption of technologies.

2. Development of a non-exclusive access infrastructure

The access infrastructure is that which provides users with access both to the devices necessary to establish communication and to the networks giving access to the basic connectivity infrastructure for data transmission.

a) *Access to devices for digital information exchange*

Universal access to information technologies is a priority policy objective for reducing the so-called digital divide. According to information up to November 2000, in that year 16.9% of Chilean households had a computer and 8.3% were connected to the Internet. In terms of numbers of people, the figures were better: 29.6% and 15.9% of the population, respectively, thus indicating that people have access to computers and the Internet in places other than their homes, as well as through some specific community programmes.

The relatively low rate of household access to the Internet largely reflects the fact that the main medium used is the personal computer, whose high cost constitutes a significant entry barrier. While technological development will introduce new means for accessing the Internet at higher speeds, such as digital television and third generation mobile services, it is necessary to improve access to terminals through specific support programmes.

In late 2001, the private sector started to install public telephones especially designed to send e-mails and messages to cellular telephones at prices accessible to users, which will contribute significantly to more widespread use of the Internet. Similarly, the market is generating solutions that permit Internet access through infocentres.

For its part, the public sector has implemented several measures to promote access to computers, which may be divided into measures of an individual nature and those at the community level.

Among the possible measures to promote **individual access** to Internet connection devices are subsidies for the purchase of equipment and targeted credit policies. Chile has opted for the second alternative, establishing a programme of soft loans for groups of users with common interests, in this case school teachers and small and medium-sized firms. Unlike other countries, no moves have been made to establish special programmes for improving Internet access by providing lower-cost equipment.

The national Production Development Corporation (CORFO) and the state-owned bank BancoEstado have opened lines of credit to allow micro- and small firms to purchase computer equipment and receive training in Internet use.

To this end, BancoEstado (www.bancoestado.cl) offers two lines of credit to small and medium-sized firms: one called Easy PC Credit, to finance the purchase of a computer, aimed at micro- or small businesses which are formally established and have been in existence for at least one year; and a PC Internet credit scheme to finance the purchase of computer equipment for all kinds of educational establishments, whether State-subsidized or private schools, to help them to set up computer classrooms and obtain equipment for carrying out the school's administrative tasks.

Similarly, in 2001 CORFO set up a programme to provide 10,000 computer sets (equipment and services) for small businesses and teachers, with preferential financing. This programme was repeated at the end of that year, providing the same number of computer solutions.

The policy for **community access** to telecommunications services has mainly focused on strengthening infrastructure for vulnerable or isolated sectors, through a subsidy for investment in this respect. Thanks to the universal access policy applied in Chile since 1995, basic telecommunications infrastructure –wired, wireless and satellite networks– has been developed throughout the country, particularly in rural areas, thus providing extensive coverage,⁶ and it is hoped to expand it to include infrastructure providing universal access to the Internet.

Several other initiatives have also been taken to promote community access to information technologies and are already under way.

“Enlaces” Network. In the context of the educational reform programme, in 1993 an experimental project in the field of computers and digital networks was begun in Chile’s State-subsidized schools. It is known as the *Enlaces* (Links) Network, and its purpose is to integrate information technology into the educational system as a resource for teaching and learning, training teachers, and developing relevant content. By 2000, 90% of Chile’s students were in schools with a computer room connected to the Internet (100% coverage of secondary schools and 50% of primary schools). In 2001, an educational portal (www.educarchile.cl) was inaugurated to help the community advance in terms of educational content relevant to the formation of human capital.

National Community Infocentre Programme. This programme is a means for the coordination and generation of inter-institutional alliances. It operates through a governmental working group that coordinates public initiatives in this area, creates alliances and designs policies to promote universal community access, in close coordination with non-governmental initiatives. A national list of infocentres has been prepared (www.gobiernodechile.cl and www.mapas.moptt.cl), which so far lists 184 such centres; this includes 18 infocentres for small and medium-sized firms, which will soon rise to 60. Similarly, in 2002 the government department responsible for libraries, archives and museums (*Dirección de Bibliotecas, Archivos y Museos*) was due to set up around 366 infocentres in its premises in

municipalities all over the country: this initiative is being carried out jointly with the Gates Foundation. Among the measures for developing these infocentres throughout the country are projects for the recycling of computers and the establishment of community telecentres.

Computer recycling project for Infocentres. This initiative, begun in 2001 as part of the Public-Private Alliance, aims to create infocentres run by non-governmental and community organizations, with equipment and services provided by private firms. The State’s role is mainly that of management, targeting and selection of the institutions responsible for running the infocentres, along with coordination among the companies and civilian organizations involved. By late 2001, ten infocentres were up and running, and by the end of 2002 another 100 were due to be established, using recycled elements.

Community Telecentres. This programme, in association with the Telecommunications Development Fund (see www.subtel.cl), seeks to provide local communities with an integrated community solution in terms of telecommunications services, including the Internet. The implementation of this programme, involving competitive grants to subsidize the development of community telecentres, is designed to generate community telecommunications and Internet infrastructure in isolated locations. The subsidy is financed from the general State revenues, so it has no distorting effect on the industry. The allocation of funds is efficient, in that those projects offering the most social benefits compete among themselves and the subsidies go to those applicants who meet the basic requirements but request the lowest amounts. To date, five community telecentres are up and functioning, as part of a pilot project that should develop further in 2002.

b) *Basic connectivity infrastructure to access the digital economy*

Chilean telecommunications policy has stimulated a rapid increase in the telecommunications infrastructure, which is of a high standard compared to other countries with similar per capita income. Because of the early market liberalization,⁷ privatization of the main fixed telephone and long-distance companies in the late 1980s, and the application of a regulatory framework that encourages investment, market competitiveness and universal access, investment in

⁶ The Telecommunications Development Fund programme, which started in March 1995, helped to improve the coverage of public telephones to virtually the whole country within five years. Only 3.2% of households now lack access to telephone service, that is, do not even have access to public telephones.

⁷ In the early 1980s.

telecommunications has risen steadily and with it the importance of this sector to the country's economy.

Internet access in Chile has grown strongly since mid-1999, because of the reduction in the price of dial-up connections, technological progress that permits higher-speed Internet access –at prices that residential and small business users can afford– and a minimal regulatory framework in a competitive market.⁸ To date, the penetration rate for Internet access is over 20%, thanks to the leap in the number of new broadband connections that became available as from 2001.

Although the basic connectivity infrastructure, understood as the basic Internet access infrastructure, which consists mainly of the public fixed telephone network, has performed well by regional standards, the country still displays a significant deficit compared with developed countries (table 1).

In terms of the organization of the industry, although there have been some substantial advances towards the entry of new operators and the development of new services, the market structure of the sector still shows a significant degree of concentration, particularly with regard to access to the “last mile”, where the dominant operator still controls about 80% of the market. In other services, such as mobile telephone service, long distance and the Internet, although there are many operators (4, 13 and 42 respectively) the market still tends to be controlled primarily by two or three firms, whose business is vertically integrated at every level.

Access to the digital economy requires access and connectivity infrastructure at three levels:

i) *International connectivity*. For the country to be fully integrated into global communications systems it needs an infrastructure connected to systems abroad via international links to form part, ultimately, of the global network of networks, thus placing the opportunities that exist elsewhere in the world within the grasp of Chilean individuals and companies.

In early 2001, two rings of underwater cable offering continental coverage and capable of processing 2.56 terabytes per second came into operation, thus connecting the Chilean network to systems operating in the United States and from there to the rest of the world. This represented a quantum leap in terms of international connectivity capacity, eliminating a

TABLE 1

International comparison of telecommunications service coverage, 2000

(Telephone lines, subscribers and users per 100 inhabitants)

	Fixed telephones	Mobile telephones	Internet users
Argentina	21.3	16.3	6.8
Brazil	18.2	13.6	2.9
Colombia	16.9	5.3	2.1
Chile	22.1	22.2	16.6
Mexico	12.5	14.2	2.7
Peru	6.4	4.8	9.7
Uruguay	27.8	13.2	11.1
Venezuela	10.8	21.7	3.9
United States	70.0	39.8	34.7
Spain	42.1	60.9	13.3
Finland	55.0	72.0	37.2
England	58.8	72.7	25.8
Italy	47.4	73.7	23.0
Sweden	68.2	71.7	45.6

Source: International Telecommunication Union (ITU) and SUBTEL.

significant barrier to the development of information technologies in Chile.

ii) *National connectivity (backbone)*. Networks are needed to connect communities at the local and national levels, at speeds that satisfy the demands of the country's economic and social development. These networks constitute the system's backbone.

In terms of national connectivity, the Internet access infrastructure can be seen as a trunk network fed by multiple access networks, with the public telephone network being the most used today. The trunk network consists primarily of fibre optic networks that provide connectivity at the national and international levels and meet capacity needs without restrictions.

In Chile, the region between Arica and Puerto Montt has three fibre optic networks at the national level, apart from local networks in the country's main cities. As a result, the supply of services is sufficient and competitive in most of the country, although the southernmost region remains unserved. There, the State's participation on a subsidiary basis is being studied.

iii) *Local connectivity or end-user access*. It is necessary to have means of transmission through which it is possible to reach digital nodes –mainly switches or routers that can channel digital communications to users or contents located both inside the country and abroad.

⁸ At the household level, in terms of Internet access infrastructure, in November 2000 17% of households had a computer and 8.2% an Internet connection.

As regards local connectivity, that is to say, networks for accessing the Internet that connect users to the national connectivity system, the public telephone network is the most significant component.⁹ More than 53% of Chilean households have telephone service, mostly in urban areas and higher income sectors. Most of this network uses traditional copper cables; the rest uses technologies based on TV cable networks and wireless technologies (wireless local loop (WLL), or satellites in rural areas).

A central element of telecommunications policy in recent years has been the stimulation of competition in the “last mile” access market. With the advent of digital signals, technological differences between networks have become increasingly irrelevant: a phenomenon known as convergence. Network technologies are incorporating the IP protocol as the support standard for almost all known and developing services, placing these within reach of individuals and companies, whoever the operator and whatever the type of network. Convergence of media thus offers the chance to deepen competition as a necessary condition for the proper development of a telecommunications network infrastructure offering users more and better local connection alternatives.

At the national level, new technologies are expected to be introduced that will contribute to broadband access and promote competition in the end-user access market. Recently, an experiment in the introduction of Power Line Communication (PLC) technology began, which can provide access to the Internet backbone using household power lines. Similarly, while awaiting the arrival of third generation (3G) service, the mobile telephone industry is working with medium-speed data transmission, referred to generically as 2.5G. Finally, as regards digital television, the country faces some challenges in terms of defining the technical standard for terrestrial digital television and designing a model for the transition from analogue television: non-exclusive access to this technology must be guaranteed, along with the creation of conditions that will allow television channels to position themselves more competitively in the telecommunications sector, within a context of convergence.¹⁰

The private sector is responsible for introducing the new technologies in a timely and efficient manner, whether by using the existing networks or creating new ones, while the task of the State is to improve and adapt the regulations to ensure the prompt incorporation of new technologies, as well as simplifying the procedures for authorizations and watching over market behaviour to ensure healthy competition.

3. Development of an infrastructure providing certainty and security

A key factor for the development of the digital economy is the availability of recognized, secure and low-cost means of payment. The very nature of electronic commerce, which allows the supplier and the consumer to be located in different countries with different legal systems, makes it necessary to have well-known and accepted means of payment. This requires a broadly accepted set of rules and appropriate institutions that guarantee the efficiency of certification procedures, can referee electronic transactions and commercial information, and protect users from abuse or deception.

Any deficiency in trust-related conditions, understood as those relating to network security, means of payment, certification procedures and guaranteed privacy, can become a barrier to electronic commerce—especially when providing services across networks—and thus endanger the competitiveness of the digital economy and increase country risk in the field of electronic operations.

People’s evaluation and use of information networks depend on the degree of certainty that these can offer.¹¹ In other words, the use of the network is extremely sensitive to users’ perceptions that it offers suitable conditions to guarantee the security and privacy of the information transmitted across it. Thus, a policy that helps to strengthen the perception of network security, privacy, integrity and authenticity of communications and information, along with certainty in payment systems, stimulates the creation of added value through the network.

In Chile, two bodies have appeared that provide certification services, and they could become a basic instrument for generating trust in business-to-consumer (B2C) exchanges. Furthermore, the system of digital signatures was recently approved, which will help to

⁹ In Chile, 100% of the dial-up and transmission networks installed for local telephone service have been digital since 1993, so that Chile has had a suitable infrastructure for data transmission since the early 1990s.

¹⁰ See SUBTEL (2000).

¹¹ A study in the United States indicates that in 2001, 42% of fraud reports referred to theft of credit card or personal data over the Internet.

overcome some legal restrictions that limit electronic exchanges.

As regards the means of payment, Chile has made progress in arranging for the traditional payment card system to cover monetary transactions over the network throughout the country. In order to achieve mass use of these systems for transferring money and speed up access to the digital economy, however, the country must resolve the issue of how to devise means to enable the lower-income sectors to make payments over the Internet, because they have no access to traditional financial instruments. Another important challenge in this area is how to deal with its very high level of concentration in the hands of Transbank, which is the company that handles all the traditional financial credit cards. In this respect, the big department stores have managed to compete to a significant extent in the credit market using their own credit cards.

With respect to incidents involving computer communications, measures should be taken to strengthen the availability of intelligent devices for reducing the possibility of attacks that place information integrity and people's privacy at risk. Likewise, it is vital to form highly skilled teams to take vigorous action in the event of any threat to the security of information exchanges.

Among the main initiatives taken by the private sector and above all the public sector with regard to the certainty and security infrastructure are the following.

Privacy. The Confiare ("I will trust") project, sponsored by the National Chamber of Commerce and a number of companies and associations involved with information technologies, also with participation by some public-sector institutions, is now under way. This non-profit initiative aims to build trust between Internet users and providers regarding the use made of information, by certifying member sites that meet certain minimum standards of privacy.

Basic reports on Internet security for users and recommendations regarding safe practices. In the sphere of user education, security newsletters have been prepared for different types of Internet users (such as residential users, small and medium-sized firms, etc.) and others for parents, children and adolescents who surf the Net. These teach some basic security measures for Internet use. A report has also been prepared which identifies a number of computer security issues and makes a series of relevant recommendations. These security reports may be found on the SUBTEL website as well as on the portals of the main Internet service providers (ISP) in Chile.

Law on electronic signatures. Electronic signatures have been valid in the public sector since 1999. The recent approval of the law on such signatures in January 2002, which established the equivalency of printed and electronic documents and recognizes the validity and value as proof of minutes and contracts signed by electronic means, will help to build trust and reaffirm the legal and technological security of electronic transactions over the Internet. By mid-2002, relevant regulations were due to come into effect that would establish an accreditation and certification system for private firms, government bodies, the judicial system and the legislature.

Development of information security policies within the public sector. This inter-ministerial initiative is designed to establish a general information security policy within the public administration and create the methodological tools for its implementation, as well as information risk management procedures and auditing mechanisms. A cooperation network against cyber-crime has been set up and is developing procedures and agreements involving the criminal investigation department of the police force, the Ministry of Justice, the Office of the Under-Secretary of Telecommunications, Internet service providers and security companies, to coordinate reports of offences and the investigation and punishment of information-related crime.

4. Development of the logistics infrastructure

The existence of efficient distribution mechanisms is an essential requirement for electronic commerce. This distribution involves not only the timely delivery of goods purchased on-line, but also the existence of a logistical system that guarantees the availability of the goods being purchased and their timely dispatch.

In order for distribution to be efficient, the system must supply quality services, that is, delivery must be timely, the merchandise must arrive in optimum condition, the product must be traceable during transport, and so on. Ideally, a range of alternative services should be available to provide different price-quality combinations, so that users can choose the combination best suited to their needs and limitations. This means that competition must be encouraged, along with the transparency of the delivery service market.

The courier industry must adjust to the needs of electronic commerce, thus requiring a review of dispatch procedures and reorganization of the systems and infrastructure for transportation, storage and distribution, along with on-line information systems.

The courier industry in Chile has advanced significantly, with the development of new services to adjust to the needs of electronic commerce. On one hand, already established private companies, such as LanCourier (www.lancourier.com) have adapted to these demands by offering new services in distribution and logistics (for example, on-line tracking and just-in-time delivery) and providing both transparency and lower costs. On the other, new companies have appeared that aspire to meet international standards, such as ChilePost (www.chilepost.cl), along with other international operators, which contributes to the development of more competitive markets.

In the public sector, the Chilean postal service (*Empresa Correos de Chile*) faces major challenges in modernizing and adjusting to electronic trade, because it must compete with operators applying very high quality standards yet it still displays some weaknesses as regards simplifying procedures and developing customer-oriented services in electronic commerce. In countries where the main postal system remains State-run, it plays an important role because as it is present throughout the country, it constitutes the only distribution option for most of the national territory, which is fundamental for bringing e-commerce to the masses. Furthermore, its extensive infrastructure opens the way for solutions designed to provide mass Internet access, particularly in more isolated areas.

Finally, in order to adjust logistics to the demands of these new technologies, a review must be made of the instruments aimed at furthering the incorporation of new management practices based on information and telecommunications technology, particularly in terms of back office procedures in small and medium-sized firms.

5. Strengthening the supply of goods and services

The policy of strengthening the supply of goods and services has mainly been associated with the creation of public sector content in order to act as a catalyst for encouraging Internet use by the general population. But the private sector has also made a significant effort and has recently been very active in this field. Thus, from March 2000 to March 2001, the number of virtual stores rose from 57 to 481 and the number of B2C products went up from 37,000 to 340,000,¹² while the volume traded¹³ doubled.

¹² See Santiago Chamber of Commerce (2001).

¹³ In 2001, B2C commerce reached US\$ 65 million, while B2B (business to business) commerce reached US\$ 900 million.

In terms of content, the public sector has made rapid progress in pursuance of a decision to move towards electronic government by placing several public services on line. A particularly notable effort was that of the internal revenue service (SII), which has allowed people to file their tax returns via Internet since 1999, turning it into a world leader in its field. For the 2001 tax year, 788,645 tax returns were filed by Internet, representing 41.6% of the total number of taxpayers. Similarly, various procedures can be carried out over the Internet in other public services, thus saving time and paperwork: these include the payment of social security contributions on line in the Instituto de Normalización Previsional (INP) (www.inp.cl) and the issue of various certificates from the national registry of births, marriages and deaths (www.registrocivil.cl). Various portals designed to bring the State closer to citizens are also currently available or in preparation, some of which are described briefly below.

a) *Information on public sector procurement* (compraschile.cl)

This system provides information on the goods and services required by the Chilean government and was designed to distribute and maintain information on the Internet about procurement operations, with each procedure duly documented on-line in a transparent fashion. On this site, State institutions publish their needs for goods and services, so that any user can find out about them and thus become a potential supplier.

b) *One-stop "window" for government services*

This project attempts to allow citizens requiring some service offered by the public sector to gain access to them from a single entry point where the institutions and procedures involved are presented in a transparent manner. The purpose of this "single window" is to provide less expensive access to State services, and thus streamline and facilitate government-related procedures so as to satisfy citizens' needs and allow them to comply with their obligations or request authorizations, reducing the time and cost of these processes for both the State and users.

In this context of modernization of the State, the web site www.tramitefacil.gov.cl was set up to provide information on the different procedures that people must follow in different public offices and allow them to carry out these formalities directly on line. This website constitutes a single window (on-line) for applications from citizens: at present, 38 procedures can be carried out at this site and information obtained on another 700.

Another programme functioning as a one-stop on-line service shop is the website *www.sitioempresa.cl* which provides services for companies and allows them to enter the appropriate websites for different formalities. It includes a specially designed website for those who wish to form a company and need to know what the procedures are in order to establish it and enter the market.

c) *Use of information technologies within the State sector*

This project aims to introduce the use of new ICT technologies inside and among public bodies so as to improve their management efficiency and effectiveness by saving time and resources over their documentation requirements. To do so, the project provides for the identification of recurring internal procedures in the different bodies and their redesign to take advantage of these new technologies.

Similarly, it seeks to expand the use of ICT in the State sector beyond the basic levels of e-mail and web pages and to use it to support internal management, by providing shared technical support for smaller institutions so they can make the most of economies of scale and establish more expedite communications mechanisms by using a common electronic

identification system shared throughout the central government.

d) *Infrastructure for public services*

The government is studying the introduction of a concession system for the digital infrastructure, whereby the State could entrust a private agent with the construction of the physical infrastructure needed to house its electronic platform for public services and then go on to entrust the private sector with both the management of the information associated with this public good and the distribution of the products required by individuals.

e) *Other initiatives for improving public sector Internet content*

A number of public bodies are engaged in spontaneous initiatives to improve Internet content and streamline service procedures. These include on-line procedures for telecommunications concessions, set up in late 2001 by the Department of Telecommunications, and the Ministry of Education's decision that as from 2002 university students must apply for government grants solely via the Internet, for which purpose it created 300 infocentres with the necessary equipment to ensure that all applicants have access to this mechanism.

IV

Policy challenges for the information infrastructure

The information infrastructure has made substantial progress in recent years, as a result of a decisive commitment to carry the country forward into the information society. Key elements in this have been the determination and effort displayed by both the public and private sectors. Nonetheless, the country is still in the midst of building the support infrastructure necessary for the digital economy. Consequently, there are many challenges that still need to be faced by both sectors in the coming years if they are to achieve the widespread use of the Internet as a tool for work, trade, leisure, education and social integration.

1. Efficient development of the telecommunications infrastructure

In the context of globalization, sustained and sustainable economic growth will be increasingly linked

to the development of the information infrastructure, which must necessarily be combined with the other fundamental productive factors in a strategy of growth with equity.

The efficient development of the telecommunications infrastructure is, in turn, linked to the existence of competitive markets. When media are converging with each other and a single service can be transmitted along networks using different technologies, while different networks can transmit the same services, it is essential at least to guarantee competition among networks.

Since the early 1980s, and increasingly since the 1990s, Chile's telecommunications policy has sought to deepen competition as a necessary condition for achieving a suitable infrastructure for telecommunications networks, which is a basic requirement for gaining access to the information society. In this sense,

market mechanisms must be expanded, the infrastructure and high-quality services must be extended to low-income sectors that are still without services,¹⁴ and progress must be made towards integrating new technologies in the “last mile” that will make it possible to move closer to the deregulation of this segment. Public intervention should be restricted solely to technical regulation, the correction of distortions and the application of policies of a subsidiary nature. The same principle applies to the other segments of this industry, in which the development of technology and services demands timely allocation of the electromagnetic spectrum and the establishment of regulations compatible with a context of convergence.

Improving and expanding mechanisms to reduce anti-competitive practices, together with the elimination of barriers to the entry of new companies and obstacles to the exit of dissatisfied users can help to promote competition within a single network. Other valuable mechanisms include those for disaggregating networks, making telephone numbers portable, and monitoring and severely punishing anti-competitive behaviour. Tariff regulations and a policy of allocating the electromagnetic spectrum in such a way as to promote the development of services in competitive markets will also help to ensure proper allocation of resources to maximize social benefits.

In order to encourage competition among networks, new technologies must continue to be introduced, such as wireless networks, power line communication and digital television. Other challenges include the need to: expedite the introduction of new concessions, which will require the timely adoption of technical standards and invitations to compete, when necessary; simplify the procedures for granting concessions, through a single license; and rapidly give rulings on administrative complaints designed to block new players from entering the arena.

2. Equality of access to the Internet

Reducing the differences in access to the Internet, be they the result of territorial-, gender-, ethnic- or age-related factors, is essential in order to ensure the non-exclusive development of the information infrastructure. To achieve this, an evaluation must be made of the policies on access to this infrastructure, as

¹⁴ This means facilitating the application of mechanisms like pre-payment systems and others which have facilitated the mass use of mobile telephony.

well as considering targeted policies aimed at providing infrastructure for the most vulnerable and/or marginalized sectors. The information infrastructure provides these sectors with a powerful instrument for gaining access to better opportunities and a better quality of life. In this respect, residence in rural or isolated areas, physical disability or urban poverty must cease to be factors limiting the development of these communities.

One of the challenges still pending is the need to progress in the building of a national network of infocentres covering isolated rural areas and lower-income urban areas, as well as establishing the regulatory instruments needed to promote the expansion of telephone service coverage to households that are still without it.

Expanding the capacity and coverage of the telecommunications infrastructure in a territorially balanced fashion is crucial for non-exclusive integration into the Internet. In order to promote territorial integration, consideration must be given to the introduction of new instruments that will help to extend the basic and broadband infrastructure to distant locations, and above all, to the extension of the fibre optic network to the extreme south of the country, thus completing a continental broadband trunk network.

3. Eliminating barriers to Internet use

Factors which hinder greater use of the new information and telecommunications technologies and inhibit network applications, particularly those involved in electronic commerce and other business activities, must be eliminated. Among the most urgent tasks in this area is the continued generation of instruments to encourage e-commerce and make it more secure. Moreover, the distribution industry must be urged to adjust to the standards demanded in more developed countries.

4. The growing presence of the State on the networks

The State's involvement in the networks represents a catalyst for the digital economy, while at the same time improving citizens' quality of life and bringing public services closer to users. Although there has been considerable progress in designing on-line governmental programmes, those still underway must be completed and the population educated on how to use them. Likewise, the country must continue to promote the development of private sector content.

5. Strengthening institutions in a context of media convergence

Because of the importance of telecommunications and information technologies to economic development, institutions must be adapted so they can more quickly absorb new technologies and information. To do so, the harmonic development of regulations for converging services must be promoted and further progress must be made towards the integration of telecommunications, information technologies, and science and technology within a single ministry. This would make it possible to replace the current multi-ministry approach, which reduces the opportunities for synergies among converging sectors and limits the efficiency of policies based on the principle of institutions focusing on the development of sectoral infrastructure. One challenge still pending is to create a Superintendency of Telecommunications which will allow enforcement activities to be separated from those aimed at furthering sectoral policies.

6. Participation in building infrastructure

Private sector participation is a central element in the construction of the information infrastructure, because the telecommunications sector has steadily lost its character of a traditional public service¹⁵ and must progress towards a more self-regulatory approach. In this sphere, the public sector must increasingly play the role of facilitator, helping to secure increased investment.

Finally, another challenge is to strengthen citizens' participation, to use the Internet as a tool for participation, to stimulate the development of content that will help to create better-informed citizens, and to improve markets by helping citizens to exert their rights as consumers.

(Original: Spanish)

¹⁵ For an analysis of the nature of telecommunications services, see Cominetti and Pérez (2001).

Bibliography

- Cominetti, R. and E. Pérez (2001): *Sector telecomunicaciones: modelos de institucionalidad alternativos*, December, unpublished.
- Santiago Chamber of Commerce (2001): *La economía digital en Chile, 2001*, www.ccs.cl.
- SUBTEL (Department of Telecommunications) (2000): *Propuesta de un marco normativo para la introducción de la televisión*

digital terrestre en Chile, Santiago, Chile, February, www.subtel.cl.

_____ (2001): *Informe estadístico*, No. 3, Santiago, Chile, December.

_____ (2002): *Informe estadístico*, No. 4, Santiago, Chile, January.

CEPAL REVIEW ON THE INTERNET

www.cepal.cl
www.cepal.org

www.eclac.cl
www.eclac.org

LC/R.2175-PI	ISBN	92-1-121364-0
April 2002	Printed copy	US\$ 15.00
Director: Oscar Altimir	Sale N°	** S/N **
Cepal, Executive		
No. 76		
198 pp		

[Full text document in pdf format \(2.853 Kb.\)](#)
[The transformation of collective action in Latin America \(pdf 507 Kb.\)](#) Manuel Antonio Garretón M.
[The idea of citizenship in the Latin American debate \(pdf 493 Kb.\)](#) Carlos Sojo
[Equity and exclusion in Latin America and the Caribbean: the case of indigenous and Afro-descendant peoples \(pdf 506 Kb.\)](#) Alvaro Bello and María Rangel
[Challenges for secondary education in Latin America \(pdf 528 Kb.\)](#) Néstor López and Juan Carlos Tedesco
[The role of institutions in local contexts \(pdf 509 Kb.\)](#) Kirsten Appendini and Monique Nuijten
[Structural reforms and economic growth in Latin America: a sensitivity analysis \(pdf 579 Kb.\)](#) Rafael Correa
[Urban traffic congestion: its economic and social causes and consequences \(pdf 505 Kb.\)](#) Ian Thomson and Alberto Bulli
[Hub ports in Mexico: limitations and opportunities \(pdf 1.534 Kb.\)](#) Carlos Martner Peyrelongue
[The impact of exports on growth in Chile \(pdf 518 Kb.\)](#) Ricardo French-Davis
[The strategies of multinational companies in 1980s Argentina \(pdf 504 Kb.\)](#) Daniel Chughnorsky and Andrés López
[Bolivia's commodity price shock \(pdf 531 Kb.\)](#) Gabriel Loza T.

Suscripción por el año N°

Ejemplares atrasados N°

Nombre:

Domicilio:

Código y ciudad:

País: Tel.: FAX:

E-Mail:

Adjunto cheque (*) del Banco N°

por valor de \$ / US\$ (Para exterior: **sobre plaza USA**. / No enviar giros postales).

(*) *Agradeceremos emitir el cheque a nombre de UN-ECLAC.*

Favor cargar tarjeta de crédito Diners MasterCard Visa

Nombre que aparece en la tarjeta: Número:

Firma:

Fecha de vencimiento:



Publicaciones de la CEPAL
COMISIÓN ECONÓMICA PARA AMÉRICA LATINA
Y EL CARIBE

Casilla 179-D - Santiago de Chile
publications@eclac.cl
Fax (562) 210-2069

Los precios de suscripción anual vigentes para 2003 son de US\$30. El precio por ejemplar suelto es de US\$15 más costo de envío. Los precios de suscripción por dos años (2003-2004) es de US\$50.



CEPAL

REVIEW

Request for subscription
and/or back issues

Subscription for the year No.

Back issues Nos.

Name:

Address:

City and postal code:

Country: Telephone: FAX:

E-Mail:

I enclose cheque (*) No. drawn on the following bank:

in the amount of \$ / US\$ (For requests originating outside Chile, the cheque must be drawn on a **United States bank**. / Do not send money orders).

(*) *The cheque should be made payable to UN-ECLAC.*

Please charge my credit Card Diners MasterCard Visa

Name as appears on card: Number:

Signature:

Expiration:



ECLAC publications
ECONOMIC COMMISSION FOR LATIN AMERICA
AND THE CARIBBEAN

Casilla 179-D - Santiago, CHILE
publications@eclac.cl
Fax (562) 210-2069

Annual subscription costs for 2003 are US\$35. The price of single issues is US\$15 plus shipping costs. The cost of a two-year subscription (2003-2004) is US\$60.

Recent ECLAC publications

Periodical publications

Foreign investment in Latin America and the Caribbean, 2001 Report, LC/G.2178-P, United Nations publication, Sales No.: E.02.II.G.47, ECLAC, Santiago, Chile, September 2002, 174 pages.

Foreign direct investment (FDI) flows to Latin America and the Caribbean dwindled for the second year in a row in 2001, and preliminary data for 2002 show no signs of a recovery. This trend was observed in both greenfield investment and in mergers, acquisitions and privatization operations. The investments announced by transnational corporations (TNCs) for the coming years remain concentrated in the services and infrastructure sectors. This indicates that the region has continued to strengthen its links with the incipient networks being established for the provision of services at the global level. This development contrasts with the Latin American economies' gradual disengagement from international production systems led by TNCs in the manufacturing sector. This combination of trends has been most evident in the South American countries.

In addition to providing an overview of current FDI trends in Latin America and the Caribbean, this publication presents in-depth analyses of investment flows to Argentina both before and after the introduction of economic reforms, as a sample analysis of a recipient country; of the European Union as an international investor region; and of the hydrocarbons sector as a branch of activity that clearly illustrates the role of sectoral reform in attracting FDI.

Latin America and the Caribbean in the world economy, 2000-2001, LC/G.2149-P/E, United Nations publication, Sales No. E.02.II.G.6, ECLAC, Santiago, Chile, March 2002, 174 pages.

The 2000-2001 edition of this report is divided into three parts.

Part One (chapters I, II and III), on the international situation and international trade of Latin America and the Caribbean, examines the main current trends and their impact on the economies of the region and describes the international trade of the different countries in 2000 and the first quarters of 2001. It then goes on, in chapter III, to present some structural relationships in the pattern of integration of Latin America and the Caribbean into the world economy. Part Two (chapters IV and V) analyses the evolution of the process of regional integration in Latin America and the Caribbean in 2000-2001 and formulates proposals for coordinating macroeconomic policies under the various subregional arrangements. Lastly, Part Three (chapters VI and VII) reviews some of the barriers that exports from the region encounter in the United States and the negotiation process leading to the adoption, at the Conference in Doha, Qatar, of an agenda for the new round of multilateral trade negotiations in the World Trade Organization (WTO).

Statistical Yearbook for Latin America and the Caribbean, 2001, LC/G.2151-P, United Nations publication, Sales No. E/S.02.G, ECLAC, Santiago, Chile, February 2002, 764 pages.

The 2001 edition of the *Statistical Yearbook for Latin America and the Caribbean* contains a selection, updated to the beginning of December, of the main statistical series available on economic and social trends in the countries of the region. It represents a systematic effort by the ECLAC Statistics and Projections Division to harmonize the figures and make them internationally comparable.

This edition does not differ from the 2000 edition in terms of its structure, but minor changes have continued to be made in the tables of the chapters on social development and welfare and on social conditions as improvements are made in the processing of the available household surveys. The tables given in the chapter on the balance of payments continue to be based on the guidelines for its analysis given in the fifth edition of the *Balance of Payments Manual* published by the International Monetary Fund in 1993.

Part One (Indicators of economic and social development in Latin America and the Caribbean) consists of derived social and economic indicators (growth rates, ratios or coefficients) which provide an overview of each area of interest, along with the background material needed to make the information suitable for use in specialized analyses. This group of indicators includes those used in the periodic regional appraisals of the development process of Latin America and the Caribbean conducted by the ECLAC secretariat.

For the most part, the indicators presented in Part One of the *Statistical Yearbook* relate to the years 1980, 1985 and 1990 and the years between 1994 and 2000. When the available data are not fully up-to-date, the statistics presented relate to the most recent year for which the relevant data are available. Some of the indicators based on census information are recorded only around the years when the respective censuses were conducted. The statistical series in Part Two, whether national figures or regional estimates, relate to data for the years 1980, 1985 and 1990 and the period from 1993 to 2000.

Part Two (Statistical series for Latin America and the Caribbean) provides historical series in absolute figures which can be used for a large variety of purposes. The majority of the statistical tables provide figures on a single topic, organized in such a way as to facilitate comparisons among countries as well as between individual countries and regional totals or averages. The tables on the balance of payments and national accounts are the only exceptions in this respect, since they have been prepared by countries.

Other publications

Globalization and development (LC/G.2157(SES.29/3), document presented at the twenty-ninth session of the Economic Commission for Latin America and the Caribbean (Brasilia, 6-10 May 2002), ECLAC, Santiago, Chile, April 2002, 380 pages.

The process that has come to be known as globalization, i.e., the progressively greater influence being exerted by worldwide economic, social and cultural processes over national or regional ones, is clearly leaving its mark on the world of today. Although this is not a new process, since its historical roots run deep, the dramatic changes in terms of space and time being brought about by the communications and information revolution bring in new

dimensions which represent a qualitative break with the past. The countries of the region therefore requested the secretariat to focus the deliberations of the twenty-ninth session of ECLAC on the issue of globalization and development.

Globalization clearly opens up opportunities for development. We are all aware -and rightfully so- that national strategies should be designed to take advantage of the potential and meet the requirements associated with greater integration into the world economy. This process also entails risks, however: the risks generated by new sources of instability in trade and, especially, financial flows; the risk that countries unprepared for the formidable demands of competitiveness in today's world may be excluded from the process; and the risk of an exacerbation of the structural heterogeneity existing among social sectors and regions in countries whose linkages with the world economy are segmented and marginal. Many of these risks are associated with two disturbing aspects of the globalization process. The first is the bias in the current form of market globalization created by the fact that the mobility of capital, goods and services contrasts with the severe restrictions on the mobility of labour. This is reflected in the asymmetric, incomplete nature of the international agenda accompanying the globalization process, which does not, for example, include issues like labour mobility, nor mechanisms for ensuring the global coherence of the central economies' macroeconomic policies, international standards for the proper taxation of capital, or agreements regarding the mobilization of resources to relieve the distributional tensions generated by globalization between and within countries.

These shortcomings are also the reflection of an even more disturbing problem: the absence of a suitable form of governance in the world of today, not only in economic terms (as has become particularly evident in the financial sector) but in many other areas as well. This lack of governance can be attributed, in turn, to the tremendous contrast between global-scale problems and political processes that continue to be pursued within national and, increasingly, local frameworks.

An important dimension of the globalization process, though it is not generally one of the main focal points of attention in discussions on the subject, is the gradual spread of ideas and values with regard to civil and political rights, on the one hand, and economic, social and cultural rights, on the other. These ideas and values are gradually laying the foundations for the concept of global citizenship. No entity embodies this aspect of the globalization process more fully than the United Nations. Ever since its inception, under the terms of its founding Charter, the United Nations has promoted global ideas and values regarding these rights, which have been gradually ratified by governments at successive world summits.

Part One of this study analyses globalization from an integral standpoint. Chapter I stresses the multidimensional nature of globalization, situates the current phase of this process within the historical context of the progressive internationalization of the world

economy, and explores its social, political and cultural components. Chapter 2 reviews the economic aspects of the globalization process, including trade and investment, finance and macroeconomic regimes, and international labour mobility, while chapter 3 analyses trends in income inequality and the fundamental asymmetries of the global order. Finally, chapter 4 proposes a positive agenda for Latin America and the Caribbean in the global era, based on a number of essential principles -such as shared objectives; global institutions that respect diversity; the complementarity of global, regional and national institutions; and equitable participation in accordance with suitable rules of governance- and outlines the measures that should be taken at the national, regional and global levels to achieve three priority objectives of the new international order: the provision of global public goods, correction of international asymmetries, and the pursuit of a rights-based social agenda.

Part Two of the study focuses on specific issues: external vulnerability and macroeconomic policy (chapter 5); the place of Latin America and the Caribbean in global trade and production circuits (chapter 6); the strengthening of innovation systems and technological development (chapter 7); international migration and globalization (chapter 8); globalization and environmental sustainability (chapter 9); globalization and social development (chapter 10); and the effects of globalization on the Caribbean economies (chapter 11). In these chapters, after a brief diagnosis of the main problems in each of these areas, a series of measures are proposed that should be taken at the national, regional and international levels in order to implement the proposals put forward in chapter 4 of Part One.

Survey of agriculture in Latin America and the Caribbean, 1990-2000, LC/G.2154-P, United Nations publication, Sales No.: S/E.02.II.G.5, ECLAC, Santiago, Chile, January 2002, 219 pages.

This publication is the outcome of a joint effort between ECLAC and the Inter-American Institute for Cooperation on Agriculture (IICA) aimed at giving a global overview of the performance of Latin America and the Caribbean in the agricultural sector from 1990 to 2000 and also analysing the main challenges the sector can expect to face in the future. It is thus a follow-up to a similar study, covering the period from 1970 to 1995, which the two organizations produced a few years earlier. This study looks at the region's agricultural performance in as disaggregated a fashion as possible, recognizing the different situations that arose in the sector not only because of the different conditions of each country, but also as a consequence of the different policies applied in the sector. At the same time, an effort was made to identify the problems and solutions that were common to the countries in question during the period under review.

NOTE: All the above-mentioned documents can be accessed through the ECLAC web page: <http://www171.eclac.org/publicaciones>.



ECLAC publications

ECONOMIC COMMISSION FOR LATIN AMERICA
AND THE CARIBBEAN
Casilla 179-D Santiago, Chile

Publications may be accessed at: www.eclac.cl/publicaciones

CEPAL Review

CEPAL Review first appeared in 1976 as part of the Publications Programme of the Economic Commission for Latin America and the Caribbean, its aim being to make a contribution to the study of the economic and social development problems of the region. The views expressed in signed articles, including those by Secretariat staff members, are those of the authors and therefore do not necessarily reflect the point of view of the Organization.

CEPAL Review is published in Spanish and English versions three times a year.

Annual subscription costs for 2002 are US\$ 30 for the Spanish version and US\$ 35 for the English version. The price of single issues is US\$ 15 in both cases.

The cost of a two-year subscription (2002-2003) is US\$ 50 for Spanish-language version and US\$ 60 for English.

Revista de la CEPAL, número extraordinario: CEPAL CINCUENTA AÑOS, reflexiones sobre América Latina y el Caribe, 1998, 376 p. (out of stock)

Annual reports

Issues for previous years also available

- *Panorama social de América Latina, 2001-2002*, 272 p.
Social Panorama of Latin America, 2001-2002, 272 p.
- *Balance preliminar de las economías de América Latina y el Caribe, 2002*, 125 p.
Preliminary Overview of the Economies of Latin America and the Caribbean, 2002, forthcoming.
- *Estudio económico de América Latina y el Caribe 2001-2002*, 311 p.
Economic Survey of Latin America and the Caribbean 2001-2002, forthcoming.
- *Situación y perspectivas, estudio económico de América Latina y el Caribe 2001-2002*, 48 p.
Current conditions and outlook, Economic Survey of Latin America and the Caribbean 2001-2002, 48 p.

- *Anuario estadístico de América Latina y el Caribe / Statistical Yearbook for Latin America and the Caribbean* (bilingual). 2001, 778 p.
- *La inversión extranjera en América Latina y el Caribe, 2001*, 190 p.
Foreign investment of Latin America and the Caribbean, 2001, 178 p.
- *Panorama de la inserción internacional de América Latina y el Caribe, 2000-2001*, 194 p.
Latin America and the Caribbean in the World Economy, 2000-2001, 240 p.

Libros de la CEPAL

- 71 *Capital social y reducción de la pobreza en América Latina y el Caribe. En busca de un nuevo paradigma*, 2003, Raúl Atria y Marcelo Siles, Editors, CEPAL/Michigan State University, 590 p.
- 70 **Meeting the Millenium Poverty Reduction Targets in Latin America and the Caribbean**, 2002, ECLAC/ICEA/UNDP, 70 p.
- 69 *El capital social campesino en la gestión del desarrollo rural. Diadas, equipos, puentes y escaleras*, 2002, John Durston, 156 p.
- 68 *La sostenibilidad del desarrollo en América Latina y el Caribe: desafíos y oportunidades*, 2002, 146 p.
- 68 **The sustainability of development in Latin America and the Caribbean: challenges and opportunities**, 2002, 140 p.
- 67 **Growth with stability, financing for development in the new international context**, 2002, Jürgen Weller, 196 p.
- 66 **Economic reforms, growth and employment. Labour markets in Latin America and the Caribbean**, 2001, 205 p.
- 65 **The income distribution problem in Latin America and the Caribbean**, 2001, Samuel Morley, 169 p.
- 64 **Structural reforms, productivity and technological change in Latin America**, 2001, Jorge Katz, 143 p.
- 63 **Investment and economic reforms in Latin America**, 2001, Graciela Moguillansky y Ricardo Bielschowsky, 186 p.
- 62 **Equity, development and citizenship** (abridged edition)
- 61 *Apertura económica y (des)encadenamientos productivos-Reflexiones sobre el complejo lácteo en América Latina*, 2001, Martine Dirven (compiladora), 176 p.
- 60 *El espacio regional. Hacia la consolidación de los asentamientos humanos en América Latina*, 162 p.
- 59 *Juventud, población y desarrollo en América Latina y el Caribe. Problemas, oportunidades y desafíos*, 474 p.
- 58 *La dimensión ambiental en el desarrollo de América Latina. Apertura y (des)encadenamientos-Reflexiones en torno a los lácteos*, 2001, 282 p.
- 57 *Las mujeres chilenas en los noventa. Hablan las cifras*, 2000, 214 p.
- 56 *Protagonismo juvenil en proyectos locales: lecciones del cono sur*, 170 p.
- 55 **Financial globalization and the emerging economies**, José Antonio Ocampo, Stefano Zamagni, Ricardo Ffrench-Davis y Carlo Pietrobelli, 2000, 328 p.
- 54 *La CEPAL en sus 50 años. Notas de un seminario conmemorativo*, 2000, 149 p.
- 53 *Transformaciones recientes en el sector agropecuario brasileño*, M. Beatriz de A. David, Philippe Waniez, Violette Brustlein, Enali M.

- De Biaggi, Paula de Andrade Rollo y Monica dos Santos Rodrigues, 1999, 127 p.
- 52 *Un examen de la migración internacional en la Comunidad Andina*, 1999, 114 p.
- 51 *Nuevas políticas comerciales en América Latina y Asia. Algunos casos nacionales*, 1999, 584 p.
- 50 *Privatización portuaria: bases, alternativas y consecuencias*, 1999, 248 p.
- 49 *Teorías y metáforas sobre el desarrollo territorial*, Sergio Boisier, 1999, 128 p.
- 48 *Las dimensiones sociales de la integración regional en América Latina*, Rolando Franco y Armando Di Filippo, 1999, 238 p.
- 47 *El pacto fiscal. Fortalezas, debilidades, desafíos*, 1998, 280 p.
- 47 **The fiscal covenant. Strengths, weaknesses, challenges**, 1998, 290 p.
- 45 *La grieta de las drogas. Desintegración social y políticas públicas en América Latina*, 1997, 218 p.
- 46 *Agroindustria y pequeña agricultura: vínculos, potencialidades y oportunidades comerciales*, 1998, 180 p.
- 44 *La brecha de la equidad. América Latina, el Caribe y la Cumbre Social*, 1997, 218 p.
- 44 **The equity Gap. Latin America, the Caribbean and the Social Summit**, 1997, 218 p.
- 43 *Quince años de desempeño económico. América Latina y el Caribe, 1980-1995*, 1996, 120 p.
- 43 **The economic experience of the last fifteen years. Latin America and the Caribbean, 1980-1995**, 1996, 206 p.
- 42 *Fortalecer el desarrollo. Interacciones entre macro y microeconomía*, 1996, 116 p.
- 42 **Strengthening development. The interplay of macro- and microeconomics**, 1996, 116 p.
- 41 *Las relaciones económicas entre América Latina y la Unión Europea: el papel de los servicios exteriores*, 1996, 395 p.
- 40 *América Latina y el Caribe: políticas para mejorar la inserción en la economía mundial*, 1995, 314 p. (out of stock)
- 40 **Latin America and the Caribbean: policies to improve linkages with the global economy**, 1995, 308 p.
- 39 *El regionalismo abierto en América Latina y el Caribe. La integración económica en servicio de la transformación tecnológica*, 1994, 120 p.
- 39 **Open regionalism in Latin America and the Caribbean. Economic integration as a contribution to changing production patterns with social equity**, 1994, 103 p.
- 38 *Imágenes sociales de la modernización y la transformación tecnológica*, 1995, 198 p.
- 37 *Familia y futuro: un programa regional en América Latina y el Caribe*, 1994, 137 p.
- 37 **Family and future: a regional programme in Latin America and the Caribbean**, 1994, 124 p.
- 36 *Cambios en el perfil de las familias: la experiencia regional*, 1993, 434 p.
- 35 *Población, equidad y transformación productiva*, 1993, 2ª ed. 1993, 158 p.
- 35 **Population, social equity and changing production patterns**, 1993, 154 p.
- 34 *Ensayos sobre coordinación de políticas macroeconómicas*, 1992, 249 p.
- 33 *Educación y conocimiento: eje de la transformación productiva con equidad*, 1992, 269 p.
- 33 **Education and knowledge: basic pillars of changing production patterns with social equity**, 1992, 257 p.
- 32 *Equidad y transformación productiva: un enfoque integrado*, 1992, 254 p.
- 32 **Social equity and changing production patterns: social equity and the environment**, 1991, 254 p.
- 31 *El desarrollo sustentable: transformación productiva, equidad y medio ambiente*, 1991, 146 p.
- 31 **Sustainable development: changing production patterns, social equity and the environment**, 1991, 146 p.
- 30 *Evaluaciones del impacto ambiental en América Latina y el Caribe*, 1991, 232 p. (out of stock)
- 29 *Inventarios y cuentas del patrimonio natural en América Latina y el Caribe*, 1991, 335 p.
- 28 **A collection of documents on economic relations between the United States and Central America, 1906-1956**, 1991, 398 p.
- 27 *Los grandes cambios y la crisis. Impacto sobre la mujer en América Latina y el Caribe*, 1991, 271 p.
- 27 **Major changes and crisis. The impact on women in Latin America and the Caribbean**, 1992, 279 p.
- 26 *América Latina y el Caribe: opciones para reducir el peso de la deuda*, 1990, 2ª ed. 118 p.
- 26 **Latin America and the Caribbean: options to reduce the debt burden**, 1990, 110 p.
- 25 *Transformación productiva con equidad*, 1990, 4ª ed. 1991, 185 p.
- 25 **Changing production patterns with social equity**, 1990, 3ª ed. 1991, 177 p.
- 24 **The environmental dimension in development planning**, 1991, 302 p.
- 23 *La crisis urbana en América Latina y el Caribe: reflexiones sobre alternativas de solución*, 1990, 197 p. (out of stock)

Recent co-publications

On occasion ECLAC concludes agreements for the co-publication of texts that may be of special interest to other international organizations or to publishing houses. In the latter case, the publishing houses have exclusive sales and distribution rights.

Financial Crises in 'Successful' Emerging Economies, Ricardo French-Davis (coordinador y editor), CEPAL/Brookings Institution Press, 2001.

Capital social rural. Experiencias de México y Centroamérica, Margarita Flores y Fernando Rello, CEPAL/Plaza y Valdés, 2002.

Equidade, desenvolvimento e cidadania, José Antonio Ocampo, CEPAL/Editor Campus, 2002.

Crescimento, emprego e equidade; O Impacto das Reformas Econômicas na América Latina e Caribe, Barbara Stallings e Wilson Peres, CEPAL/Editor Campus, 2002.

Crescer com Estabilidade, José Antonio Ocampo, CEPAL/Editora Campus, 2002.

Pequeñas y medianas empresas industriales en América Latina y el Caribe, Wilson Peres y Giovanni Stumpo (coordinadores), CEPAL/Siglo XXI, México.

- Aglomeraciones mineras y desarrollo local en América Latina*, Rudolf M. Buitelaar (compilador), CEPAL/Alfaomega, Colombia, 2002.
- Panorama de la agricultura en América Latina y el Caribe 1990-2000 / Survey of Agriculture in Latin America and the Caribbean 1990-2000*, CEPAL/IICA, 2002.
- Reformas, crecimiento y políticas sociales en Chile desde 1973*, Ricardo Ffrench-Davis y Barbara Stallings (editores), CEPAL/LOM Ediciones, 2001.
- Financial Crises in 'Successful' Emerging Economies**, Ricardo Ffrench-Davis (editor), CEPAL/Brookings Institution Press, 2001.
- Crece con estabilidad. El financiamiento del desarrollo en un nuevo contexto internacional*, José Antonio Ocampo (coordinador), CEPAL/Alfaomega, Colombia, 2001.
- CLAROSCUROS, *integración exitosa de las pequeñas y medianas empresas en México*, Enrique Dussel Peters (coordinador), CEPAL/JUS, México, 2001.
- Sociología del desarrollo, políticas sociales y democracia*, Rolando Franco (coordinador), CEPAL/Siglo XXI, México, 2001.
- Crisis financieras en países exitosos*, Ricardo Ffrench-Davis (compilador), CEPAL/McGraw Hill, Santiago, 2001.
- Una década de luces y sombras. América Latina y el Caribe en los noventa*, CEPAL/Alfaomega, Colombia, 2001.
- Desarrollo Rural en América Latina y el Caribe*, Beatriz David, CEPAL/Alfaomega, Colombia, 2001.
- Equidad, desarrollo y ciudadanía*, Tomos I, II y III, CEPAL/Alfaomega, Colombia, 2000.
- La distribución del ingreso en América Latina y el Caribe*, Samuel Morley, CEPAL/Fondo de Cultura Económica, Santiago, 2000.
- Inversión y reformas económicas en América Latina*, Graciela Mougillansky y Ricardo Bielschowsky, CEPAL/Fondo de Cultura Económica, Santiago, 2000.
- Reformas estructurales, productividad y conducta tecnológica en América Latina*, Jorge Katz, CEPAL/Fondo de Cultura Económica, Santiago, 2000.
- Reformas económicas, crecimiento y empleo. Los mercados de trabajo en América Latina y el Caribe*, Jürgen Weller, CEPAL/Fondo de Cultura Económica, Santiago, 2000.
- Crecimiento, empleo y equidad. El impacto de las reformas económicas en América Latina y el Caribe*, Barbara Stallings y Wilson Peres, CEPAL/Fondo de Cultura Económica, Santiago, 2000.
- Growth, employment, and equity. The impact of the Economic Reforms in Latin America and the Caribbean**, Barbara Stallings and Wilson Peres, CEPAL/Brookings Institution Press, Washington, D.C., 2000.
- Cinquenta años de pensamiento na CEPAL**, Tomos I y II, Ricardo Bielschowsky, CEPAL/RECORD/COFECOM, Brasil, 2000.
- Integración regional, desarrollo y equidad*, Armando Di Filippo y Rolando Franco, CEPAL/Siglo XXI, México, 2000.
- Ensayo sobre el financiamiento de la seguridad social en salud*, Tomos I y II, Daniel Titelman y Andras Uthoff, CEPAL/Fondo de Cultura Económica, Chile, 2000.
- Brasil uma década em transição**, Renato Baumann, CEPAL/CAMPUS, Brasil, 2000.
- El gran eslabón: educación y desarrollo en el umbral del siglo XXI*, Martín Hopenhayn y Ernesto Ottone, CEPAL/Fondo de Cultura Económica, Argentina, 1999.
- La modernidad problemática: cuatro ensayos sobre el desarrollo Latinoamericano*, Ernesto Ottone, CEPAL/JUS, México, 2000.
- La inversión en Chile ¿El fin de un ciclo de expansión?*, Graciela Mougillansky, CEPAL/Fondo de Cultura Económica, Santiago, 1999.
- La reforma del sistema financiero internacional: un debate en marcha*, José Antonio Ocampo, CEPAL/Fondo de Cultura Económica, Santiago, 1999.
- Macroeconomía, comercio y finanzas para reformar las reformas en América Latina*, Ricardo Ffrench Davis, CEPAL/Mc Graw-Hill, Santiago, 1999.
- Cincuenta años de pensamiento en la CEPAL: textos seleccionados, dos volúmenes*, CEPAL/Fondo de Cultura Económica, Santiago, 1998.
- Grandes empresas y grupos industriales latinoamericanos*, Wilson Peres (coordinador), CEPAL/Siglo XXI, Buenos Aires, 1998.
- Flujos de Capital e Inversión Productiva. Lecciones para América Latina*, Ricardo Ffrench-Davis-Helmut Reisen (compiladores), CEPAL/Mc Graw Hill, Santiago, 1997.
- Estrategias empresariales en tiempos de cambio*, Bernardo Kosacoff (editor), CEPAL/Universidad Nacional de Quilmes, Argentina, 1998.
- La Igualdad de los Modernos: reflexiones acerca de la realización de los derechos económicos, sociales y culturales en América Latina*, CEPAL/IIDH, Costa Rica, 1997.
- La Economía Cubana. Reformas estructurales y desempeño en los noventa*, Comisión Económica para América Latina y el Caribe. CEPAL/Fondo de Cultura Económica, México, 1997.
- Políticas para mejorar la inserción en la economía mundial. América y El Caribe*, CEPAL/Fondo de Cultura Económica, Santiago, 1997.
- América Latina y el Caribe quince años después. De la década perdida a la transformación económica 1980-1995*, CEPAL/Fondo de Cultura Económica, Santiago, 1996.
- Tendências econômicas e sociais na América Latina e no Caribem Economic and social trends in Latin America and the Caribbean / Tendencias económicas y sociales en América Latina y el Caribe**, CEPAL/IBGE/CARECON RIO, Brasil, 1996.
- Hacia un nuevo modelo de organización mundial. El sector manufacturero argentino en los años noventa*, Jorge Katz, Roberto Bisang, Gustavo Burachick (editores), CEPAL/IDRC/Alianza Editorial, Buenos Aires, 1996.
- Las nuevas corrientes financieras hacia América Latina: Fuentes, efectos y políticas*, Ricardo Ffrench-Davis y Stephany Griffith-Jones (compiladores), México, CEPAL/Fondo de Cultura Económica, primera edición, 1995.

Cuadernos de la CEPAL

- 86 *Industria, medio ambiente en México y Centroamérica. Un reto de supervivencia*, 2001, 182 p.
- 85 *Centroamérica, México y República Dominicana: maquila y transformación productiva*, 1999, 190 p.
- 84 *El régimen de contratación petrolera de América Latina en la década de los noventa*, 1998, 134 p.
- 83 *Temas y desafíos de las políticas de población en los años noventa en América Latina y el Caribe*, 1998, 268 p.

- 82 **A dinâmica do Setor Saúde no Brasil**, 1997, 220 p.
- 81 *La apertura económica y el desarrollo agrícola en América Latina y el Caribe*, 1997, 136 p.
- 80 *Evolución del gasto público social en América Latina: 1980-1995*, 1998, 200 p.
- 79 *Ciudadanía y derechos humanos desde la perspectiva de las políticas públicas*, 1997, 124 p.
- 78 *Centroamérica y el TLC: efectos inmediatos e implicaciones futuras*, 1996, 174 p.
- 77 *La reforma laboral y la participación privada en los puertos del sector público*, 1996, 168 p.
- 77 **Labour reform and private participation in public-sector ports**, 1996, 160 p.
- 76 *Dinámica de la población y desarrollo económico*, 1997, 116 p.
- 75 *Crecimiento de la población y desarrollo*, 1995, 95 p.
- 74 *América Latina y el Caribe: dinámica de la población y desarrollo*, 1995, 151 p.
- 73 *El gasto social en América Latina: un examen cuantitativo y cualitativo*, 1995, 167 p.
- 72 *Productividad de los pobres rurales y urbanos*, 1995, 318 p. (out of stock)
- 71 *Focalización y pobreza*, 1995, 249 p. (out of stock)
- 70 *Canales, cadenas, corredores y competitividad: un enfoque sistémico y su aplicación a seis productos latinoamericanos de exportación*, 1993, 183 p.
- 69 *Las finanzas públicas de América Latina en la década de 1980*, 1993, 100 p.
- 69 **Public finances in Latin America in the 1980s**, 1993, 96 p.
- 68 *La reestructuración de empresas públicas: el caso de los puertos de América Latina y el Caribe*, 1992, 148 p.
- 68 **The restructuring of public-sector enterprises: the case of Latin America and Caribbean ports**, 1992, 129 p.
- 67 *La transferencia de recursos externos de América Latina en la posguerra*, 1991, 92 p.
- 67 **Postwar transfer of resources abroad by Latin America**, 1992, 90 p.
- 66 **The Caribbean: one and divisible**, 1994, 207 p.
- 65 *Cambios estructurales en los puertos y la competitividad del comercio exterior de América Latina y el Caribe*, 1991, 141 p.
- 65 **Structural changes in ports and the competitiveness of Latin America and Caribbean foreign trade**, 1990, 126 p.
- 64 *La industria de transporte regular internacional y la competitividad del comercio exterior de los países de América Latina y el Caribe*, 1989, 132 p.
- 64 **The international common-carrier transportation industry and the competitiveness of the foreign trade of the countries of Latin America and the Caribbean**, 1989, 116 p.
- 63 *Elementos para el diseño de políticas industriales y tecnológicas en América Latina*, 1990, 2ª ed. 1991, 172 p.
- 25 *Clasificaciones estadísticas internacionales incorporadas en el Banco de Datos del Comercio Exterior de América Latina y el Caribe de la CEPAL*, 1998, 287 p.
- 24 *Chile: comercio exterior según grupos de la Clasificación Uniforme para el Comercio Internacional, Rev. 3, y países de destino y procedencia, 1990-1995*, 1996, 480 p.
- 23 *América Latina y el Caribe: series regionales y oficiales de cuentas nacionales, 1950-1994*, 1996, 136 p.
- 22 *América Latina y el Caribe: dirección del comercio exterior de los principales productos alimenticios y agrícolas según países de destino y procedencia, 1970-1993*, 1995, 224 p.
- 21 *Estructura del gasto de consumo de los hogares en América Latina*, 1995, 274 p.
- 20 *Dirección del comercio exterior de América Latina y el Caribe según principales productos y grupos de productos, 1970-1992*, 1994, 483 p.
- 19 *América Latina: comercio exterior según la clasificación Industrial Internacional uniforme de todas las actividades económicas (CIIU)*
Vol. I, Exportaciones, 1985-1991, 1993, 285 p.
Vol. II, Importaciones, 1985-1991, 1993, 291 p.
- 18 *Clasificaciones estadísticas internacionales incorporadas en el Banco de Datos del Comercio Exterior de América Latina y el Caribe de la CEPAL*, 1993, 323 p.
- 17 *Comercio intrazonal de los países de la Asociación de Integración, según capítulos de la Clasificación Uniforme para el Comercio Internacional (CUCI), Rev. 2, 1992*, 299 p.
- 16 *Origen y destino del comercio exterior de los países de la Asociación Latinoamericana de Integración*, 1991, 190 p.
- 15 *América Latina y el Caribe: series regionales de cuentas nacionales a precios constantes de 1980, 1991*, 245 p.

Estudios e Informes de la CEPAL

- 95 *México: la industria maquiladora*, 1996, 237 p.
- 94 *Innovación en tecnologías y sistemas de gestión ambientales en empresas líderes latinoamericanas*, 1995, 206 p. (out of stock)
- 93 *Comercio internacional y medio ambiente. La discusión actual*, 1995, 112 p. (out of stock)
- 92 *Reestructuración y desarrollo productivo: desafío y potencial para los años noventa*, 1994, 108 p.
- 91 *Las empresas transnacionales de una economía en transición: la experiencia argentina en los años ochenta*, 1995, 193 p.
- 90 *El papel de las empresas transnacionales en la reestructuración industrial de Colombia: una síntesis*, 1993, 131 p.
- 89 *El impacto económico y social de las migraciones en Centroamérica*, 1993, 78 p.
- 88 *El comercio de manufacturas de América Latina. Evolución y estructura 1962-1989*, 1992, 150 p.
- 87 *Análisis de cadenas agroindustriales en Ecuador y Perú*, 1993, 294 p.
- 86 *Inversión extranjera y empresas transnacionales en la economía de Chile (1974-1989). El papel del capital extranjero y la estrategia nacional de desarrollo*, 1992, 163 p.
- 85 *Inversión extranjera y empresas transnacionales en la economía de Chile (1974-1989). Proyectos de inversión y estrategias de las empresas transnacionales*, 1992, 257 p.
- 84 *La transformación de la producción en Chile: cuatro ensayos de interpretación*, 1993, 372 p.

Cuadernos Estadísticos de la CEPAL

- 28 *Dirección del comercio exterior de América Latina, según la clasificación central de productos provisionales de las Naciones Unidas*, 2001, 532 p.
- 27 *América Latina y el Caribe: series regionales y oficiales de cuentas nacionales 1950-1998*, 2001, 136 p.
- 26 *América Latina y el Caribe: series estadísticas sobre comercio de servicios 1980-1997*, 1998, 124 p.

- 83 *Reestructuración y desarrollo de la industria automotriz mexicana en los años ochenta: evolución y perspectivas*, 1992, 191 p.
- 82 *América Latina y el Caribe: el manejo de la escasez de agua*, 1991, 148 p.
- 81 *Magnitud de la pobreza en América Latina en los años ochenta*, 1991, 177 p.
- 80 *Impacto ambiental de la contaminación hídrica producida por la Refinería Estatal Esmeraldas: análisis técnico-económico*, 1991, 190 p.
- 79 *La industria de bienes de capital en América Latina y el Caribe: su desarrollo en un marco de cooperación regional*, 1991, 235 p.
- 78 *La apertura financiera en Chile y el comportamiento de los bancos transnacionales*, 1990, 132 p.
- 77 *Los recursos hídricos de América Latina y del Caribe: planificación, desastres naturales y contaminación*, 1990, 266 p.
- 77 *The water resources of Latin America and the Caribbean—planning, hazards and pollution*, 1990, 252 p.

Serie INFOPLAN: Temas Especiales del Desarrollo

- 13 *Políticas sociales: resúmenes de documentos II*, 1997, 80 p.
- 12 *Gestión de la información: reseñas de documentos*, 1996, 152 p.
- 11 *Modernización del Estado: resúmenes de documentos*, 1995, 75 p.
- 10 *Políticas sociales: resúmenes de documentos*, 1995, 95 p.
- 9 *MERCOSUR: resúmenes de documentos*, 1993, 219 p.
- 8 *Reseñas de documentos sobre desarrollo ambientalmente sustentable*, 1992, 217 p. (out of stock)
- 7 *Documentos sobre privatización con énfasis en América Latina*, 1991, 82 p.

Boletín demográfico/Demographic Bulletin (bilingual)

Bilingual publication (Spanish and English) providing up-to-date estimates and projections of the populations of the Latin American and Caribbean countries. Also includes various demographic

indicators of interest such as fertility and mortality rates, life expectancy, measures of population distribution, etc.

Published since 1968, the Bulletin appears twice a year in January and July.

Annual Subscription: US\$ 20.00 Per issue: US\$ 15.00

Notas de población

Specialized journal which publishes articles and reports on recent studies of demographic dynamics in the region, in Spanish with abstracts in Spanish and English. Also includes information on scientific and professional activities in the field of population.

Published since 1973, the journal appears twice a year in June and December.

Annual Subscription: US\$ 20.00 Per issue: US\$ 12.00

Series de la CEPAL

Comercio internacional
 Desarrollo productivo
 Estudios estadísticos y prospectivos
 Financiamiento del desarrollo
 Gestión pública
 Información y desarrollo
 Manuales
 Medio ambiente y desarrollo
 Población y desarrollo
 Política fiscal
 Políticas sociales
 Recursos naturales e infraestructura
 Seminarios y conferencias
 Temas de coyuntura
 Macroeconomía del desarrollo
 Estudios y perspectivas regionales
 Informes y estudios especiales

A complete listing is available at: www.eclac.cl/publicaciones

TERRORISMO Y POLÍTICA

ZOOM: **Antonio Camou**, Argentina. La rebelión de las cacerolas. **Margarita López Maya**, Venezuela. El paro cívico del 10 de diciembre. **César Arias Quincot**, Perú. Las dificultades del nuevo gobierno. **Robert Maguire**, Haití. Continúan los problemas.

APORTE: **Wolf Grabendorff**, Perspectivas de una integración política de América del Sur.

TEMA CENTRAL: **Farid Kahhat**, ¿Quién teme al islam? **Eric Lair**, El islamismo armado en la posguerra fría. **Jean Meyer**, ¿Apocalipsis? ¡Now! **Renato Ortiz**, Violencia y globalización. **Edgardo Lander**, Los civilizados y los bárbaros. **David Slater**, Política de la memoria y Estados terroristas. **John Saxe-Fernández**, Terrorismo de Estado y terrorismo internacional. **José Joaquín Brunner**, El difícil camino hacia la sociedad global. **Elsa Cardozo**, La integración: entre lo urgente y lo importante. **Shiguenoli Miyamoto**, Terrorismo y seguridad global. **Fernando Bustamante**, Los límites de la seguridad. **Alberto M. Binder**, Viejas y nuevas razones de la razón gestiva (viejas y nuevas luchas de la emancipación solidaria) **Otto Boye**, ¿Hay oportunidades para América Latina y el Caribe en el nuevo escenario mundial? **Fernando Mires**, Las leyes de la guerra. **Helio Jaguaribe**, Terrorismo e islam. **Ramón Grosfoguel**, Colonialidad global y terrorismo antiterrorista. **Theotônio dos Santos**, Tragedia y razón. **Juan Carlos Moreno-Brid / Juan Ernesto Pardinás**, La economía mundial después del 11 de septiembre. **Rodrigo Araya Dujisin**, El factor sociotecnológico. **Anthony P. Maingot**, Transnacionalización de identificaciones raciales y religiosas en el Caribe.

SUSCRIPCIONES (Incluido flete aéreo)	ANUAL (6 núms.)	BIENAL (12 núms.)
América Latina	US\$ 56	US\$ 97
Resto del mundo	US\$ 86	US\$ 157

PAGOS: Cheque en dólares a nombre de NUEVA SOCIEDAD. Rogamos no efectuar transferencias bancarias para cancelar suscripciones. Dirección: Apartado 61712- Chacao-Caracas 1060-A, Venezuela. Telfs.: (58-212) 267.31.89/265.99.75/265.53.21/266.16.48/265.18.49, Fax: 267.33.97; @: nuso@nuevasoc.org.ve; nusoven@nuevasoc.org.ve.

Rescate
SOSTENEMOS LA LUCHA, LA ALEGRÍA Y LA ESPERANZA
Patricia Walsh
CARTA ABIERTA A LA DICTADURA
Rodolfo Walsh

Debate
MEDIDAS ECONÓMICAS: GANADORES Y PERDEDORES. OPCIONES
Claudio Katz - Diego Herrero - Juan Carlos Junio

Opiniones
**DÍA DEL PETRÓLEO ARGENTINO
¿CELEBRACIÓN O VELATORIO?**
Adolfo Dorfman

Análisis
TRANSFERENCIAS DE RECURSOS DURANTE LA PRESIDENCIA DUHALDE
Eduardo Basualdo - Claudio Lozano - Martín Schorr

Anticipo
ALCA: NEOLIBERALISMO Y NUEVO PACTO COLONIAL
Enrique Arceo

Comentario
**EL FETICHISMO DEL CAPITAL-DINERO:
DEBATE CHESNAIS-HUSSON**
Alberto R. Bonnet

Derecho
CONTRATO AGROINDUSTRIAL DE MAQUILA
Susana Formento

IADE
EN RESUMIDAS CUENTAS

Galera de corrección
**LA PROTESTA SOCIAL EN LA ARGENTINA -
Norma Giarracca y colaboradores**
Flora Losada

**ESTRATEGIAS DE DESARROLLO Y
TRANSFORMACIÓN ESTATAL -**
Víctor Ramiro Fernández
Ubaldo Martínez Veiga - Juan Carlos Gimeno Martín

IADE
• ACTIVIDADES DOCENTES 2002

Exterior

Precio ejemplar (vía aérea) US\$ 18
Suscripción anual (vía aérea) US\$ 130

realidad económica

Revista de economía editada por el
Instituto Argentino para el Desarrollo Económico (IADE)
Hipólito Yrigoyen 1116 - 4º piso C1086AAT Buenos Aires
Tel. (54 11) 4381-7380/4381-9337 • Fax (54 11) 4381-2158
e-mail: iade@iade.org.ar • http://www.iade.org.ar

VOL. IX, NÚM. 1, MÉXICO,
PRIMER SEMESTRE DE 2002

POLÍTICA y gobierno

ARTÍCULOS

- G. JOHN IKENBERRY La gran estrategia liberal y la persistencia del orden hegemónico de Estados Unidos durante la posguerra
- STEPHEN M. WALT Mantener al mundo "fuera de balance": el autocontrol y la política exterior de Estados Unidos
- JONATHAN FOX La relación recíproca entre la participación ciudadana y la rendición de cuentas
- FABRICE LEHOUCQ
E IVÁN MOLINA Democratización y gobernabilidad electoral: el caso de Costa Rica
- SUSAN MINUSHKIN Y
CHARLES W. PARKER III Relaciones entre la banca y el gobierno: la nueva estructura financiera en México

ENSAYOS

- VINCENT OSTROM Transformaciones revolucionarias



www.politicaygobierno.cide.edu

Gestión y Política Pública

VOLUMEN XI, NÚMERO 1
PRIMER SEMESTRE DE 2002

Gestión y política pública

- Fausto Hernández Trillo** MANEJO DE RIESGOS FINANCIEROS EN ENTIDADES FEDERATIVAS DE MÉXICO

Gestión y organización

- Michel Bauer
y Catherine Laval** GERENCIA PÚBLICA, GERENCIA PRIVADA
- Luis Montaña Hirose** ESTRATEGIAS EMPRESARIALES DE MODERNIZACIÓN FRENTE AL PROCESO DE GLOBALIZACIÓN ECONÓMICA. EL CASO DE MÉXICO

Experiencias relevantes

- Marc Uhalde** LAS TRANSFORMACIONES SOCIALES DE LA EMPRESA FRANCESA EN LOS AÑOS 1980-1990: LOS "MUNDOS SOCIALES DE LA EMPRESA"

Gestión regional y local

- Rafael Tamayo Flores** LOS NEXOS TEÓRICOS DE LA POLÍTICA DE DESARROLLO INDUSTRIAL REGIONAL EN MÉXICO
- Hans Krause Hansen** PRÁCTICAS DE COMUNICACIÓN EN EL CAMPO POLÍTICO. EL CASO DE TIJUANA

Instituciones e ideas

- Philippe d'Iribarne** UNA GESTIÓN MODERNA ARRAIGADA EN LA CULTURA MEXICANA



www.gestionypoliticapublica.cide.edu

REVISTA HOMINES

Directora: *Dra. Aline Frambes-Buxeda*

INVESTIGACIÓN

Experimentos Genocidas en Puerto Rico

JOSÉ MANUEL TORRES SANTIAGO

Julia de Burgos y Yosano Akiko, La comparación de dos poetas precursoras de la liberación de la mujer en Puerto Rico y Japón

SHIGAKI YOSHIKO

HECHOS E IDEAS DE ACTUALIDAD

La cultura popular bien pensada

MIRKO LAUER

Puerto Rico como miembro del NAFTA - Tratado de Libre Comercio Norteamericano

ALINE FRAMBES-BUXEDA

La reestructuración de la economía de Argentina en nuevas condiciones políticas

JORGE SCHVARZER

México y el "Tratado de Libre Comercio"

(TLC - NAFTA)

DIETER BORIS

SOBRE LA MUJER

La mujer puertorriqueña como líder

YOLANDA ZAYAS

HISTORIA

"Hasta el último día de mi vida", Testamento de Vito Marcantonio a los Puertorriqueños

JUAN MANUEL RIVERA

Directora Revista Homines
Universidad Interamericana de Puerto Rico
Apartado 191293

San Juan, Puerto Rico 00919

CUADERNOS DE ECONOMIA

Latin American Journal of Economics

**INSTITUTO DE ECONOMIA
PONTIFICIA UNIVERSIDAD CATOLICA
DE CHILE**

Año 39

Abril 2002

Nº 116

SUMARIO

¿PUEDEN MEJORAR SU PAA LOS ALUMNOS DE ESCASOS RECURSOS? EVIDENCIA EXPERIMENTAL	5
<i>Javier Núñez E.</i> <i>Isabel Millán V.</i>	
SIMULACIÓN DE CIT EN LA PESQUERÍA DEL JUREL EN CHILE	27
<i>Hugo Salgado C.</i> <i>Bernardo Aliaga R.</i>	
INFLUENCIA DE LAS TARJETAS DE DÉBITO SOBRE LA DEMANDA DE EFECTIVO	51
<i>Juan Carlos Pérez Velasco Pavón</i>	
CAMBIOS ESTRUCTURALES E INTEGRACIÓN. DISCUSIÓN Y ANÁLISIS DEL MERCADO ACCIONARIO CHILENO	95
<i>Fernando Lefort</i> <i>Eduardo Walker</i>	
NOTAS TÉCNICAS	
UN MODELO INTEGRADO DE DEPREDACIÓN Y COLUSIÓN	123
<i>Germán Coloma</i>	
AJUSTE ESTACIONAL E INTEGRACIÓN EN VARIABLES MACROECONÓMICAS	135
<i>Raimundo Soto</i>	

PRECIO SUSCRIPCIÓN ANUAL 2002 (CUATRIMESTRAL)

Chile	\$	12.000
América Latina	US\$	44 (incluye envío aéreo)
Europa y USA	US\$	54 (incluye envío aéreo)

NUMEROS SUELTOS O ATRASADOS

Chile	\$	4.000
Extranjero	US\$	15 (incluye envío aéreo)

Enviar pedidos de suscripción y cheque o giro (libre de comisiones y gastos bancarios) a nombre de:

Pontificia Universidad Católica de Chile

Instituto de Economía

Oficina de Publicaciones

Teléfonos: 686-4314; 686-4312

Casilla 76, Correo 17, Santiago

CHILE

FAX 56-2-5521310

echamorr@volcan.facea.puc.cl

Dirección WEB: <http://sol.facea.puc.cl/cuadernos>

Cuadernos de Economía

Pontificia Universidad Católica de Chile

Derechos reservados

Inscripción Nº 63.967

(autorizada su reproducción con mención de las fuentes)

EL TRIMESTRE ECONOMICO



COMITÉ DICTAMINADOR: José Ayala Espino, Lilia Domínguez, Silvano Espíndola, Gerardo Jacobs, Julio López, Luis Felipe López-Calva, Juan Carlos Moreno Brid, Ugo Pipitone, José Rangel, Ricardo Solís. CONSEJO EDITORIAL: Edmar L. Bacha, Gerardo Bueno, Enrique Cárdenas, Arturo Fernández, Ricardo French-Davis, Enrique Florescano, Roberto Frenkel, Kevin B. Grier, Ricardo Hausmann, Alejandro Hernández, Albert O. Hirschman, Hugo A. Hopenhayn, David Ibarra, Felipe Larraín, Francisco Lopes, Guillermo Maldonado, Rodolfo Manuelli, José A. Ocampo, Joseph Ramos, Luis Ángel Rojo Duque, Gert Rosenthal, Francisco Sagasti, Jaime José Serra, Jesús Silva Herzog Flores, Osvaldo Sunkel, Carlos Tello, Sweder van Winjberger.

Director: José Blanco
Secretario de Redacción: Guillermo Escalante A.

Vol. LXIX (2)

México, Abril-Junio de 2002

Núm. 274

**José Carlos Ramírez
y José B. Morelos** *El concepto de población en los modelos de crecimiento económico*

**Eduardo Walker
y Fernando Lefort** *Premios por plazo, tasas reales y catástrofes: Evidencia de Chile*

**Francisco Venegas-Martínez
y Bernardo González-Aréchiga** *Cobertura de tasas de interés con futuros del mercado mexicano de derivados. Modelo estocástico de duración y convexidad*

David Mayer *El efecto recíproco a largo plazo entre salud e ingreso: México, 1950-1995*

EL TRIMESTRE ECONÓMICO aparece en los meses de enero, abril, julio y octubre. La suscripción en México cuesta \$180.00. Número suelto \$60.00. Número suelto atrasado \$40.00. Disquetes con el índice general (por autores y temático) de los números 1-244, \$26.00 (4.49 dls.)

Precios para otros países (dólares)

	Suscripciones	Números sueltos	
		Del año	Atrasados
Centroamérica y el Caribe	70.00	20.00	10.00
Sudamérica y España	90.00	30.00	20.00
Canadá, Estados Unidos y resto del mundo	120.00	33.00	20.00

Fondo de Cultura Económica, carretera Picacho Ajusco 227, Col. Bosques del Pedregal, 14200 México, Distrito Federal. Suscripciones y anuncios: teléfono 52 27 46 70, señora Irma Barrón.

Correo electrónico (E-mail): trimestre@fce.com.mx

Página del Fondo de Cultura Económica en Internet: <http://www.fce.com.mx>

Problemas de desarrollo

Revista Latinoamericana de Economía

Publicación trimestral del
Instituto de Investigaciones Económicas
UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO

Vol. 32 núm. 127 octubre-diciembre 2001

Editorial

Leticia Campos Aragón

La paradoja de la reunión de Monterrey

Artículos

Alfredo Guerra-Borges

¿Tiene futuro la integración económica de América Latina?

Pierre Salama

1997-1998. ¿Diferente naturaleza de las crisis en Asia y en América Latina?

Miguel Ángel Rivera Ríos

México en la economía global: reinserción, aprendizaje y coordinación

Mario Miguel Carrillo Huerta

La teoría neoclásica de la convergencia y la realidad del desarrollo regional en México

M^{ra} Gabriela Siller Pagaza

Medición del riesgo país para México

José Antonio Ávila

El mercado de los fertilizantes en México/Situación actual y perspectivas

Fernando Cervantes Escoto, Horacio Santoyo Cortés, Adolfo Álvarez Macías

Gestión de la calidad y desarrollo desigual en la cadena de lácteos en Los Altos de Jalisco

Coyuntura y debate

Armando Labra Manjarrez - Héctor Ramírez del Razo

La reforma presupuestal en la reforma hacendaria distributiva

José Luis Calva

Causas de la recesión en México

Presencia del Instituto

Normas para la recepción de originales

Guidelines for Submitting Originals

Problemas del Desarrollo es una revista de excelencia, forma parte del Índice de Revistas Mexicanas de Investigación Científica y Tecnológica del Conacyt y de la base de datos de economía más importante a nivel mundial: *EconLit*, producida por la American Economic Association, con empleo del sistema de clasificación del Journal of Economic Literature (JEL), entre otros bancos de datos del extranjero disponibles en internet como los siguientes: LADB de la Universidad de Nuevo México; LANIC-ARL de la Universidad de Texas en Austin; HLAS de la Biblioteca del Congreso de Estados Unidos; *International Bibliography of Social Sciences*, de la London School of Economics; *Bancos Bibliográficos Latinoamericanos y del Caribe* de la UNESCO. A nivel nacional, además del índice del Conacyt, pertenece a los siguientes bancos de datos también disponibles en internet: *Alfa*, del IIEC; UNAM; *Citas Latinoamericanas en Ciencias Sociales y Humanidades (Clase)* de la DGB; UNAM; *Índice de Revistas de Educación Superior e Investigación Educativa (IRESIE)*, del CESU; UNAM; *Catálogo Comentado de Revistas Mexicanas sobre Educación Superior e Investigación Educativa (Camex)*, editado en CD ROM, elaborado por el CESU, UNAM; así como de la *Heroteca Virtual Universitaria*, producto de la Gran Biblioteca Metropolitana del Consejo Regional de la Zona Metropolitana de la ANUIES. *Problemas del Desarrollo* aparece en texto completo a partir del número 121, correspondiente al trimestre abril-junio de 2000, en el EJOURNAL, sitio coordinado y editado por la Dirección General de Servicios de Cómputo Académico (DGSCA) de la UNAM.

Ventas: en librerías de la UNAM. **Suscripciones y ventas:** Depto. de Ventas del IIEC: Torre II de Humanidades, 1^{er} piso, Ciudad Universitaria, 04510, México, D.F., MÉXICO o al A.P. 20-721, 01000, México, D.F., MÉXICO. Tel.: (52-55) 5623-0080, Fax: (52-55) 5623-0124, 5623-0097. **Correo electrónico:** venties@servidor.unam.mx. **Colaboraciones:** Departamento de la Revista: Torre II de Humanidades, 5^o piso, Cubículo 515, Tels.: (52-55) 5623-0105, 5623-00-74, Tel/fax: (52-55) 5623-00-97, con Atención de la Directora: Mtra. Leticia Campos Aragón. **Correo electrónico:** <revprode@servidor.unam.mx>. Consultar la página <http://www.iiec.unam.mx/problemas_del_desarrollo.htm>.

Sumario

Nº 86 Otoño 2002

CENTRO DE ESTUDIOS
PÚBLICOS

Monseñor Sótero Sanz 175,
Santiago-Chile

Fono: 231 5324

ESTUDIOS PÚBLICOS

www.cepchile.cl

El gran bailongo	Carlos Franz
Peligro en el SIES	Arturo Fontaine T.
La brecha en la enseñanza	James W. Stigler y James Hiebert
Regulación por empresa eficiente	Álvaro Bustos y Alexander Galetovic
Debates sobre cuotas individuales transferibles: ¿"Privatizando" el mar? ¿Subsidios? o ¿Muerte anunciada de la pesca extractiva en Chile?	Julio Peña Torres
Nulidad y divorcio en el proyecto de nueva Ley de Matrimonio Civil	Mauricio Tapia
Libertad y verdad en Foucault	Charles Taylor
Ciencia del derecho	Jorge Streeter
Liderazgo empresarial en época de crisis	Ricardo Capponi
¿Qué hacer con el dinero?	Martín Hopenhayn
Ovación por Miller	Mario Valdovinos
Panorama de Narrativas	Jorge Herralde
DOCUMENTOS	
El profesor Iriarte	Alfredo Bryce Echenique
El Inca Garcilaso, un indio antártico (1539-1616)	Marta Blanco

SUSCRIPCIONES

Anual \$ 9.000 • Bianaual \$ 13.500 • Estudiantes \$ 5.000

كيفية الحصول على منشورات الأمم المتحدة

يمكن الحصول على منشورات الأمم المتحدة من المكتبات ودور التوزيع في جميع أنحاء العالم. استعلم عنها من المكتبة التي تتعامل معها أو اكتب إلى : الأمم المتحدة ، قسم البيع في نيويورك أو في جنيف .

如何购取联合国出版物

联合国出版物在全世界各地的书店和经售处均有发售。请向书店询问或写信到纽约或日内瓦的联合国销售组。

HOW TO OBTAIN UNITED NATIONS PUBLICATIONS

United Nations publications may be obtained from bookstores and distributors throughout the world. Consult your bookstore or write to: United Nations, Sales Section, New York or Geneva.

COMMENT SE PROCURER LES PUBLICATIONS DES NATIONS UNIES

Les publications des Nations Unies sont en vente dans les librairies et les agences dépositaires du monde entier. Informez-vous auprès de votre libraire ou adressez-vous à : Nations Unies, Section des ventes, New York ou Genève.

КАК ПОЛУЧИТЬ ИЗДАНИЯ ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

Издавания Организации Объединенных Наций можно купить в книжных магазинах и агентствах во всех районах мира. Наводите справки об изданиях в вашем книжном магазине или пишите по адресу: Организация Объединенных Наций, Секция по продаже изданий, Нью-Йорк или Женева.

COMO CONSEGUIR PUBLICACIONES DE LAS NACIONES UNIDAS

Las publicaciones de las Naciones Unidas están en venta en librerías y casas distribuidoras en todas partes del mundo. Consulte a su librero o diríjase a: Naciones Unidas, Sección de Ventas, Nueva York o Ginebra.

Las publicaciones de la Comisión Económica para América Latina y el Caribe (CEPAL) y las del Instituto Latinoamericano y del Caribe de Planificación Económica y Social (ILPES) se pueden adquirir a los distribuidores locales o directamente a través de:

Publicaciones de las Naciones Unidas
Sección de Ventas – DC-2-0853
Fax (212)963-3489
E-mail: publications@un.org
Nueva York, NY, 10017
Estados Unidos de América

Publicaciones de las Naciones Unidas
Sección de Ventas, Fax (22)917-0027
Palais des Nations
1211 Ginebra 10, Suiza

Unidad de Distribución
CEPAL – Casilla 179-D
Fax (562)208-1946
E-mail: publications@eclac.cl
Santiago de Chile

Publications of the Economic Commission for Latin America and the Caribbean (ECLAC) and those of the Latin American and the Caribbean Institute for Economic and Social Planning (ILPES) can be ordered from your local distributor or directly through:

United Nations Publications
Sales Sections, DC-2-0853
Fax (212)963-3489
E-mail: publications@un.org
New York, NY, 10017
USA

United Nations Publications
Sales Sections, Fax (22)917-0027
Palais des Nations
1211 Geneve 10, Switzerland

Distribution Unit
CEPAL – Casilla 179-D
Fax (562)208-1946
E-mail: publications@eclac.cl
Santiago, Chile



IN THIS ISSUE OF THE REVIEW

Institutional reform and government coordination in Brazil's social protection policy	7
<i>Vilmar E. Faria</i>	
Growth, instability and the convertibility crisis in Argentina	25
<i>José María Fanelli</i>	
Investment and financial volatility in Latin America	45
<i>Graciela Moguillansky</i>	
International tax cooperation and capital mobility	65
<i>Valpy FitzGerald</i>	
Reforms and growth in Latin America	79
<i>Andrea C. Bandeira and Fernando Garcia</i>	
EMBRAER: From national champion to global player	97
<i>Andrea Goldstein</i>	
Education and the labor market in Latin America: confronting globalization	117
<i>Beverley Carlson</i>	
Changes and inequality in Latin American families	135
<i>Irma Arriagada</i>	
Infrastructure to support the digital economy in Chile	155
<i>Rossella Cominetti</i>	
Cepal Review on the Internet	169
Recent ECLAC publications	171

