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

C E P A L

REVIEW

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OSCAR ALTIMIR
Director of the Review



UNITED NATIONS

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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.
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(—)	A dash indicates that the amount is nil or negligible.
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	A blank space in a table means that the item in question is not applicable.
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(-)	A minus sign indicates a deficit or decrease, unless otherwise specified.
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(.)	A point is used to indicate decimals.
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(/)	A slash indicates a crop year or fiscal year, e.g., 2001/2002.
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(-)	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.
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Economic growth *and human development* in Latin America

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The paper explores the two-way links between human development and economic growth in Latin America. Economic growth is likely to advance human development as the resource base expands, while higher human development generates greater economic growth as healthier and more educated people contribute to improved economic performance. Regression analysis shows quite strong connections from human development to economic growth in Latin America, but the economic growth to human development relationship is much weaker than that indicated by worldwide evidence, probably due to the disruptive impact of the debt crisis. Case studies of successful and unsuccessful countries show that human development success was due to good economic performance combined with high social expenditure; failures were associated with conflict, natural disasters and harsh adjustment policies. Exploration of country behaviour over time confirms that priority should be given to human development to reach a virtuous cycle of growth and higher human development.

I

Introduction

There is a strong case to be made for regarding human development rather than economic growth as the ultimate objective of human activity. Human development has been defined as enlarging people's choices in a way which enables them to lead longer, healthier and fuller lives.¹ This is a very broad definition of human development, and can include a great variety of choices, for example in the political and cultural dimensions. In this paper we focus on a narrow subset of choices –those directed specifically at health and education– which are among the basic preconditions for choice in other dimensions. This paper is in the spirit of much of the work of Al Berry, whose major concern has been to move beyond growth of per capita income to focus rather on its distribution, with the objective of improving the lives of the poor.²

In a previous paper (Ranis, Stewart and Ramírez, 2000), we explored the links between human development (defined in this rather restricted fashion) and economic growth, both theoretically and empirically. Clearly, there exists a strong two-way connection between the two. On the one hand, economic growth provides the resources to permit sustained improvements in human development. On the other, improvements in the quality of the labour force constitute an important contribution to economic growth. While these general connections are readily accepted, one needs to understand the links in more depth for this to be of much use in policy formulation.

In particular, one needs to know whether all forms of economic growth promote human development, or whether there are particular patterns of economic growth which are more conducive to human development; equally, whether all forms of human development promote economic growth, or whether there are specific types which are more conducive to promoting such growth; and whether we can say anything useful about priorities if a choice is necessary: for example, should human development be promoted before economic growth, or can we delay the achievement of human development while promoting economic growth?

In order to answer these questions we explored the theoretical links and then analysed them empirically, drawing on cross-country data from all developing regions of the world. The exercise came to quite strong conclusions about the questions just posed above. In this paper, we aim to investigate how well our general findings apply in the Latin American context, and what policy conclusions are to be derived from the Latin American experience.

The next section of the paper (section II) summarizes the findings of our earlier work. Section III presents some econometric estimates for Latin America, comparing them with the earlier global findings, and section IV reports on some country cases in Latin America which have been particularly successful or unsuccessful. Finally, section V presents some brief conclusions.

□ This version was originally presented at the conference in honour of Professor Albert Berry on 'The Social and Economic Effects of Globalization and Liberalization on the Labour Market and Income Distribution', organized by the University of Toronto on 19 and 20 April 2002. We wish to express our thanks to Tavneet Suri, for her outstanding support, and also to Prateek Tandon for his valuable assistance.

¹ The first UNDP Human Development Report stated that: "The basic objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives" (UNDP, 1990, p. 9), and defined human development as "a process of enlarging people's choices" (p. 10).

² For an early example see Berry and Urrutia (1976); for a much more recent one, see Berry (ed., 1998).

II

Human development and economic growth: findings from the previous study

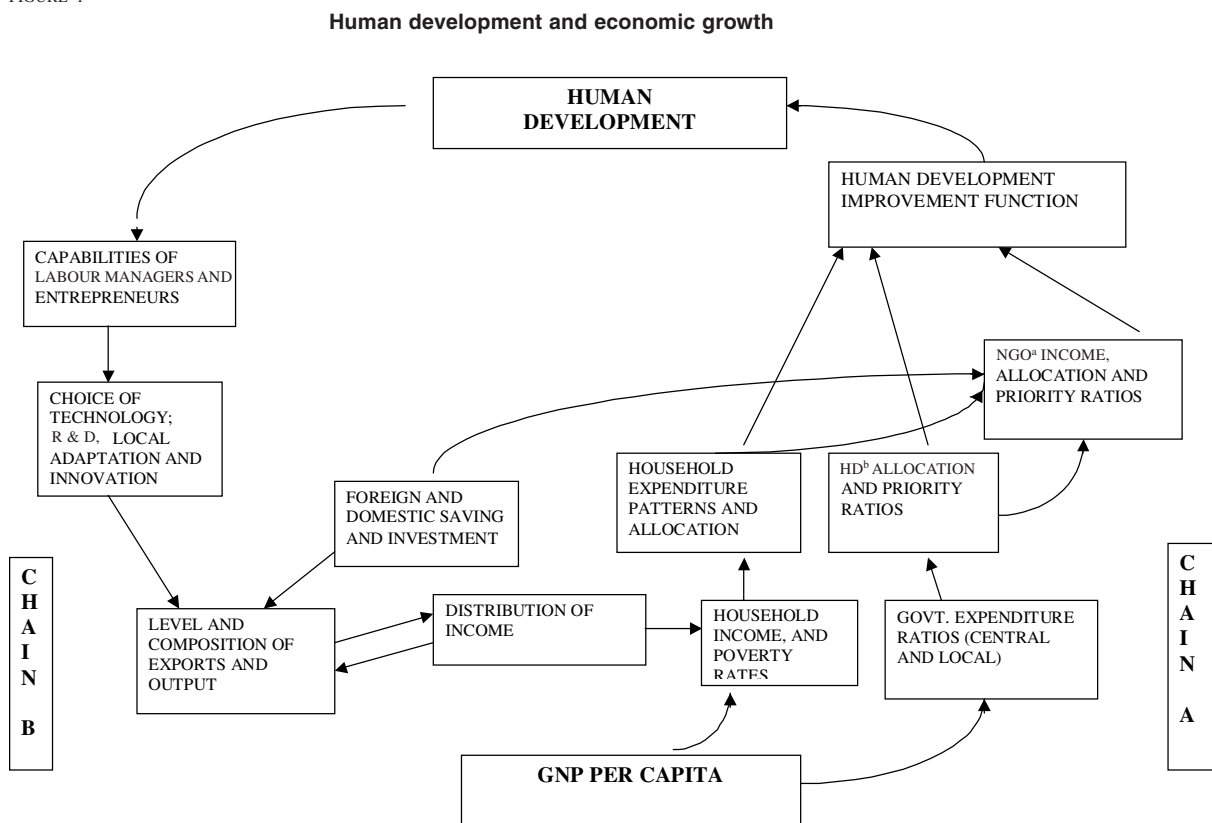
We view human development as the central objective of human activity and economic growth as potentially a very important instrument for advancing it. At the same time, achievements in human development themselves can make a critical contribution to economic growth. There are thus two distinct **causal chains** to be examined: one runs from economic growth to human development, as the resources from national income are allocated to activities contributing to human development; the other runs from human development to economic growth, indicating how human

development, as well as being an overriding objective, helps increase national income. The two chains are pictured in figure 1.

1. Chain A: from economic growth to human development

From a review of the literature on the determinants of human development, it appears that the main links in the chain from economic growth to human development relate to:

FIGURE 1



Source: Prepared by the authors.

^a NGO: Non-governmental organization.

^b HD: Human development.

- a) The distribution of GDP between households and government, since each performs vital, if different, roles in generating conditions favourable for human development. Civil society –for example, through community organizations and other NGOs– also plays a role. These organizations’ share of national resources depends on the decisions of government and households on how much to allocate to them.
- b) The distribution of income among households, as income going to poorer households is more likely to enhance our restricted concept of human development (education, health), since deficiencies are greatest among such households.
- c) Households’ propensity to spend their after-tax income on items which contribute most directly to the promotion of human development in poor countries, such as food, education and health services. A major determinant in this respect appears to be the share of income controlled by females.
- d) With regard to the government, the allocation of resources for improving human development is a function of total public sector expenditure, of how much of this flows to the human development sectors, and of the way in which it is allocated within these sectors. This can be expressed in the form of three ratios³: the public expenditure ratio, defined as the proportion of GNP spent by the various levels of government; the human development allocation ratio, defined as the proportion of total government expenditure going to the human development sectors; and, finally, the human development priority ratio, defined as the proportion of total human development sector expenditure going to ‘priority areas’. The precise definition of what constitutes a ‘priority area’ varies according to a country’s stage of development, rendering this third ratio more arbitrary and difficult to measure than the other two. Within the health and education sectors, however, some expenditures are clearly much more productive in terms of achieving advances in human development than others: for example, basic education, especially in countries at an early stage of development, is generally recognized to have a larger impact on human development than tertiary education.
- e) The activities of NGOs or other sectors of civil society activity are likely to promote human development. Information on this is more scattered, but NGO expenditures appear to be typically heavily oriented towards human development objectives (e.g. generating incomes for the poor, and school, nutrition and health projects). In most contexts, NGOs play a supplemental or even marginal role, but in a few areas –such as the Bangladesh Rural Advancement Committee (BRAC) and the Grameen Bank in Bangladesh, the Harambee Schools in Kenya and the ‘Comedores Populares’ in Peru, for example– they appear to represent a major source of human development enhancement (Riddell et al., 1995).
- f) The effectiveness of these various expenditures in raising human development levels is, of course, an important consideration. Expenditures on human development inputs are clearly not objectives in themselves, but rather constitute instruments for achieving advances in various dimensions of basic well-being. A further important link in Chain A is what type of measure is most productive at what level of development, and how different combinations bring about a change in human development. We call this link in the chain the *human development improvement function*; it resembles a production function in that it relates the inputs into human development, such as public expenditure on health services or potable water, to the human development objective of achieving better health.

It is clear from this discussion of the various links in the economic growth to human development chain that, in general, we would expect important causal connections to exist between the economy and human development achievements, but these connections are not automatic: the strength of the links in Chain A varies according to a large range of factors, including the structure of the economy, the distribution of income and assets, and the policy choices made.

2. Chain B: from human development to economic growth

Turning our attention to this second chain, there is strong empirical support for the view that as people become healthier, better nourished and more highly educated they contribute more to economic growth. More specifically, both micro- and macro-level research show that:

³ See Human Development Report 1991.

- a) Extending primary education raises the productivity of both rural and urban workers. In agriculture, education raises productivity among farmers using modern technologies, with less impact, as might be expected, among those using traditional methods.⁴ Education is also an important contributor to technological capability and technical change in industry.
- b) Improved health and nutrition have been shown to have direct effects on labour productivity, especially among poorer individuals.⁵ Morbidity has a negative impact on labour productivity, as shown, for example, by studies in Ghana and Côte d'Ivoire (Schultz and Tansel, 1993). In some contexts the evidence indicates that the productivity effects arising from health and nutrition are even larger than from formal schooling, although the impact of education has been much more emphasized in the development literature.
- c) Secondary education, including vocational, facilitates the acquisition of skills and managerial capacity.
- d) Tertiary education supports the development of basic science, the appropriate selection of technology imports, their domestic adaptation and the development of indigenous technologies.
- e) Secondary and tertiary education represent critical elements in the development of key institutions in the areas of government, law and the financial system, among others, which are all essential for economic growth.
- f) From a macro perspective, the "new growth theories" aim to endogenize technical progress by incorporating some of these same effects, with emphasis on education, learning by doing and R. and D. A number of empirical studies have shown the positive effect of education on economic growth at the macro level, with the size of this effect varying according to the measure of education and the particular macro growth model adopted.⁶
- g) Education affects the nature and growth of exports, which in turn affects the aggregate growth rate. It has been argued that even 'unskilled' workers in a modern factory normally need the literacy, numeracy and discipline which are acquired in

primary and lower secondary school (Wood, 1994). Studies have shown a significant positive correlation between the growth of manufactured exports and the growth of GDP.⁷

- h) Education can also affect per capita income growth via its impact on the denominator, i.e., population growth. Many studies have shown a negative correlation between female schooling and fertility (Ainsworth, Beegle and Nyamete, 1995).
- i) Increasing basic education has been shown to lead to more equal income distribution (Psacharopoulos and others, 1992, p. 48), and recent studies suggest that a more equal distribution of assets and income has a positive effect on economic growth.⁸ As in Chain A, the strength of the various links in Chain B varies and there is no automatic connection between an improved level of human development and increases in per capita GDP. Education, health and nutrition alone, of course, cannot transform an economy. The quantity and quality of investment, both domestic and foreign, together with the overall policy environment, represent other important determinants of economic performance. Income distribution again appears to be important in Chain B, as in Chain A.

3. Empirical findings

Our earlier empirical work used cross-country regressions covering 35 to 76 developing countries, according to the availability of data for particular variables, for the 1960-1992 period. We tested the following hypotheses, derived from the analysis of Chain A summarized above:

Human development improvement would be greater:

- A1: the higher the economic growth;
- A2: the lower the proportion of the population below the poverty line; for a given level of per capita GDP, this means the more equally income is distributed;
- A3: the more income households allocate to human development at a given income level; this may be related both to the level of female education and to the extent of female control over income within the household;

⁴ See Schultz (1975), Welch (1970), Rosenzweig (1995), and Foster and Rosenzweig (1994).

⁵ See surveys in Behrman, 1993 and 1996.

⁶ For example, Barro (1991) and Barro and Lee (1993 a and b).

⁷ For example, Michaely (1977), Krueger (1978), Ram (1985), Rana (1988) and Edwards (1993).

⁸ See Alesina and Rodrik (1994), Alesina and Perotti (1994), Persson and Tabellini (1994) and Birdsall, Ross and Sabot (1995).

A4: the higher the proportion of GDP devoted to social expenditure by the government.

Using the change in human development, proxied by life expectancy shortfall reduction, 1970-1992, as the dependent variable, for **Chain A** we found that:

- a) Per capita GDP growth proved significant and quite strong in all of the equations, with higher growth of per capita income leading to better human development performance. According to one equation, a one percentage point increase in the average growth rate of per capita GDP was estimated to reduce life expectancy shortfall by more than 3 percentage points over the period.
- b) The share of national resources going to social expenditure almost always proved significantly positive. For every percentage point increase in the average share of GDP invested in health and education (lagged), the life expectancy shortfall decreased by about 1.75 percentage points.
- c) The initial female primary enrollment rate had a significant but small impact on the subsequent rate of improvement in life expectancy. We attributed this to the impact on household behaviour of female income, knowledge and control within the household.
- d) Contrary to expectations, a more equal distribution of income did not seem to advance human development.
- e) Both the African and Latin American dummies were negative and significant throughout, as we might have expected, given that the comparator was highly successful East Asia. In each case the coefficient was quite small.

For **Chain B**, we tested the following hypotheses: GDP growth would be higher:

- B1: the higher human development;
 B2: the higher the investment rate;
 B3: the more equal the distribution of income.

Using per capita GDP growth, 1970-1992, as the dependent variable, for Chain B we found that:

- a) Measures of the initial level of human development invariably proved significant, although with low coefficients.
- b) The change in life expectancy (1962-1982) was positive and significant in all cases but one.
- c) The domestic investment rate was always significant, except when the regional dummies were included.
- d) The lagged income distribution variables virtually all gave results with the expected sign (i.e., more

equal income distribution is associated with higher economic growth), and were almost always significant, except when the regional dummies were included.

- e) Regional dummies for Latin America were significantly negative in every case and, in one case, also for Africa.

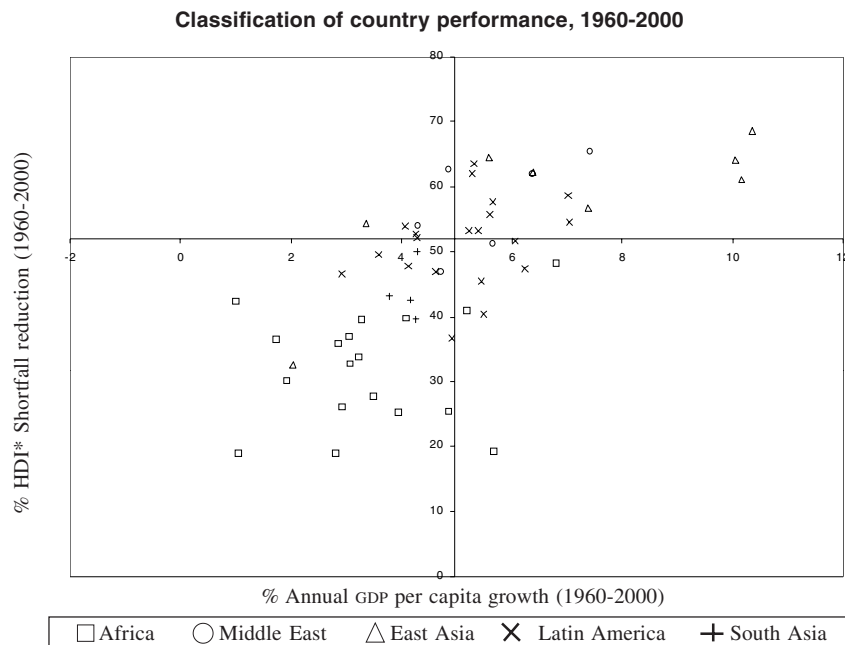
In summary, the two chains, taken together, showed a significantly positive effect of economic growth on human development and a significantly positive effect of human development on economic growth.

4. Virtuous and vicious cycles and lopsided development

The existence of two chains linking human development and economic growth was thus strongly supported by our results. This means that an economy may be on a mutually reinforcing upward spiral, with high levels of human development leading to high growth, and high growth in turn further promoting human development. Conversely, weak human development may result in low growth and consequently poor progress towards human development improvement.

Following this reasoning, we classified country performance into four categories: virtuous cycles, vicious cycles, and two types of lopsidedness, i.e., lopsided with strong human development but weak economic growth (called “human development lopsidedness”), and lopsided with weak human development but strong economic growth (“economic growth lopsidedness”). In the virtuous cycle case, good human development enhances growth, which in turn promotes human development, and so on. In the vicious cycle case, poor performance in human development tends to lead to poor growth performance, which in turn depresses human development achievements, and so on. The stronger the linkages in the two chains described above, the more pronounced the cycle of economic growth and human development, either in a positive or dampening direction. Where linkages are weak, cases of lopsided development may occur. On the one hand, good economic growth may not bring about good human development if, for example, there are weak linkages such as a low social expenditure ratio; on the other hand, good human development performance may not generate good economic growth if there is a dearth of complementary resources, such as low investment rates. Such cases of lopsided development are, however, unlikely to persist. Either the weak partner in the cycle eventually acts as a brake

FIGURE 2



Source: Prepared by the authors.

on the other partner, leading to a vicious cycle case, or, if the linkages are strengthened over time, possibly by policy change, a virtuous cycle results.

For the purpose of classifying country performance empirically, we compared the performance of each country to the average of all developing countries. It is important to explore how a country moves from one category to another over time. In our earlier work, both lopsided categories proved very impermanent. Indeed, the most interesting finding from this work was that

none of the countries that started as economic growth-lopsided were able to move from there to the virtuous cycle category: all fell back to the vicious cycle (poor human development, poor economic growth) category. Thus, our previous global analysis suggested that it is not possible to move to a virtuous cycle via economic growth-lopsidedness, as this proved a dead end. In contrast, some countries which started as human development-lopsided did manage to move into the virtuous cycle category.

III

The Latin American perspective

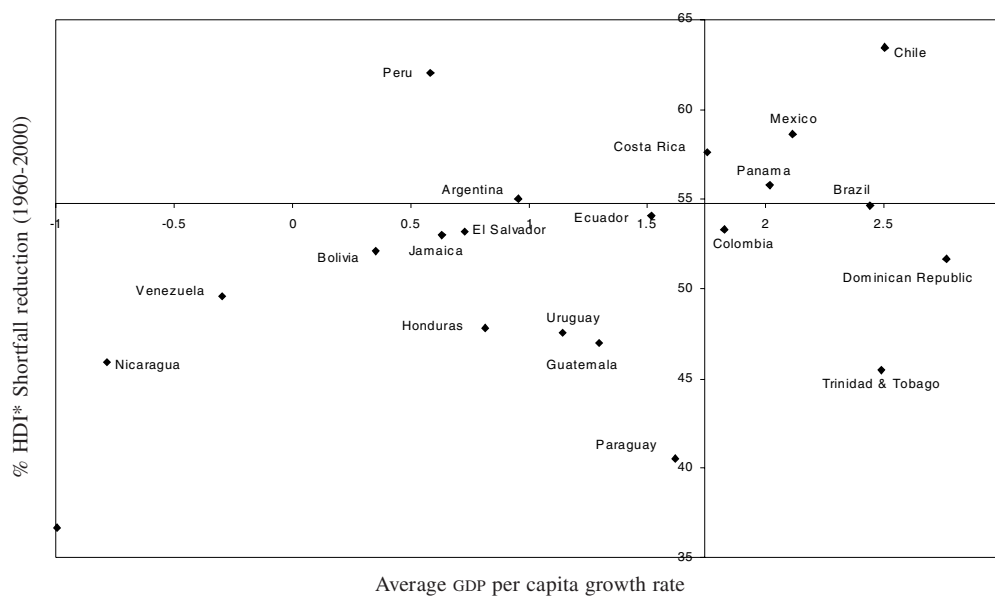
The global picture, now extended to 1960-2000, is presented in figure 2, where the vertical dividing line represents the average human development shortfall reduction for the developing world as a whole and the horizontal dividing line represents the average per capita GDP growth rate –both weighted by population. This figure indicates that Latin American countries are concentrated in the human development-lopsided and vicious cycle quadrants. This is in sharp contrast to East Asia, which is mainly in the virtuous cycle category and Sub-Saharan Africa, which is mainly in the vicious

cycle category. In figure 2, the measure of human development adopted –the human development index (HDI*)– is the same as the most recent formula adopted by the UNDP for its own human development index (HDI),⁹ except it excludes the income component, since

⁹ The UNDP HDI, as currently constituted, includes life expectancy at birth, calculated as an index with a minimum of 25 years and a maximum of 85 years; an education component made up of adult literacy and the combined primary, secondary and tertiary gross enrolment rate; and a measure of real income weighted according to income level at purchasing power parity (see UNDP, 2001).

FIGURE 3

Classification of country performance, Latin America, 1960-2000



Source: Prepared by the authors.

we do not want income to appear as part of both human development and economic growth.

The position of Latin America relative to other regions is due in part to the particularly heavy impact of the 1980s debt crisis on the region. As is well known, this decade is often termed the “lost decade”. When we come to focus on the Latin American countries relative to each other—particularly in the 1980s—this means that negative growth performance over that decade is the norm, so that a country such as Mexico, which had falling per capita income in the 1980s, may nonetheless appear in the virtuous quadrant.

When we compare countries across Latin America for the 1960-2000 period, classified only according to the *region’s* average performance (figure 3), four countries appear in the virtuous category—Chile, Costa Rica, Mexico and Panama. The majority of Latin American countries fall in the vicious category, with a small number in the human development- or economic growth-lopsided quadrants.

Again, it is enlightening to investigate country movements over time. Table 1 shows the positions of the Latin American countries decade by decade. We classified them, in terms of growth and HDI* shortfall reduction, into vicious, virtuous, human development-lopsided and economic growth-lopsided quadrants,

noting how the country classification shifts from decade to decade. These transitions are based on how countries fare relative to the *Latin American* (not the world) average. We find that countries’ positions fluctuate over time for a variety of both general and country-specific reasons. In contrast to the global picture, Latin American countries move more frequently in and out of the virtuous and vicious categories. This is partly due to the smaller number of countries involved and the greater similarity among countries in a single region, which means that small changes can lead to switches in classification, and is also partly because the larger incidence of exogenous shocks is likely to lead to more changes of this type.

Most importantly, the Latin American analysis reinforces our earlier conclusion: that it is not possible to move from economic growth-lopsided to the virtuous category. In contrast, countries which are human development-lopsided are frequently seen to move into the virtuous category, while countries in the economic growth-lopsided quadrant tend to return to the vicious cycle. This has strong implications for the sequencing of policy, suggesting that, in contrast to the pattern often advocated, it is not possible to put growth first and worry about human development later, because this will actually undermine both growth and human

TABLE 1

**Latin America: Classification of countries according to changes
in human development (HD) and economic growth (EG), 1960-2000**

Country	1960-1970	1970-1980	1980-1990	1990-2000
Argentina	HD-lopsided	HD-lopsided	HD-lopsided	Virtuous cycle
Bolivia	Vicious cycle	Vicious cycle	Vicious cycle	Vicious cycle
Brazil	EG-lopsided	EG-lopsided	EG-lopsided	Vicious cycle
Chile	HD-lopsided	HD-lopsided	Virtuous cycle	Virtuous cycle
Colombia	HD-lopsided	HD-lopsided	Virtuous cycle	HD-lopsided
Costa Rica	HD-lopsided	HD-lopsided	Virtuous cycle	Virtuous cycle
Dominican Republic	Vicious cycle	EG-lopsided	EG-lopsided	EG-lopsided
Ecuador	Vicious cycle	EG-lopsided	Virtuous cycle	HD-lopsided
El Salvador	Vicious cycle	Vicious cycle	Vicious cycle	EG-lopsided
Guatemala	Vicious cycle	Vicious cycle	Vicious cycle	Vicious cycle
Guyana	-	HD-lopsided	HD-lopsided	Virtuous cycle
Haiti	Vicious cycle	Vicious cycle	Vicious cycle	Vicious cycle
Honduras	Vicious cycle	Vicious cycle	Vicious cycle	Vicious cycle
Jamaica	Virtuous cycle	HD-lopsided	Virtuous cycle	HD-lopsided
Mexico	Virtuous cycle	Virtuous cycle	Virtuous cycle	Virtuous cycle
Nicaragua	EG-lopsided	Vicious cycle	Vicious cycle	Vicious cycle
Panama	Virtuous cycle	HD-lopsided	HD-lopsided	Virtuous cycle
Paraguay	HD-lopsided	Virtuous cycle	Virtuous cycle	HD-lopsided
Peru	Vicious cycle	Vicious cycle	Vicious cycle	Virtuous cycle
Trinidad and Tobago	Virtuous cycle	Virtuous cycle	HD-lopsided	Virtuous cycle
Uruguay	HD-lopsided	HD-lopsided	Virtuous cycle	Virtuous cycle
Venezuela	HD-lopsided	HD-lopsided	HD-lopsided	HD-lopsided

Source: World Bank (various years) *World Development Indicators*; UNDP (various years), *Human Development Report*.

development. Building up human development, however, is a viable way of creating conditions for sustained growth and further improvements in human development.

It is instructive to investigate the extent to which our global econometric findings, summarized above, apply in the Latin American case, both to identify the robustness of the overall two-way connections between human development and economic growth, and to assess the strength of the specific links which make up Chains A and B. In the Latin American case, we obviously have far fewer observations to go on. Consequently, we used data for each decade and for each country (i.e., pooling time series and cross-sections). The results are presented in tables 2 and 3.

For **Chain A**, we examined the shortfall reductions for both life expectancy and infant mortality as possible dependent variables (columns 1 and 2 of table 2). In column 1, we see a positive, although not significant, relationship between the growth rate and an improved HDI in the 1960-2000 period, in which human development improvement is measured by life expectancy shortfall reduction. Public expenditure on

education¹⁰ as a share of GDP at the beginning of each decade was positively and significantly related to life expectancy shortfall reduction. In column 2, we see that female primary enrolment has a positive, and significant, effect on infant mortality shortfall reduction. Although we would have liked to include a variable for income distribution, data limitations meant that this would have reduced the number of observations by three quarters.

For **Chain B**, we found that two different measures of human development achievement at the beginning of each period (the literacy rate and the logarithm of life expectancy) were positively and significantly related to growth in per capita income. It is noteworthy that in this chain we found that the dummy for 1990 was negative and highly significant. This is a clear effect of the debt crisis, showing that human development achievements did not translate as well into growth in the 1980s as they did in other decades. The dummy for

¹⁰ Used instead of education and health expenditure because of lack of data.

TABLE 2

Chain A: Evidence from Latin American experience, 1960-2000^{a,b}*(Ordinary least squares (OLS): dependent variable is the change in human development over a decade^c (e.g. 1970-1980))*

Variable	(1) Dependent variable: life expectancy shortfall reduction	(2) Dependent variable: infant mortality shortfall reduction
Per capita GDP growth rate over the decade (e.g. 1970-1980) x 100	3.99 (0.83)	1.23 (0.15)
Public expenditure on education as a percentage of GDP, average over the decade (e.g. 1970-1980) x 100	1.23 ^d (1.92)	-0.25 (0.22)
Gross female primary school enrollment rate, average over the decade (e.g. 1970-1980) x 10,000	1.42 (0.25)	0.17 ^d (1.74)
Dummy for 1970's x 100	0.90 (0.41)	9.80 ^e (2.54)
Dummy for 1980's x 100	3.22 (1.22)	12.07 ^e (2.63)
Dummy for 1990's x 100	-0.53 (0.23)	9.32 ^e (2.34)
Intercept x 100	8.89 ^d (1.71)	5.75 (0.63)
Number of observations	76	76
R ²	0.095	0.220

Source: World Bank (various years) *World Development Indicators*; UNDP (various years), *Human Development Report*.

^a For example, 1970-1980.

^b The 1970s is the omitted decade.

^c Figures in parentheses are absolute *t* statistics.

^d Indicates significance at the 10% level.

^e Indicates significance at the 5% level.

TABLE 3

Chain B: Evidence from Latin American experience, 1960-2000*(Ordinary least squares (OLS): dependent variable is per capita GDP growth over a decade)^{a,b,c}*

Independent variable	(1)	(2)
Literacy rate, average over the decade (e.g. 1970-1980) x 1000	2.54 ^d (1.92)	—
Log life expectancy, average over the decade (e.g. 1970-1980) x 10	—	3.94 ^d (1.80)
Average gross domestic investment (as a percentage of GDP) over the decade (e.g. 1970-1980) x 1000	4.20 (1.05)	4.54 (1.14)
Dummy for 1970's x 100	-0.45 (0.08)	-2.05 (0.36)
Dummy for 1980's x 10	-3.39 ^e (6.10)	-3.63 ^e (6.03)
Dummy for 1990's x 100	-8.57 (1.49)	-11.53 ^d (1.75)
Intercept x 10	-0.55 (0.53)	-14.80 ^d (1.72)
Number of observations	84	84
R ²	0.414	0.411

Source: World Bank (various years) *World Development Indicators*.

^a For example, 1970-1980.

^b The 1970s is the omitted decade.

^c Figures in parentheses are absolute *t* statistics.

^d Indicates significance at the 10% level.

^e Indicates significance at the 1% level.

1999 was also significantly negative in the Chain B equations – presumably reflecting the continued impact of stabilization and adjustment on growth.

Taking the results as a whole, we find that Chain A appears to be weaker than Chain B in the Latin American context: i.e., while better human development leads to higher growth in subsequent decades, growth rates in Latin America are not significantly related to changes in human development. This may be partly due to the importance of the debt crisis in Latin America

and the resulting adjustment requirements, which were often at the expense of expenditures on human development, when compared to our global results. In addition, it appears that variations in the policy setting, specifically in terms of priority ratios and factors determining the efficiency of the human development improvement function, were important in accounting for differences in human development performance. This indeed is supported by our account of specific country experiences, which follows.

IV

Country examples of success and failure in human development and economic growth

In this section we present thumbnail sketches of three of the good (virtuous cycle) and three of the poor (vicious cycle) performers. The aim is to identify specific circumstances and policies which appear to be responsible for such outcomes.

Chile is a country which managed good performance over the whole 40-year period, while undergoing dramatic changes in political regime and policy stance.

From the early twentieth century Chile has had a strong commitment to human development. Already in 1930 three-quarters of the adult population was literate (Thorp, 1998). In the 1960s, and in the early 1970s during the Allende administration, progress in human development was maintained through generous State expenditures on education and health. By the end of the 1960s social expenditure amounted to 20% of GDP; primary education covered 95% of 6-14 year olds, and 81% of births were delivered by professionals (Raczynski, 1987). Growth in per capita income was modest (1.6% per annum) over this period and egalitarian relative to the region as a whole, thus giving a human development-lopsided outcome.

Pinochet's political take-over in 1973 heralded dramatic changes in economic and social policy. Economic policy change involved a sharp move towards openness and a reduced role for the State. Over the next ten years this led to the stagnation of incomes (after an initial rise) and an increase in unemployment from 6% in the 1960s to more than 16% by the early 1980s. However, some of the ill effects of this on human

development were offset by major employment schemes. Income distribution worsened, with the urban Santiago Gini coefficient rising from 0.47 in the 1960s to 0.51 in 1978-1982.¹¹ After 1986 the economy grew rapidly (the highest growth rates in Latin America), largely fuelled by expanding exports of non-traditional primary products.

From the 1960s, Chile had an extensive system of State-run welfare programmes in the areas of social security, health, and education. In addition, there was universal access to curative health care and programmes of preventive care for all expectant mothers, infants, and children less than six years of age who did not have access to alternative forms of health care. These programmes were largely maintained despite sharp cuts in aggregate social expenditure, which fell from 4% to 2% of GDP between 1975 and 1990. Despite this reduction, Chile's human development mostly continued to improve, due mainly to more effective targeting, partly achieved through decentralization. In education, government spending focused on primary and secondary education and moved away from tertiary; indeed government expenditure on tertiary education declined from 38% of total government educational expenditure in 1980 to 19% in 1990. The government also developed a number of special programmes and

¹¹ Riveros (1998). According to Berry (ed., 1998, p. 16), "data on the distribution of consumption among Greater Santiago households show one of the largest deteriorations ever recorded statistically in a developing country" between 1969 and 1978.

subsidies designed to protect the most vulnerable members of society, especially mothers and children. These included a family subsidy for those in extreme poverty, a supplementary feeding programme for mothers and pre-school children, as well as programmes for children who fell below nutritional norms, and a school feeding programme designed to help reduce dropouts and repetitions (Raczynski, 1987). Dropout rates in government schools declined from 7% in 1977 to 5% in 1984. The decentralization of public health to the municipalities focused the more restricted health budget on disease prevention rather than curative medicine. Infant mortality fell from 73 per 1000 live births in 1972 to 17 in 1989.

The first ten years of the Pinochet period were thus not successful in terms of economic growth, but human development progress was maintained as a result of better targeting of the reduced social expenditures: i.e., a greatly improved priority ratio which led to human development-lopsided development. The last few years of the Pinochet regime saw a resumption of economic growth and a move towards the virtuous category.

The return to democracy in 1990 led to a renewed expansion in social expenditures and to sustained and somewhat more egalitarian economic growth. During the 1990s, Chile's average growth rate was 4.5% per annum, compared to 2.1% during the 1980s and 1.2% in the 1970s. Unemployment was reduced to low levels, and the public employment schemes could be discontinued. A progressive tax reform was introduced which helped finance the rising social expenditures. Over the 1990-1999 period, expenditure on both education and health more than doubled. Thus the 1990s saw Chile enter the virtuous category, with improved human development supported by increased growth and social expenditures; the sustained expansion in per capita GDP was, in turn, greatly facilitated by the combination of more effective economic policies and higher levels of human development.

Costa Rica, like Chile, has had a long historic commitment to human development. By 1950, its illiteracy rate was only 20%, whereas the overall Latin American rate was more than 40% (Thorp, 1998). The decision in 1948 to abolish the armed forces released resources for social expenditures, which were consistently relatively high, although subject to cuts in the early 1980s. In 1988, half of government expenditure was again devoted to health and education, with nearly 30% going to priority areas.

In the 1960s and 1970s growth was fairly good (5-6% per annum). An extended welfare benefit system

had nearly universal coverage. Costa Rica invested around 6% of GDP in education. Universal primary school enrolment was achieved, and secondary enrolment rose to around two-thirds, with 20% of young people between 20 and 24 in higher education, and relatively equal female and male enrolments. Adult illiteracy dropped 8 percentage points in the 1960s, and by 1980 only 13% of Costa Ricans over ten years old were illiterate, with the rate dropping still further to 4.5% by 1999.

Improvements on health were rather slow in the 1960s, but then accelerated. About 3% of GDP was devoted to public health expenditure in Costa Rica in 1960, and by the end of the 1990s this had risen to more than 5%, much of this increase coming in the later part of the period. Life expectancy was 67 years in 1960, increasing to about 73 years by 1980 and 76 by 1995-2000. Infant mortality rates remained quite high throughout the 1960s, standing at 68 per thousand in 1960 and falling slightly to 62 per thousand by 1970, but this was followed by a significant improvement to 19 per thousand in 1980 and 12 per thousand by 1999.

In Costa Rica, the social sector expenditure cuts of the first half of the 1980s fell most heavily on priority areas, with the share of the bottom 40% of households in educational expenditure falling from 42% in 1980 to 36% in 1986. However, social expenditure recovered in the second half of the decade. Moreover, the minimum wage was maintained, income distribution did not deteriorate, and human development progress resumed. As a result, a virtuous cycle could be maintained.

Mexico's progress in human development came much later than Chile's or Costa Rica's. In 1960 over a third of the adult population was still illiterate. Mexico falls into the virtuous category because of its improvements in human development and economic growth during the 1960-1999 period. But the absolute standards attained were still significantly below those of Chile and Costa Rica. For example, by the end of the period life expectancy was 67, a little less than the Latin American average (69) and much lower than Chile's (75) and Costa Rica's (77) (Thorp, 1998).

Until 1970, during the Echeverría administration, Mexico enjoyed "growth with stability," and advances were also made in human development. In the 1970s growth continued, but it was supported by heavy borrowing and rising fiscal imbalances. Mexico's economic performance was strong throughout the late 1960s and 1970s, when GDP growth averaged about 7% overall (over 3% per capita), with manufacturing –the

country's dominant growth sector— attracting considerable foreign investment.. Absolute poverty declined from 76% in 1960 to 45% in 1981, but income distribution remained at unfavourable levels (Ginis between 0.5 and 0.6) (Maddison, 1992).

A central pillar of post-revolutionary government in Mexico has been a strong commitment to human development. In the 1960s this took the form of enhanced emphasis on land reform, health, sanitation, education and nutrition. Educational expenditures averaged around 18% of total government spending in the 1970s, while those on health averaged around 5% (IMF, various years). Good priority ratios also contributed, with primary education and vaccination programmes receiving the bulk of public spending. As a result, human development improved significantly between 1960 and 1980: life expectancy rose from 59 to 66 years; infant mortality declined from 74 to 53 per 1000 live births; adult literacy rose from 66% to 83%; and gross educational enrolment almost doubled, from 106% to 120% for primary school enrolment, from 23% to 49% in the case of secondary education, and from 5% to 14% at the tertiary level.

The story in the debt-ridden 1980s was very different. Mexico cut its expenditure ratio, with a corresponding decline in human development spending, which contracted by 6% per annum from 1983 to 1988. Real disposable per capita income fell 5% per annum over the same period, and there were rising levels of unemployment, underemployment and poverty. The share of education in total expenditure dropped by almost 30%, most of the reduction being in primary education (Friedmann, Lustig and Legovini, 1995). Teacher and student per school ratios both declined between 1983 and 1988, as did the numbers of medical units, hospital beds and doctors per capita. Despite its very poor performance in economic growth and human development, however, Mexico still did well compared with the rest of the region, though not by world standards.

After the economic reforms initiated in the late 1980s, the economy performed better, bolstered by foreign investment following the ratification of NAFTA. But financial crises in 1994 and 1998 were followed by economic contraction and social sector cutbacks. For the decade as a whole, the growth rate per capita was 1.25% per annum (following a negative average growth rate in the 1980s). In the early part of the 1990s there was an increase in the share of GDP going to the social sectors, and expenditures on education rose by 90% between 1989 and 1993, while those on health increased by 79%. There was a reduction in general

food subsidies, with a rise in (somewhat ineffective) targeting. A large-scale programme called PRONASOL was established to make social expenditure more cost-effective and foster greater community involvement. One of its components, called "Solidaridad" contained a wide range of social programmes, including education and health, but has been accused of being politically manipulated by the then ruling party. These factors may account for the fact that Mexico shifted into the economic growth-lopsided category in the 1990s. The programme was renamed PRONOSOL and restructured in 1995, becoming less political.

In summary, Mexico's inclusion in the virtuous category in the 1960s and 1970s was due to its economic growth and social expenditure. Another element supporting human development has been the improvement in gender roles with the greater institutionalization of women's rights. The somewhat inferior performance in human development in the 1990s was probably due to inappropriate targeting, cutbacks following the crises, and the problems inherited from the 1980s.

From 1960 to 1970, **Jamaica** was in a virtuous cycle, the result of rapid economic growth at more than 6% per annum, combined with a strong government commitment to human development, with social expenditures increasing from 5.6% of GDP in 1960 to 12.2% in 1975. Primary school enrolment expanded from 65% to 85% during the 1960s, while secondary enrolment rose from 15% to 58%. By 1970, life expectancy in Jamaica was 68 years and the literacy rate was 86%, both well above the regional average (Thorpe, 1998). However, severe economic problems and tough adjustment programmes subsequently led to a deterioration in human development performance, pushing Jamaica into the vicious cycle category for much of the rest of the period.

During the 1970s severe external terms of trade shocks led to economic contraction, with sharp cutbacks in social expenditures in order to comply with the financial recommendations of the IMF. This deterioration in human development expenditures continued in the 1980s, with stringent adjustment policies which included a reduction in real expenditure on education and health by 30% between 1980 and 1986 (World Bank, 1984). The human development priority ratio also worsened, though expenditures on tertiary education were relatively protected. General food subsidies were replaced with targeted ones, and there was a deterioration in nutrition. Income distribution worsened and poverty increased.

Jamaica's economy recovered in the latter part of the 1980s, with a 2.4% per annum increase in per capita GDP between 1986 and 1990, but this was not translated into social expenditures, as there was a fall in their share as a percentage of GDP. However, they recovered in the early 1990s, when public health expenditures reached 3.2% of GDP in 1995, and public education expenditure 5.4%.

Jamaica continued to be a rather poor performer on the economic front in the 1990s. Average per capita GDP growth was negative in the 1990s (about -0.6% per annum between 1990 and 1999, compared to +0.3% per annum in the previous decade). However, human development indicators showed a substantial improvement in the 1990's, which may result in future improvements in Jamaica's economic growth performance. By the end of the 1990's life expectancy in Jamaica was about 75 years, the adult literacy rate 86%, gross primary enrolment rate 98%, and gross secondary enrolment rate 90%. Infant mortality was down to 20 per 1000 live births.

The case of **Guyana** is similar to that of Jamaica, only more so, with weak economic performance undermining human development from as early as the 1960s, subsequently aggravated by adjustment programmes which included social expenditure cuts. There was some economic recovery in the 1990s, but this was not accompanied by substantial human development improvements.

Guyana started off the period with a relatively low life expectancy of about 60 years in 1960 and a high infant mortality rate of about 99 per 1000. After independence in 1966, there was an initial period of significant growth in GDP and in social expenditures. For example, education expenditure grew by over 60% in the 1970-1975 period, and health spending rose by over 40%. Primary and secondary enrolment rates also increased. In the 1970s, the government greatly expanded its ownership of the economy, and an estimated 80% of the formal sector was under government control. Near-permanent economic crisis followed the early expansion, due to a combination of external circumstances (worsening terms of trade) and internal mismanagement. Between 1975 and 1983, the decline in GDP exceeded the previous expansion. Growth in per capita GDP over the 1970s as a whole averaged about 0.7% per annum. In the 1980s, external crises and internal mismanagement continued; the government takeover of the bulk of the retailing and distribution systems was associated with large declines in productivity. Rationing of foreign exchange and

import controls led to shortages of production inputs, and the poor state of the infrastructure further handicapped the economy, which regressed in the 1980s, with an annual fall in per capita incomes of 3.9%. The cumulative loss in GDP over the 1980s was 28%. The crises also led to cuts in social expenditures, which fell as a proportion of total government expenditure. In 1988 expenditure on education constituted only 6.4% of total government expenditure and expenditure on health 3.7%.

In the 1990s, macro policies changed as the government liberalized foreign exchange regulations, lifted price controls and import prohibitions and encouraged private investment. This was followed by a growth spurt: in the 1990s, per capita GDP grew at an average annual rate of 4.2% between 1990 and 1999 (well above the regional average). However, human development still lagged behind: life expectancy in Guyana in 1999 was only about 64 years (compared with a regional average of about 70 years) and infant mortality rates continued to be high at about 57 deaths per 1000 live births (compared with a regional average of 31). However, public expenditures on health and education began to show some improvement as from 1990: public expenditure on health was about 9% of GDP by the end of the decade and public expenditure on education reached 8% of total government expenditure.

Nicaragua's experience falls into three distinct periods: the Somoza era, covering the 1960s and 1970s; the Sandinista revolution and subsequent government, which was accompanied by continuous civil war; and the post-war period of the 1990s. Nicaragua was one of the last countries in Latin America to make any substantial progress in human development. Over half the adult population was illiterate in 1960, and life expectancy was only 47 years (Thorp, 1998).

During the Somoza era there were high rates of growth, but this was very unequally distributed. The Somozas themselves owned or controlled 60% of national economic activity. And social expenditure was low as well as unequally distributed. By the late 1970s only 65% of primary school age children were enrolled in school and only 22% completed the full six years of primary education. Three-quarters of the rural population was illiterate. Infant mortality rates were around 100 per 1,000 live births. Between 1965 and 1975 the number of children under five suffering from malnutrition doubled, at a time when GDP also doubled.

Economic growth was sharply disrupted by the revolution of 1979, with GDP shrinking by a quarter in

that year. The Sandinistas had a strong commitment to expansion of social expenditures and to improving the distribution of assets and incomes. In the early years of their regime, in 1980 and 1981, GDP jumped by 5%, and there was a big expansion in social expenditure and social service coverage. The proportion of GDP spent on primary and secondary education doubled, and adult illiteracy was reduced from 50% to 23%. The health sector expanded greatly, with an emphasis on preventive and primary care, targeting the principal causes of infant, child and maternal mortality, providing broader coverage, and eliciting higher levels of community participation. In both health and education, therefore, there were favourable priority ratios. Both health and education outcomes showed improvements: Nicaragua's life expectancy in 1980 was about 59 years (compared to 47 years in 1960) and gross primary enrolment was about 94% (compared to 66% in 1960).

However, GDP dropped every year from 1984 to 1990, with a cumulative drop of over 40% for the decade, as a consequence of the civil war, the US trade embargo and the reluctance of foreign banks to invest. Inflation spiralled, and the situation was further aggravated by natural disasters, including hurricanes and drought. By 1990 per capita income was below that of the 1970s, and in the ensuing decade per capita GDP fell by 4.1% per annum.

The economic collapse and disruptions caused by the war eventually undermined the social sectors, despite the Sandinistas' efforts. The literacy rate, for example, fell back to the levels of the late 1970s, and the infant mortality rate, which had gone down to 63 per 1000 during the early Sandinista years, began to rise again and reached 72 per 1000 in 1989.

The post-war era of the 1990s was dominated by debt and adjustment problems, as well as natural disasters, including a drought and hurricane. Economic recovery never really got under way, and social expenditures were subject to cuts. In the 1990s growth rates of per capita GDP were barely positive, at 0.3% per annum between 1990 and 1999.

In summary, the Somoza years illustrate how good economic growth can fail to translate into human development when it is badly distributed, with unequal income and asset distribution and low social expenditures accompanied by poor priority ratios. In contrast, the Sandinista period greatly improved human development initially, by better distributed and higher levels of social expenditure, but this was negated by the effects of the civil war, the embargo and natural disasters. The post-war era suffered from the problems of war debt, inadequate finance, and stringent adjustment policies.

V

Some conclusions

The Latin American region as a whole has been marked by relatively high levels and improvements in human development compared with the global developing world average during the period from 1960 to 2000, but its performance in terms of economic growth has not been so good. Latin American life expectancy at the start of the period, in 1960, was substantially higher than in the rest of the developing world. This may well be due to the region's much earlier political independence and consequently greater commitment to human development, particularly for the elite. At the same time, it was the region with the highest degree of inequality in income distribution (Berry, 1998).

Our efforts to estimate the strengths of various links in Chains A and B indicate that the links from economic growth to human development (i.e., Chain A) are more

variable in Latin America than those we found on the world scene. The social expenditure ratio holds up well, but GDP growth did not systematically translate into human development improvement in a significant way, indicating that there were country-specific circumstances which affected the strength of the chain. The links in Chain B, running from human development to economic growth, on the other hand, showed themselves to be closer to the global results, with initial human development levels significantly affecting economic growth. For both chains we were constrained in what we could test because of the more limited country data availability for some variables and fewer country observations.

Our country cases illustrate how specific circumstances influenced the strength of various links

in chains A and B. We studied three countries which fell in the virtuous quadrant over the period taken as a whole (Chile, Costa Rica and Mexico), and three which fell into the vicious quadrant (Guyana, Jamaica and Nicaragua).

With respect to the three successful cases, high growth accompanied by high social expenditure ratios translated into human development improvements, as in Mexico in the 1960s and 1970s, and Chile in the 1960s. An alternative path to success, illustrated by Costa Rica, involved moderate and relatively well distributed growth, accompanied by very high social expenditure ratios, with good priority ratios. Chile in the middle period (1975-1990) illustrates a third path to success, characterized by very well targeted social expenditures, with uneven growth for much of the period and only moderate social expenditure ratios. Later, Chile fell into the high growth and good social expenditure ratio category.

There are clearly also many paths to failure. Growth accompanied by very poor distribution of both private income and social services served to weaken chain A substantially in the case of Nicaragua during the Somoza period. Severe economic shocks and a failure to protect social sectors during adjustment accounted for the relative failure of human development in Jamaica in the 1980s, in Guyana for much of the period under consideration, and in Nicaragua during the 1990s. Civil war and a trade embargo were also important in

undermining human development improvement in Nicaragua in the 1980s, while natural disasters were a problem in every decade. Heavy external debt, accumulated as a result of war in the case of Nicaragua, also stymied human development efforts in post-war Nicaragua and in Guyana in both the 1980s and 1990s.

Exploration of how countries behaved decade by decade (see table 1) confirms the view, reached earlier on a global basis, that human development must necessarily be promoted in order to reach a virtuous cycle of growth and human development improvement. No Latin American country moved from an economic growth-lopsided position to a virtuous position. Our regressions for Latin America tell the same story: i.e., human development improvements do lead to economic growth improvements, although in this case economic growth improvements did not systematically generate advances in human development. Our regional findings therefore also contradict the usually recommended policy sequence, namely, that growth should be generated first, and that human development will naturally follow. Ending on an optimistic note, the recent surge in social sector expenditures in Latin America in the 1990s may well pave the way for improved growth in the present decade, in contrast with the cuts of the 1980s, which handicapped both growth and hence also human development.

(Original: English)

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Trade, resources *and inequality in* Latin America

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This article uses international databases to empirically estimate the links between inequality and trade. It looks first at the links between trade openness, income distribution and relative factor abundance. Next, it uses the results obtained to analyse the changing relative resource endowment of Latin America and its distributive consequences. The main conclusion is that, behind the persistent high level of inequality in the region, substantive changes have been taking place. The Latin American pattern of relative resource abundance has changed with the inroads made by Asia, China and Russia into global trade, which have reduced Latin America's relative abundance of unskilled labour and resources, respectively. The developed countries have expanded their endowment of fixed capital, while Latin America has not been able to accumulate the physical and human capital that would make a stronger emphasis on external trade compatible with greater income equity.

A businessman and an economist were hunting in the jungle. Suddenly, an enormous tiger loomed up some 200 metres away. The economist warned the businessman of the size and characteristics of the risk. The businessman did not waste a minute, and while listening to the economist he started putting on his tennis shoes. Surprised, the economist told him to forget his tennis shoes and start running, as the tiger was coming straight towards them and was going to devour them. The businessman calmly replied, however: "My problem is not running faster than the tiger: it's running faster than you".

I

Chi va piano non va lontano*

After the debt crisis of the 1980s, Latin America made a huge effort in the following decade to achieve structural adjustment and trade openness. An enormous, sustained attempt was made to do away with restrictions on foreign trade, and the current levels of tariff and para-tariff protection are lower than at any time during the twentieth century, while the intensity of foreign trade is correspondingly higher.

However, this opening-up occurred in the context of highly unequal societies. Latin America has long been the region of the world with the highest income inequality. Many analysts attribute this inequality precisely to foreign trade policy in the post-war period: an import substitution model which under-utilized the resources that were the most plentiful –labour and land– and conversely generated high capital inflows. For these analysts, it seemed natural to expect that more intense and freer foreign trade would reduce income inequalities. Since the 1980s, however, there has not been greater progress in terms of distribution:¹ on the contrary, trade openness has been accompanied by even more unequal income distribution. Indeed, by the end of the 1990s, the share of the 5% richest segment of

the population in national income had increased, while that of the 50% poorest had dwindled to less than 10% of the total.

It is therefore hardly surprising that the pendulum of public opinion has swung significantly in the opposite direction, and many analysts today attribute the worsening distributive situation to the openness of economies or see it as a price economies have to pay in order to recover their competitiveness.² Nevertheless, little evidence has so far been presented of a solid link between openness and inequality.

This article seeks precisely to use the valuable international databases currently available on the four last decades to estimate empirically the connection between inequality and trade and thus shed more light on the case of Latin America. Following a brief introduction (section I), an empirical study is presented for a large group of countries on the links between trade openness, income distribution and relative resource availability (section II), and the results are then used to analyse the changing relative resource endowment of Latin America and its effect on income distribution (section III).

The main conclusion is that behind the persistently high inequality in Latin America, substantive changes have taken place. The traditional Latin American pattern of relative resource abundance was broken by the entry of Asia and Eastern Europe into world trade. Up to the 1970s, the growing relative abundance of land and

* "Slowly but *not so* surely".

□ This article is based on a joint study conducted by the author with Antonio Spilimbergo and Miguel Székely at the Inter-American Development Bank (IDB), which was published under joint authorship in the *Journal of Economic Development* with the title "Income distribution, factor endowments and trade openness". It also draws on and supplements presentations made at the Conference of the National Bureau of Economic Research, Inc. (NBER) on income distribution, at the Meeting of the Latin American and Caribbean Economics Association (LACEA) and at the annual conference of the World Bank on development economics, but I bear sole responsibility for the views expressed herein.

¹ See Londoño and Székely (1998), ECLAC (2000) and Morley (2001).

² The first to draw attention to this negative relationship were Bulmer-Thomas (1996) and Berry (ed., 1998). Edwards (1997), however, pointed out that there was no empirical evidence of such a systematic link. Recent studies –IDB (2000), Morley (2001), Stallings and Peres (2000) and Ganuza and others (eds., 2001)– find that this link differs considerably from one country to another.

unskilled labour led to a combination of greater trade and greater income inequality in Latin America. But this relative abundance changed with the entry of two other regions into the world trade arena. With the entry of Asia, the abundance of unskilled labour in Latin America diminished in relative terms, and when the former Soviet Union linked up with the world economy, the region's previous relative natural resource abundance started to wane too, while at the same time Latin America did not manage to accumulate the new resources –physical and human capital– which would make a stronger emphasis on external trade compatible with greater income equality.

Thus, although income inequality remains high, the factors underlying this inequality have changed. It

is no longer due to the abundance of land and labour, but rather now to the relative lack of physical and human capital. These two factors are those which, in other parts of the world and at other times, have generated greater economic growth combined with greater trade intensity and greater income equality.

The slow rate of capital accumulation (*chi va piano...*) has proven very costly from the social point of view. In the new century, progress in terms of distribution and trade (*going lontano*) will depend on boosting investment not only with respect to historical patterns but also compared with the rest of the world. In order to overcome its isolation, inequity and poverty, Latin America must protect investment in businesses and homes and do so fast.

II

Trade openness and income distribution

1. Trade, regions and resources

One of the most notable aspects of world development in the last two decades was the growing intensity of international trade. Trade has grown faster than income in almost all economies, including those of Latin America, but in this region the changes in trade intensity have been less significant by world standards and have also been slower than expected. For this reason, their link with distributive changes is not so simple.

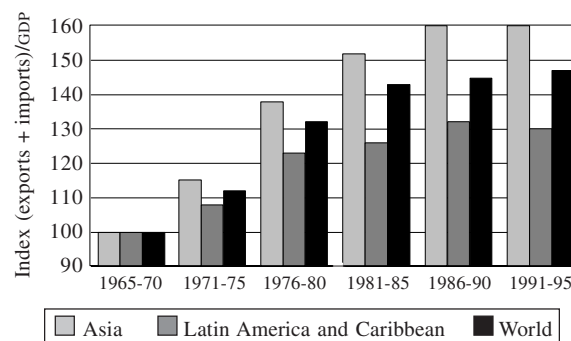
Between the 1970s and the 1990s, Latin America saw its trade flows expand considerably as the share of exports in GDP rose from 65% to 70%. This increase in trade is small, however, compared with that of other regions. Figure 1 shows that the recent increase in Latin American trade has not been faster than it was in the 1970s or faster than the average for the countries of the world in the 1990s.

In the past, the study of the links between income inequality and trade openness was focused on a few countries and on periods of time when changes in trade coincided with the availability of income distribution data (Spilimbergo, Londoño and Székely, 1999). This was done³ in an effort to isolate the effect of trade

³ See, for example, Morley (2000), Stallings and Peres (2000) and Ganuza (2001).

FIGURE 1

Asia, Latin America and the Caribbean and world as a whole: Trade intensity, 1965-1995



Source: See footnote 5 on page 28.

openness from that of other macroeconomic events, such as liberalization of the capital account and the financial system, or fiscal adjustments and variations in the rate of exchange, which have undoubtedly had major short-term effects, although whether these have been positive or negative is still subject to discussion.

Today, it is possible to use a broader set of countries and periods of time. In the Office of the Chief Economist of IDB we compiled an impressive database on income distribution, trade, education, capital and

the labour force,⁴ which has made possible a maximum of almost 3,000 annual observations of countries at all levels of development for the period 1960-1995.⁵

What we presented with Spilimbergo and Székely in 1999 was a formal theoretical model derived from the model for more than two factors and n countries presented by Leamer (1987), the general lines of which are given in the appendix. Using an earlier version of this database, we explored the relationship between trade intensity and income inequality and found, after many robustness tests, that there is no obvious direct link between the two. In this article we extend this study with the help of new econometric procedures. Table 1 shows the main results.

There is no close direct relationship between trade and inequality. According to equation [1a], the differences in trade intensity of the different economies in the world only explain an insignificant portion –less than one-fifth of 1%– of the distributive variance.

The connection between inequality and the income level, in line with the tradition of Kuznets, is somewhat higher than the connection with trade, as it explains 9% of the variance (equation [2a]). The size and sign of the coefficients are consistent with Kuznets's well-known inverted U theory, with the breaking point coming after a per capita income of US\$ 1,800, using the 1985 purchasing power parity (a level that Latin America achieved in the late 1950s). In the database

TABLE 1

Developing countries: Trade intensity and income distribution^a

Equations	[1a]	[1b]	[1c]	[2a]	[2b]	[2c]	[3a]	[3b]	[3c]	[4]
Constant	33.9 (57.6)	35.6 (66)	39.5 (21.3)	-49.9 (1.6)	8.82 (0.4)	-63.5 (0.8)	-26.5 (0.8)	-12.6 (0.6)	-61.5 (0.8)	-55.7 (2.1)
Exports + imports	0.02 (2.4)	0.01 (1.2)	0.02 (0.7)				0.02 (2.5)	0.01 (1.0)	0.04 (1.8)	-0.01 (0.2)
y				23.5 (3.0)	6.5 (1.3)	30.2 (1.5)	17.6 (2.2)	5.8 (1.2)	29.5 (1.5)	22.3 (3.3)
y^2				-1.57 (3.3)	-0.4 (1.3)	-2.1 (1.7)	-1.21 (2.5)	-0.4 (1.2)	-2.1 (1.7)	-1.3 (3.2)
Asia										4.8 (3.4)
Eastern Europe										-6.4 (6.1)
Middle East										10.6 (6.8)
Latin America and Caribbean										18.6 (18.0)
Land-rich countries										3.8 (4.3)
East Asia										5.6 (4.6)
Africa										5.9 (9.3)
Method	Huber	Changes within countries	Differences between countries	Huber	Changes within countries	Differences between countries	Huber	Changes within countries	Differences between countries	Huber
R ²	0.002	0.003	0.006	0.09	0.001	0.09	0.09	0.006	0.17	0.64
Differences between countries					0.022	0.15				
Changes within countries					0.004	0.0003				
Number of observations	565	565	565	565	565	565	565	565	565	565

Source: See footnote 5.

^a t statistics are shown in brackets.

⁴ See Spilimbergo, Londoño and Székely (1999).

⁵ The income distribution data are taken from Deininger and Squire (1996). The capital data come from Serageldin (1996) and the Penn World Tables (1995). The trade figures were drawn from the World

Trade Organization (WTO) databases. The data on education were supplied by Barro and Lee (2000), and the information on the labour force came from the records of the International Labour Organisation (ILO).

used, however, which covers a period of 35 years, the Kuznets regularity reflects differences between countries rather than changes within countries over time. The data panel technique makes it possible to distinguish between the variance attributable to changes in income in each country and that attributable to other unidentified elements in each country, which may include structural variables (such as their type of specialization or the degree of segmentation of their factor markets) or institutional variables (such as whether they underwent early or late industrialization). Equations [2b] and [2c] confirm that the dominant component is not that of the changes within countries. The link between trade intensity and inequality, once income is controlled out, also reflects differences between countries rather than the changes within each of them over time (equations [3b] and [3c]).

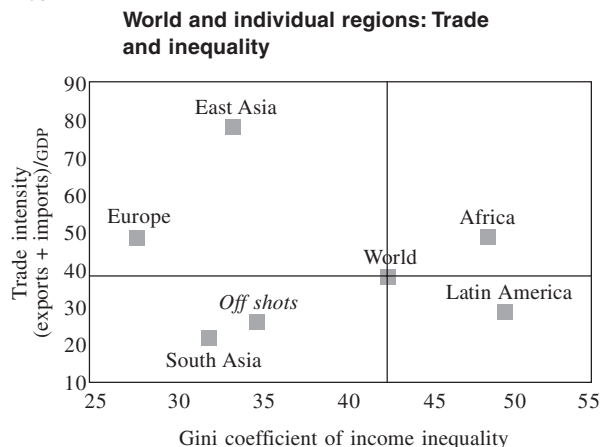
Geographical location is the element which contributes the most to inequality between countries. As shown in equation [4], it accounts for four times as much variance as the other variables. After controlling for income and trade intensity, income inequality is greater in Latin America and Africa and lower in Asia and in countries that have recently switched to the market economy, than in Europe. Regional differences account for almost two-thirds of the variance in income distribution and eliminate the statistical significance of the relationship between trade intensity and inequality.

The differences between regions are an important clue for shedding light on the possible channels of connection between trade and inequality. Those who have compared Latin America only with East Asia have suggested an apparently positive relationship between trade and equality, with these two regions as extreme points. But the simple linear relationship disappears if countries from other regions in the world are included. The least open regions are not always the most unequal, as shown in figure 2: the countries of South Asia or the frontier developed countries have less inequality and openness than the world average. Likewise, not all open regions have less inequality: Africa is open but there is high inequality.

2. Trade and resource availability

What are the factors behind the close link between regional geography and trade intensity? Leaving aside consideration of the historical diversities of specialization patterns, styles of economic policy or macroeconomic upheavals, the most natural tendency is to relate geographic differences between countries

FIGURE 2



Source: See footnote 5 on page 28.

to their resource endowment. A country's economic geography affects its trade opportunities, as various authors⁶ have pointed out. The smaller countries in terms of population and area, as well as countries that are physically closer to others, need more trade to function as an economy. The negative empirical link between a country's size, distance from markets and trade intensity is confirmed by the panel of almost 3,000 observations (first section of table 2). This dependency of trade on economic geography proves even greater when we control for the effects of the reduction in transport costs (equation [2]).⁷

Trade intensity is closely linked to the availability of productive resources in the different countries. According to the Ricardian comparative advantage tradition, countries trade more when they have resources that are different from the rest of the world. The trade intensity of each country would therefore be proportional to its relative resource abundance.

The wealth of information by country which is available allows us to measure the relative resource abundance of each country. This **relative abundance** for country *i* in period *t* is measured as the quotient of the resource abundance in each country and the average for the rest of the world (in logarithms). For example, if the average number of years of education in a country

⁶ See in particular Leamer (1987); Krugman (1992); Williamson (1996); Sachs (2002) and Acemoglu, Johnson and Robinson (2001).

⁷ We also carried out an experiment in which the effects of world trade were captured with specific dummy variables for the different five-year periods. The coefficients were similar to those indicated here.

is eight and in the rest of the world it is six, then that country has abundant human capital. A measure that magnifies the difference between countries is the square of this quotient, which we term **relative availability**.⁸ Finally, in order to obtain a synthetic indicator of the degree of each country's factor specificity, we calculate the **aggregate discrepancy** of resources as the simple sum of the relative availabilities of each factor in each year. With these three indicators, it is possible to estimate the econometric relationships between geography, resources and trade intensity. The results are presented in table 2.

The differences in trade intensity are explained by geographical variables and by disparities in the relative abundance of resources among countries: R^2 of 0.73 in equation [3] compared with 0.35 in equation [1]. Trade

intensity is affected by the relative abundance of each one of the four resources: land, labour, human capital and capital (equation [3]) and by the discrepancies in the set of factors (equation [4]). The differences in abundance of the primary resources of land and unskilled labour are statistically very significant (equations [6] to [8]) and, in accordance with the magnitude of the regression coefficients, the greatest quantitative impact comes from the differences in accumulation of physical capital and human capital. Thus, trade varies significantly with changes in the relative abundance of primary resources or accumulated capital. These differences in resources are precisely those that underlie the regional differences in trade intensity,⁹ since when they are included the explanatory power of the regional dummy variables disappears.

TABLE 2

Trade, geography and resource availability
(Dependent variable: trade intensity)

EQUATIONS	Effect of factor abundance			Effect of factor availability				
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Constant	155 (29.4)	-1 163 (13.5)	-1 918 (10.5)	-1 765 (10.3)	-1 155 (3.6)	-1 512 (11.6)	-1 683 (10.3)	-1 872 (10.8)
ln area	-6.0 (23.3)	-5.4 (21.9)	-6.4 (11.2)	-7.3 (15.0)	-5.9 (23.2)	-5.7 (14.4)	-6.5 (14.2)	-6.8 (14.9)
ln size	-2.9 (10.0)	-4.1 (14.3)	-7.2 (10.4)	-5.1 (8.9)	-3.6 (12.5)	-5.6 (10.3)	-6.6 (11.0)	-6.8 (11.4)
ln distance	-12.2 (12.6)	-13.9 (15.2)	-15.6 (9.9)	-16.4 (12.6)	-15.0 (16.5)	-16.6 (14.1)	-14.6 (10.1)	-15.1 (10.5)
Time		0.7 (15.3)	1.1 (11.6)	1.0 (11.5)	0.7 (15.4)	0.9 (12.9)	1.0 (11.5)	1.1 (12.0)
Land			0.039 (2.5)		1.3 (14.7)	1.3 (6.4)	2.6 (5.3)	2.5 (5.1)
Human capital			0.234 (5.8)			14.5 (5.3)	16.1 (5.6)	19.0 (6.2)
Capital			0.035 (1.2)				5.1 (3.5)	5.5 (3.8)
Labour			0.025 (1.1)					1.6 (1.6)
Aggregate discrepancy				3.4 (8.3)				
Adjusted R ²	0.35	0.37	0.73	0.71	0.40	0.59	0.71	0.72
F-test	460	440	177	243	382	233	201	188
Number of observations	2 930	2 930	436	436	2 899	676	440	436
Method	Huber	Huber	Huber	Huber	Huber	Huber	Huber	Huber

Source: See footnote 5.

⁸ The abundance of factors in equation [3] is measured as the logarithm of f_i/F_w , while the discrepancy of factors is measured as $(f_i/F_w)^2$. The discrepancy is measured as the sum of all the $(F_i/F_w)^2$, where F_i is factor availability in country i and F_w is the availability of that factor in the world on average.

⁹ The regional dummy variables, when added to equation [8] in table 2, appear statistically significant but add very little to the explanation of the variance. This suggests that factor endowments account for a very significant proportion of regional differences.

3. Income distribution and resource abundance

The resource endowment in each country affects the intensity of its trade and also the manner in which the owners of those resources are remunerated. Spilimbergo, Londoño and Székely (1999) formally derived the conclusion that, in a closed economy, factor remuneration depends on the **absolute** supply of factors. But in an open economy, factor remunerations depend on the **relative** supply of factors compared with the rest of the world,¹⁰ and, in view of the ownership structure, factor remunerations are transmitted to personal income distribution. The robustness of these links is measured in table 3.

The differences in relative abundance of resources account for 27% of the variance in income distribution between countries (equation [1]), which is three times

more than is explained by the level of income in table 1. When we control for resource density (equation [2]), the classic inverted U shape of the Kuznets equation is maintained.

Greater abundance of land is associated with higher income inequality, which reflects the higher concentration of ownership existing in economies with more land (Engerman and Sokoloff, 1997). Greater abundance of human capital, in contrast, is associated with less income inequality,¹¹ since there is a ceiling on the number of years of education that each person can have.

Abundance of unskilled labour and physical capital would apparently seem to have an ambiguous effect on distribution, as shown in equations [1], [2], [3] and [4a]. Once we control for the effects of other structural and institutional factors through fixed-effect models,

TABLE 3

Factor intensity, trade and income distribution
(Dependent variable: Gini coefficient)

Equations	[1]	[2]	[3]	[4a]	[4b]	[5]	[6]
Constant	45.5 (10.6)	-130.9 (3.0)	-104.0 (2.4)	-104.0 (0.8)	-90.1 (2.6)	-81.7 (2.3)	-124.1 (3.2)
Exports + imports			0.03 (2.5)				
Openness						0.26 (1.2)	-0.21 (1.2)
Land	0.9 (3.3)	1.3 (4.7)	1.4 (4.7)	1.1 (1.6)	2.1 (1.1)	1.9 (1.2)	1.4 (3.6)
Labour	1.2 (2.8)	0.7 (1.5)	0.7 (1.6)	1.5 (1.2)	-1.0 (2.1)	-1.0 (2.1)	-0.9 (2.8)
Physical capital	-0.1 (0.1)	1.9 (1.6)	1.5 (1.3)	1.3 (0.5)	-2.9 (2.4)	-2.4 (1.8)	-2.7 (3.2)
Human capital	-4.1 (4.6)	-3.8 (4.4)	-3.6 (4.1)	-2.2 (0.8)	-4.2 (5.4)	-3.9 (4.8)	-4.3 (6.2)
y		44.4 (4.3)	37.4 (3.5)	38.7 (1.2)	33.7 (4.2)	32.2 (4.0)	41.9 (4.6)
y ²		-2.9 (4.7)	-2.4 (3.9)	-2.6 (1.3)	-1.9 (4.1)	-1.9 (4.1)	-2.6 (4.8)
Dummy variables							XXX
Method	Huber	Huber	Huber	Differences between countries	Changes within countries	Changes within countries	Huber
R ²	0.27	0.31	0.33	0.51	0.21	0.18	0.69
Number of observations	318	318	318	318	318	284	318

Source: See footnote 5.

¹⁰ For a formal derivation of these relationships, see Spilimbergo, Londoño and Székely (1999).

¹¹ See Londoño and Székely (1998) and Birdsall and Londoño (1997).

however (equation [4b]), these endowments have a significantly negative effect on income inequality within each country.

Thus, the simple link between trade intensity and income inequality fades if we bear in mind the effect of resource availability. The direct relationship loses its statistical significance, and trade intensity that is not due to geography, transport costs or resource availability no longer proves to have any significant link with income inequality (equation [6]).

We may therefore conclude that the supposed strong link between trade intensity and income inequality, so popular in public opinion, is not borne out by the broad database that we have today. It would

therefore appear that Latin American commentators have tended to exaggerate the extent of trade openness and the strength of its link with income inequality. Although there was increased trade in Latin America in the 1990s, the increase was lower than in the rest of the world and, judging from the international results, it did not have any significant direct impact on income inequality.

Why, then, did growing economic openness in Latin America in the 1990s coincide with a level of income inequality that was higher in that decade than in the previous one? Could it be because there was a change in the relative position of the region's "resource portfolio" compared with the rest of the world?

III

Changing relative resource endowments and their consequences

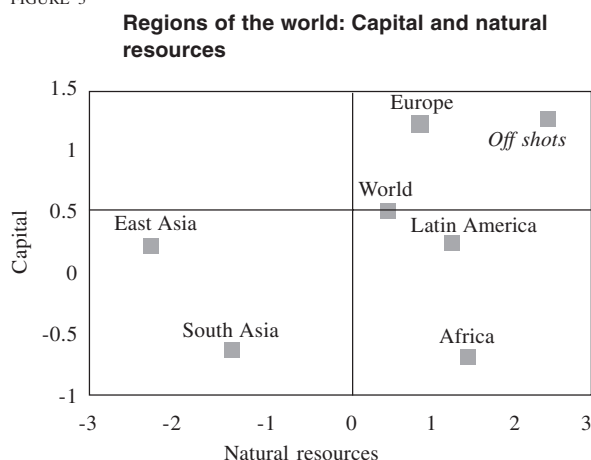
In relative terms, how abundant is Latin America's resource endowment today? How has it evolved over the last decades? And what was the impact of this evolution of fundamental variables on trade intensity and income distribution?

1. Changes in Latin America's relative resource endowment

The region's resource availability may be measured by the monetary value of the stocks of its different assets or by physical indicators of their relative scarcity. The first route could use the study by Serageldin (1996), which values at international prices the stocks of physical and human capital and of natural resources of almost all countries of the world in the year 1990. The second route quantifies, in physical terms, the availability of unskilled labour, land, human capital and physical capital for many countries in the postwar period. Both paths illustrate the relative resource portfolio of Latin America and the way it has changed in recent decades.

Compared with the rest of the world, Latin America has a similar level of physical capital, more abundant natural resources and less human capital (figures 3 and 4). The density of unskilled labour is much greater in South Asia and China, as are the density of human

FIGURE 3

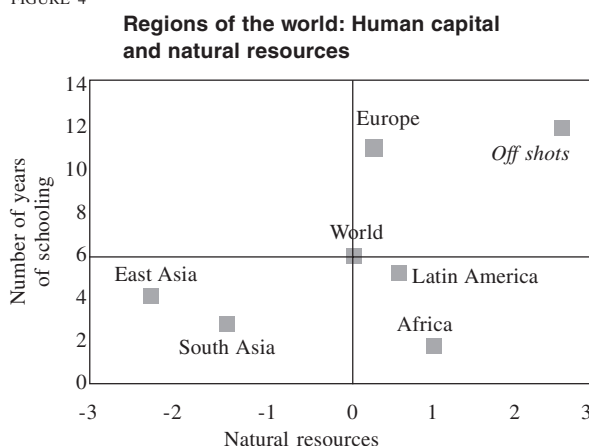


Source: See footnote 5 on page 28.

capital in East Asia and Eastern Europe and the density of natural resources in the Asian States that were formerly part of the Soviet Union's sphere of influence.

Paradoxically, however, Latin America now has the aggregate mix of resources most similar to the average for the world. Although regions with a similar resource endowment—such as the European Union—can increase their trade through economic policy decisions, the fact is that relative lack of specialization in some factors

FIGURE 4

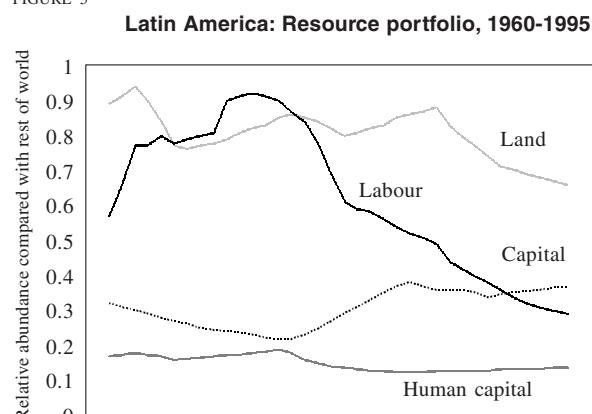


Source: See footnote 5 on page 28.

compared with the rest of the world does not, according to the Ricardian tradition, favour greater trade intensity.

The resource portfolio is not a historical constant, since it is the result of the expansion of primary factors and the relative accumulation of physical and human capital in different countries: a dynamic which is influenced by political decisions with respect to patterns of specialization and development strategies. This is why it has changed. Up to the mid-1970s, Latin America had a relative abundance of land and unskilled labour, as well as a decreasing relative density of capital per worker (figure 5). This situation has changed radically over the last twenty years, however. The entry into the

FIGURE 5



Source: See footnote 5 on page 28.

world trade arena of regions as vastly different in terms of resource endowment as Asia, China and Russia revealed that the absolute abundance of primary resources which had always characterized Latin America in the past was no longer a relative abundance compared with the rest of the world.

Thus, it was the evolution of the other regions of the world that changed the relative abundance of the factors that can be accumulated in Latin America. As from the 1970s, the developed countries increased their relative density of physical capital much faster than Latin America, while the other developing countries –especially those of Asia– accumulated more human capital than the Latin American region (table 4).

TABLE 4

Selected regions: Changes in relative resource endowment

	1960-1965	1966-1970	1970-1974	1975-1979	1980-1984	1985-1989	1990-1995
OECD							
Capital	4.68	4.72	4.76	4.80	4.84	4.88	4.92
Education	4.76	4.79	4.82	4.85	4.88	4.91	4.94
Land	3.60	3.65	3.70	3.75	3.80	3.85	3.60
Labour	0.32	0.33	0.34	0.35	0.36	0.37	0.38
Developing countries							
Capital	0.07	0.08	0.08	0.08	0.08	0.09	0.09
Education	0.19	0.20	0.20	0.21	0.21	0.22	0.23
Land	0.28	0.28	0.28	0.28	0.28	0.28	0.29
Labour	0.66	0.68	0.70	0.73	0.75	0.78	0.80
Southeast Asia							
Capital	0.04	0.05	0.05	0.06	0.06	0.07	0.08
Education	0.67	0.70	0.73	0.74	0.75	0.76	0.77
Land	0.06	0.06	0.06	0.07	0.07	0.07	0.07
Labour	0.28	0.32	0.36	0.40	0.44	4.48	0.52

Source: See footnote 5 on page 28.

Latin America lost relative primary resource abundance, but it did not gain physical or human capital abundance. This trend contrasts sharply with the abundance displayed by the East Asian countries, where capital endowment per worker increased tenfold and education moved from a low level (half of the world average) to a high level (double the world average).

2. The effects of the changes in resource endowment

If relative resource abundance is of key importance for trade intensity and income inequality, and if relative resource endowment in the world has changed so much, how strong was the quantitative impact of the changing relative resource abundance on trade and equity in Latin America? To answer this question, we conducted a simulation exercise, applying the parameters of the best equations to the evolution of an average Latin American country, calculated as the arithmetic average of 19 countries.

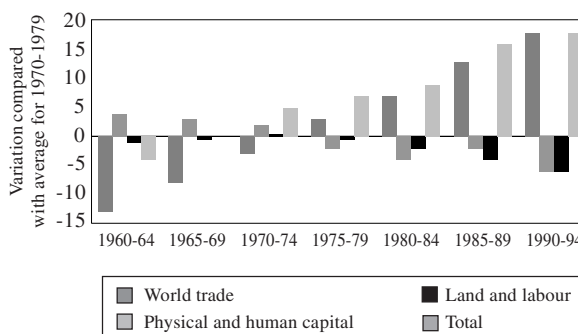
a) *Did Latin American openness really increase all that rapidly?*

According to the changes in economic geography, transport costs and resource abundance, the trade intensity of Latin America (equation [8] of table 2) should have started to increase as from the 1960s. In view of this expectation, the increase in openness observed in the region does not seem very remarkable, since it rose from 54 in that decade to 65 in the 1970s and subsequently 70 in the 1990s. Indeed, the opening-up was slower than would have been suggested by international experience. For that reason, paradoxically and in spite of the increase in openness actually registered, the disparity between the level of trade observed and that which could have been expected in view of the intensity of world trade became increasingly wide, even in the 1980s.

The persistent lag in Latin America's trade intensity is attributable to the evolution of its resource portfolio rather than to its foreign trade policies. According to world trade trends, in the last three decades Latin America should have displayed constantly growing trade intensity (figure 6). The relative changes in its resource endowment had the opposite effect, however. Up to the early 1970s, the greater relative abundance of its primary resources—land and labour—accelerated trade, but subsequently the changes in its resource portfolio were not favourable to more intensive trade, and indeed its lesser relative primary resource

FIGURE 6

Changes in trade intensity attributable to changes in resource portfolio, 1960-1964 to 1990-1994



Source: See footnote 5 on page 28.

abundance and lesser relative accumulation of physical and especially human capital resulted in a slackening in trade intensity.

b) *The impact on income distribution*

The Gini coefficient of income inequality for the region as a whole, calculated by Londoño and Székely (1998), indicates that in the last three decades inequality has persisted, albeit with considerable short-term fluctuations and a marked increase since the mid-1980s (figure 7).

Latin America has a similar resource portfolio to the world average but much greater income inequality, which may be accounted for by the greater inequality in the distribution of land, capital and also education. Given the difference in levels of inequality associated with the resource ownership structure, and making allowances for short-term effects linked to macroeconomic trends,¹² the medium-term inequality trend can be broken down according to the changes in the fundamental variables.

How should income inequality have evolved in view of the changes in magnitude and in the economic resource portfolio? According to the Kuznetsian approach, in the 1950s Latin America had already passed the point of maximum inequality, and inequality should be on the decline, with a temporary interruption in the 1980s (equation [1c] of table 1). The evolution of the resource portfolio modified these simple

¹² These are analysed in Londoño and Székely (1998); Morley (2001); Ganuza and others (eds.) (2001), and Stallings and Peres (2000).

FIGURE 7



Source: See footnote 5 on page 28.

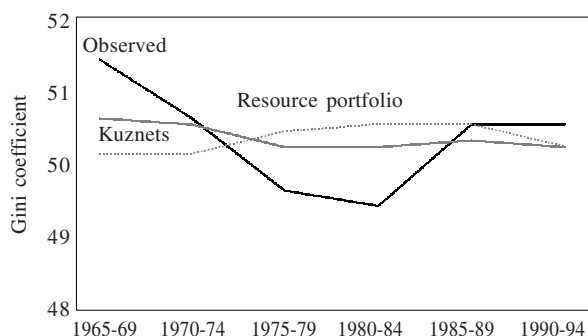
predictions and, according to equation [2] of table 3, postponed the turning point in terms of inequality to the late 1980s. Thus, economic growth in a context of changes in the resource portfolio should have led to high and persistent inequality. Although its volatility was in fact higher, this was precisely the trend in the Gini coefficient during the period in question (figure 8).

As Kuznetsian income has very little quantitative impact, the main impact in terms of distribution came from the changing relative resource abundance. The lower relative abundance of primary resources such as land and labour would have tended to reduce the Gini coefficient from the mid-1970s on, while the slow accumulation of human and physical capital from the end of that decade would have generated, on the other hand, a more than proportional increase in income inequality (figure 9).

Thus, underlying the apparent medium-term inertia and short-term volatility of the aggregate indicators of inequality there are significant changes in the

FIGURE 8

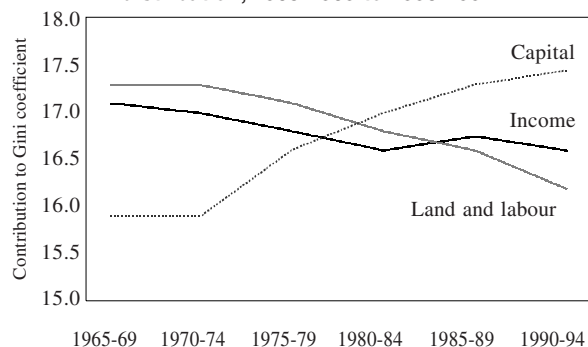
Latin America: Contrast between observed and expected levels of income inequality, 1965-1969 to 1990-1994



Source: See footnote 5 on page 28.

FIGURE 9

Latin America: Factors of change in income distribution, 1965-1969 to 1990-1994



Source: See footnote 5 on page 28.

continent's distributive patterns. The relative incomes of the different population groups have varied enormously with changes in the resource portfolio of Latin America and the rest of the world.

IV Conclusions

Some analysts have linked the deterioration in distribution that followed the debt crisis of the early 1980s to the extent and speed of the structural reforms undertaken to stabilize and open up the economies of the region. The literature on this issue is still debating the effects that macroeconomic factors have had on

inequality in the last two decades. Bulmer-Thomas (1996) and Berry (ed., 1998) see negative effects, while Londoño and Székely (1998) see them as positive and Stallings and Peres (2000) and Ganuza and others (eds., 2001) see them as ambiguous and different in different countries.

This study goes one step further and concludes that the lack of distributive progress in Latin America is associated not so much with the speed of the process of opening up as with the slowness of the process of capital accumulation (both physical and, above all, human) at times of huge shifts in relative abundance in other regions of the world.

In fact, Latin America's generation of new trade since the 1980s has not been very fast, and its direct effects on income inequality are negligible.

In reality, the common causal factor underlying the changes in trade intensity and income inequality is the resource portfolio. The particular way in which Latin America's relative resource abundances evolved in comparison with the rest of the world gave rise to a paradox. In the 1950s and 1960s, the growing relative abundance of its primary resources simultaneously increased trade and inequality, but from the 1970s on the massive entry of the other developing countries into world trade shifted this relative abundance of primary resources, reducing both the opportunities for trade and the tendencies towards greater income inequality. In the last twenty years, throughout the world, the new opportunities for increasing trade, growth and equity have stemmed from greater physical and human capital, but this occurred just when (in the 1980s and 1990s) the region fell behind in its capital accumulation, with unexpected consequences.

The 1990s were years of structural reforms in Latin America. The main efforts were directed at stabilizing the fiscal accounts and eliminating trade barriers. Future progress in terms of income distribution and effective trade intensity (going *lontano*) will depend above all, however, on the advances in production which would go hand in hand with a faster rate of accumulation of physical and human capital. The slow progress in that direction in the last few decades (*chi va piano...*) has proved very expensive for the region in terms of equity and trade with the rest of the world.

In the decade from 2000 on, the focus of structural policies should shift away from trade liberalization towards the protection of investment by stimulating and fostering a propitious climate for it. If the Free Trade Area of the Americas (FTAA) is not accompanied by a substantial boost for corporate investment, it may prove to be an instrument with little impact on income distribution.

In the new century, the objective should be not just to speed up capital accumulation, but to do so at a faster pace than the rest of the world. If it is to overcome the risk of isolation, inequity and poverty, Latin America has no alternative but to protect corporate and household investment and move fast ... faster than the tigers.

(Original: Spanish)

APPENDIX

The theoretical framework used

This appendix presents theoretical elements on the relationships between income distribution, production factor prices and distribution of ownership. It first of all reviews a model for a small open economy and from this perspective then goes on to examine a world composed of different economies that have the same production function and preferences but differ in terms of production factor endowments. After this, it considers the implications of trade for income distribution.

A small open economy

In a small open economy, the international price vector, P^* , determines the internal prices of tradeable goods. International trade can also determine the price of factors under the following conditions: a) the economy is very similar to the rest of the world in terms of factor endowment; b) this economy has the same technology as that of the rest of the world; c) there are no non-tradeable goods; d) there are at least as many goods as factors; e) production functions are homogeneous of degree one, and f) there are no break points in factor intensity. If the above conditions are satisfied, an equation can be established in which internal factor prices are determined by the international prices of goods:

$$[1] \quad W^0 = W(P^*)$$

If, in any of the conditions listed above, this relation fails to apply, then internal factor prices are determined by the international prices of goods, P^* , and the internal factor endowment, E :

$$[2] \quad W^0 = W(P^*, E)$$

In an integrated world economy where the factor endowments of individual countries do not differ too much, international prices are determined by the world relative resource endowment in the same way as in a closed economy (Dixit and Norman, 1980):

$$[3] \quad P^* = P^*(E^*)$$

Substituting equation 3 in equations 1 and 2 yields:

$$[4] \quad W^0 = W^0(E^*) \text{ and } W^0(E^*, E)$$

These equations show that the factor prices are determined by the international endowments when conditions

(a), (b), (c), (d), (e) and (f) hold good, and also by internal factor endowments under more general conditions.

The case illustrated here is only for reference and is not realistic, because most of the economies in the world have tariffs. When governments intervene and impose tariffs and other barriers, equation [1] is not fulfilled, and in equation [4] there is a distortion, which we will call T , so that:

$$[5] \quad W^0 = W^0(T, E^*, E)$$

Income distribution

In the foregoing section we identified the determinants of factor prices, factor income distribution and the openness of an economy. The link between factor income distribution and personal income distribution is given by the ownership structure. Each individual may obtain his income from several factors of production, so that the total income of an individual i , y_i , is the sum of the income from all sources:

$$[6] \quad y_i = w_i(E, E^*, T)E_i\omega_{i1} + \dots \\ w_j(E, E^*, T)E_j\omega_{ij} \quad \text{with} \quad i = 1, \dots, I$$

where E_j is the endowment of factor j in the economy, and d_{i1} is the share of individual i in ownership of factor 1.

By construction, $\sum_{i=1}^I \omega_{ij} = 1$ for $j = 1, \dots, J$. w_j represents the

payment to factor j , and we will call Ω the matrix of coefficients ω_{ij} , which describes the ownership structure.

An indicator of income distribution like the Gini coefficient is a function of the income of each of the individuals:

$$[7] \quad \text{Gini} \equiv g(Y) = g(E, E^*, T, \Omega)$$

We will use this last equation as the basis for our empirical research. It indicates that personal income distribution depends on the same variables which determine the factor income distribution, and on the ownership structure Ω .

The matrix Ω is determined by historical conditions and may differ greatly between countries. The variations over time in each country are expressed through Ω . Some factors of production, such as land and capital, may be concentrated in the hands of a few people because there is no natural limit to their accumulation, but other factors of production, such as knowledge, cannot be concentrated so much, because there are natural limits to the amount of education that an individual can accumulate. This observation places a limit on the variation of $\omega_{ij}E_j$ if the resource j is human capital. Consequently, if an economy is endowed for the most part with land and physical capital, there is no limit to the concentration of wealth, but if an economy's principal endowment is education, income distribution should be more equal, providing the other factors remain constant.

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Labour markets and *pension systems*

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Latin America is going through a simultaneous process of population ageing and growing predominance of precarious employment conditions which poses a challenge for contributory pension systems. The solvency of the basic pillars of the unfunded system is being affected by the long-standing decline in the number of active persons whose contributions finance the benefits of retirees. The benefits of the individually funded systems are sensitive to the density of contributions needed to accumulate capital and finance pensions for members with increasingly long life expectancies. This study describes how this challenge manifests itself at present and examines the responsibilities that society must assume in order to cope with it.

I

Introduction

Pension systems design mechanisms whose purpose is to finance workers' living expenses during their old age or in the event of disability and to ensure the living expenses of their dependents in the event of their death. Such systems address the economic problem of setting aside part of production for such eventualities (Barr, 2000); thus, they need to identify the sources of financing with which to defray the cost of these benefits. These sources may be the savings of workers and employers, taxes for the public financing of benefits, and insurance premiums for defraying costs in cases of disability and death. If the systems do not include these financing and insurance schemes, it is highly likely that many persons will be left without any form of protection.

This study explains why the current reforms which are based on individual savings schemes and private insurance arrangements (Mesa-Lago, 1999) reproduce the inequality in society and tend to detract from the purpose of the social security system of which the pension schemes are part. Thus, when they obtain their finance on the basis of their members' labour contracts, retirement savings schemes reproduce the problems typical of labour markets in the region. Since a significant proportion of the working age population is unemployed, underemployed or inactive, a system based on such schemes for obtaining the funds needed to provide for the main income earner's living expenses during old age or disability or for those of his survivors after his death would leave many persons underinsured or not insured at all.

II

The context

The labour market limits the population coverage of pension schemes in Latin America. In this respect, three aspects of this context which contribute to this situation may be distinguished.

□ This study was prepared for the Workshop on the Economy and Population Ageing (Mexico City, 16-17 May 2002), organized by the Inter-American Centre for Social Security Studies (CIESS), El Colegio de la Frontera Norte (COLEF) and the National Autonomous University of Mexico (UNAM). The author wishes to

How pension systems in Latin America evolve will depend on the political will shown and on the institutional actions taken to solve this dilemma. Their evolution will depend on the degree of solidarity within the system and on the type of cross subsidies built into it in order to transfer resources from those who have greater capacity to save to those who have less. Society needs to define the redistributive role of the system and to consider how it will be implemented: whether redistribution will be done within the system (through solidary contributions) or from outside of it (through general taxes), but always avoiding the moral hazard that those who can save may take advantage of subsidies.

In order to highlight the importance of this link with the inequalities associated with labour markets, this essay will examine the following aspects: the demographic, economic and labour context in which the systems operate (section II); the functions that the systems should fulfill in these contexts (section III); the basic options for designing the fundamental pillars of these systems (section IV); the most extreme types of pillars that can be constructed (section V); heterogeneity in terms of access to the benefits provided by pillars based on individual saving (section VI); the liabilities associated with the different options (section VII); the results currently being observed in systems with pillars based on individual saving (section VIII); and finally, the conclusions reached (section IX).

Firstly, the rapid pace of population ageing has positive and negative elements. On the positive side, the working age population that is participating in the economy (the potentially active population that has the

express his gratitude for the comments of Dra. Patricia Olave during the workshop and those of Oscar Altimir on a first draft, as well as the valuable support provided by Nora Ruedi in the preparation of the present version, but he himself bears sole responsibility for the contents of this work.

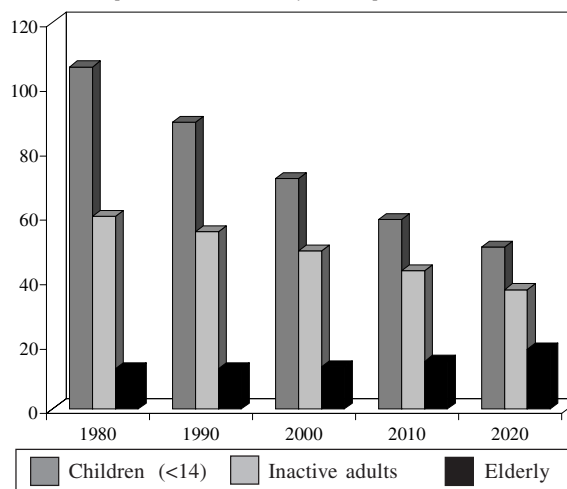
capacity to save) is continuing to grow. Another positive fact is that the total number of persons dependent on this population (children of school age, adults who are unemployed and inactive elderly persons) is going down. However, the retirement-age population is growing steadily (see right-hand column in figure 1). This quantitative indicator of population ageing is rising sharply and will start to gather still more momentum as from 2020.

Secondly, the economies are operating with savings and investment levels of around 20% of GDP, which are very low for the needs of the region. According to ECLAC studies, such levels are too low to sustain the pace of growth required in order to provide full employment for all economically active persons (ECLAC, 1996). Furthermore, it is observed that when economies are able to attract financing from abroad in the form of external savings (increase in financing with external capital), this does not complement national savings, but reduces domestic saving. Thus, the two sources of financing tend to take each other's place (Titelman and Uthoff, 1997, and figure 2).

Thirdly, as pointed out in ECLAC studies, economic growth has been dependent mainly on external financing, the sources of which have been highly volatile. This, together with the procyclical character of macroeconomic policies in the region, has been reflected in unusually frequent financial crises and in low and unstable economic growth with significant costs in terms of unemployment and poverty (Ocampo, coord., 2001). As already indicated by the International Labour Organisation (ILO) and ECLAC, those who have jobs are subject to increasingly precarious conditions which are reflected in higher rates of unemployment, informality and lack of social protection.

FIGURE 1

Latin America: Demographic dependency
(Children, inactive adults and elderly persons per 100 economically active persons)



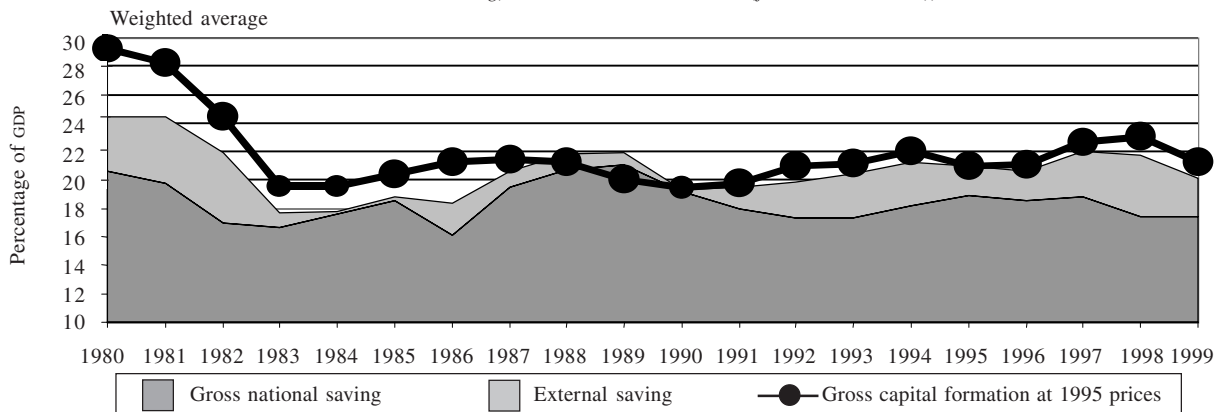
Source: ECLAC/CELADE, 1999 and 2002.

Unemployment rates (which show the numbers of unemployed among the economically active population) are rising (figure 3) and furthermore, the year 2002 was not very promising in this regard, since unemployment rates were of the order of 9%.

Increasing numbers of those who have jobs now work in the informal sector. This is because of the downturn in formal public employment and because job creation in large enterprises grows more slowly than the total labour force looking for work. In Latin America, therefore, most of the employed are tending to be in the informal sector, obviously without social security coverage.

FIGURE 2

Latin America and the Caribbean: Gross national saving, external saving and real investment
(As a percentage of GDP, on the basis of current dollars (for gross national saving and external saving) and constant 1995 dollars (for real investment))



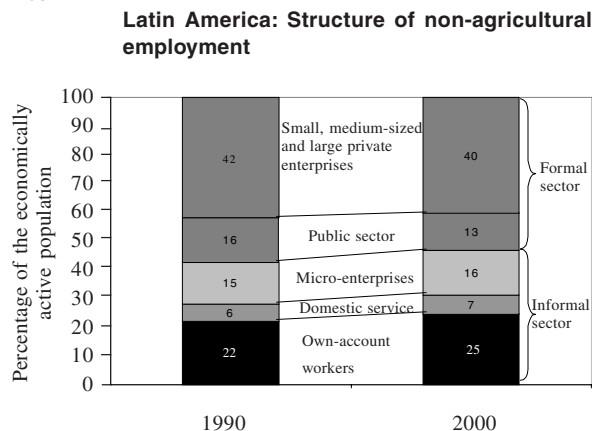
Source: World Bank (2001).

FIGURE 3



Source: ILO, 2001b.

FIGURE 4



Source: ILO, 2001b.

III

The functions of pension systems

Within this context, what the reforms are trying to do is to develop a system that fulfils two types of functions: economic and social. The fundamental social function is to ensure the savings (production) necessary for financing satisfactory levels of consumption during old age, disability and survival. Another important function is that of contributing to equity through solidarity with those who are not in a position to save for their old age. Persons who are unable to save on account of their particular employment status will also grow old one day, and the systems which are designed must decide how to provide for these people. Will they have access to a pension? And if so, under what conditions and how will it be financed?

Such functions obviously cannot be promoted, however, through measures that involve restrictions and a deterioration in economic objectives such as public-sector solvency or the cost of hiring labour. This would occur if, for example, in order to improve coverage, there was a significant increase in contributions and/or the tax burden or fiscal deficit. If we build solidarity into the system, we must identify the source of the solidary funding so that it remains consistent with the objectives of competitiveness and economic solvency.

These economic functions are important and act as conditioning factors for the fulfillment of the social functions pursued.

Contributions to financial savings and to the development of capital markets are sometimes included among the economic functions, and indeed these objectives have been cited a great deal in connection with the individual capitalization model. Highlighting them, however, tends to confuse a means, such as saving, with an end, namely, social protection. Thus, desirable though such objectives may be in themselves, they must be secondary to the design of the system, although they do not by the same token cease to be important. As we will see below, it is not clear either that individual capitalization systems are fulfilling the function of increasing real investment. There is financial saving, but this does not necessarily constitute real investment. Furthermore, in cases where such systems take the place of an unfunded system, the cost of transition has to be financed.¹

¹ See Orszag and Stiglitz (1999) and Barr (2000) for a study of the myths that exist in connection with these issues.

IV

Options for designing a pension system

In order to ensure that families set aside a portion of their income as savings for old age, pension systems need to have some idea of their consumption patterns in relation to their current disposable income and its future variations. Since the decision that has to be taken will depend on the income expectations throughout the life of the main income earner, it is said to be intertemporal in character.

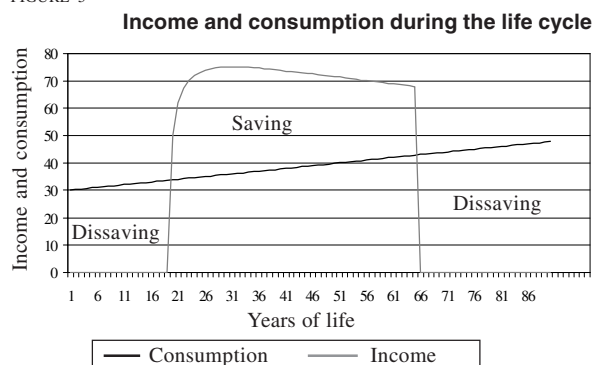
The life-cycle theory assumes that a person has an income profile (represented by the gray line in figure 5), which begins when the person enters the labour force, grows up to a certain point and then wanes until it disappears altogether when the person retires or stops working. However, it also assumes that there are conditions for maintaining a relatively stable and, it is to be hoped, increasing level of consumption throughout the life cycle. But this requires a pension system that promotes saving for old age during the income-earning years.

Systems that are financed through the worker's contributions are based on this theory and assume that there is a will to obtain a merit good (such as correcting short-sightedness as far as saving for old age is concerned) through the design of a mechanism whereby the State, during the active life of the pension scheme member, taps into the individual's current income in the form of a tax or social security contribution and sets aside the amount thus withdrawn to finance the system that will support that person's living expenses during old age. This contribution to the financing of the system is easier to obtain from formal workers and can be designed by resorting to different options with respect to:

- i) The type of scheme, which can be based on defined contributions or defined benefits.
- ii) The financing mechanism, which can be fully funded or unfunded, the latter with different premiums (for permitting actuarial adjustments and in extreme cases a simple unfunded arrangement).
- iii) The form of administration, which can be public or private or a mixture of the two; and
- iv) Participation, which can be mandatory or voluntary.²

² It is very easy to say that an independent or informal worker should participate voluntarily and that if he does not, then it is his

FIGURE 5



Source: Prepared by the author.

In contributory schemes financed by the unfunded method, the benefits are usually defined not by a close relation with the amounts contributed but by length of membership and a rule that determines the pension on the basis of a rate corresponding to the last or best taxable wages. In contributory fully funded systems, the contributions are usually fixed and the amount accrued determines the benefits on the basis of actuarial criteria regarding life expectancy at the time of retirement. It is interesting to note that this last criterion is being applied in unfunded systems, through the notional capitalization models implemented recently in Brazil (Carvalho Pinheiro and Paiva Vieira, 2000).

However, there are also pension systems that finance the benefits without direct contributions by beneficiaries. The State finances the payment of retirement benefits for eligible persons out of general income and consumption taxes which bring in revenue for the fiscal budget. An extreme case of this type of system is the New Zealand model, which sets a universal fixed pension: this pension, which is adjusted in accordance with the price index and bears a relationship with the average wage paid in the economy, is payable to all citizens over the age of 65 whatever their employment status during their lives and is financed entirely out of general taxes (St. John and Willmore, 2001).

problem and he should consequently be left out of the system. This argument could be used to justify the exclusion of many who are nevertheless going to need income when they retire.

V

Pension schemes: two extreme cases

Fully funded or individual saving pension plans combine some or all of the following characteristics:

- i) They are contributory: that is, financed out of workers' contributions.
- ii) They are based on defined contributions: the benefit depends on the savings accrued.
- iii) They are funded through individual capitalization.
- iv) They are privately managed only in relation to the capitalization of savings.
- v) They are obligatory only for dependent workers and not for own-account workers.
- vi) The State plays a fundamental role insofar as it continues to be responsible for operating the system: it acts as regulator and supervisor of pension fund administration companies and can also play a distributional role in order to give coverage to those who do not manage to save enough and who are entitled to a minimum or welfare pension.

Universal coverage schemes, such as that of New Zealand, display some or all of the characteristics listed below:

- i) They are non-contributory: they are funded through general taxes (consumption or income tax).
- ii) They provide defined, universal and equal benefits for all: in New Zealand, after the age of 65 years

and subject to certain residence conditions, all citizens receive a universal pension guaranteed by the State.

- iii) They are based on the unfunded system and are paid for out of general taxes collected from the current generation.
- iv) They are publicly administered.
- v) The system is universal for all residents: it does not exclude anyone and is the same for all.
- vi) The private sector fulfils a fundamental role as it is responsible for designing a voluntary, complementary savings scheme for those who wish to obtain greater benefits than those guaranteed by the State.

Different combinations of the above characteristics have permitted the design of two totally opposite schemes, such as that of New Zealand and that of Chile. The New Zealand scheme ensures that all persons have a guaranteed pension and the private sector plays a complementary role: that of promoting additional voluntary saving mechanisms. The Chilean scheme is concerned with compulsory saving, and it is the State that has a subsidiary role. As will be seen in section VIII below, there are many other possible combinations. Here we have illustrated just two extreme cases.

VI

Heterogeneity of access to a pension system based on saving capacity

A contributory system based exclusively on individual capacity to save for old age will tend to reproduce within the field of social protection the uncertainties and restrictions that limited the person in question during the active phase of his life cycle. We will thus be reproducing in the social protection system the very factors that the system should counteract.

Many families live with cash flow problems and are incapable of borrowing against future income and

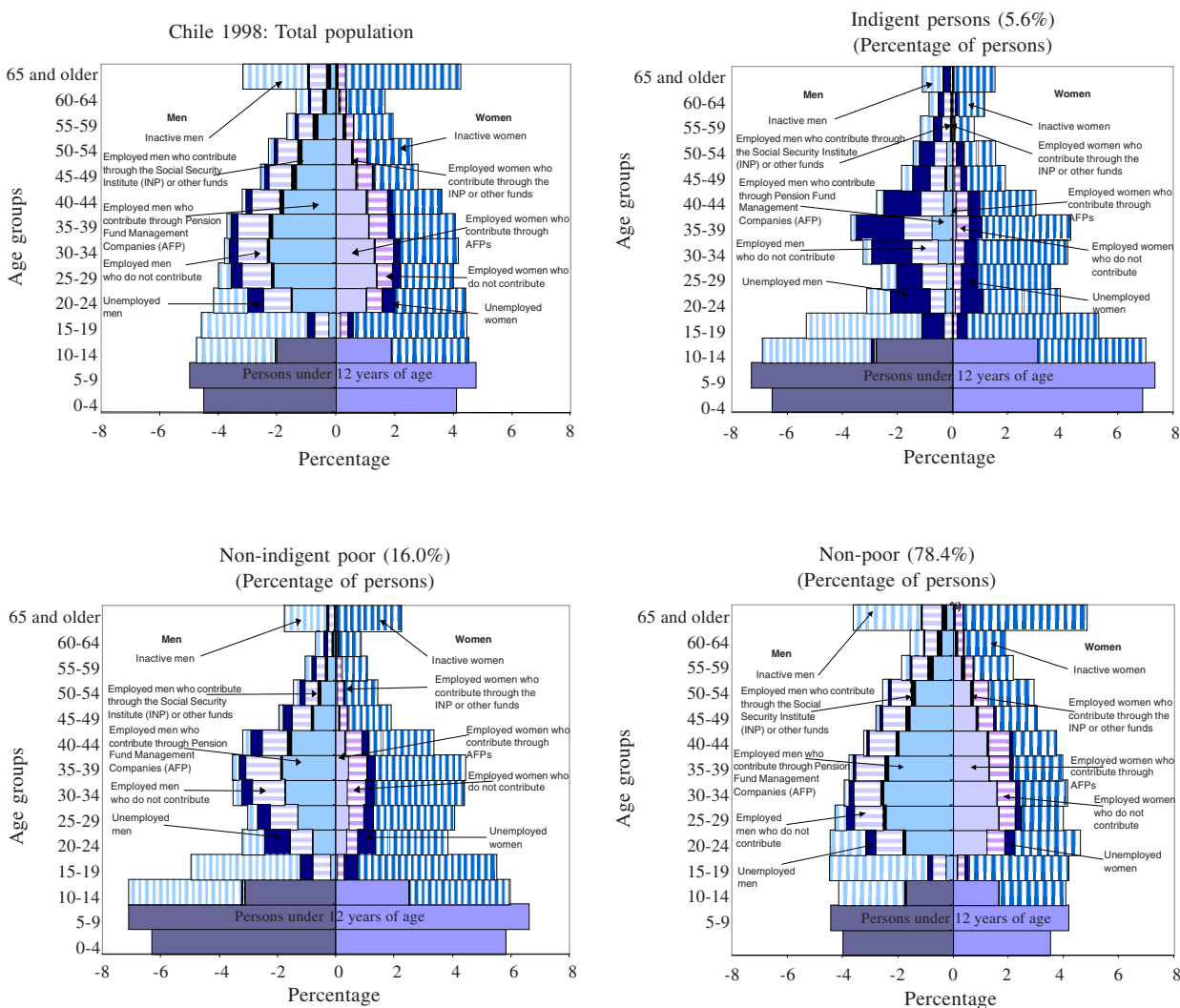
of saving for provident purposes, generally because their levels of current and future income are too low or erratic to sustain continuous levels of saving or because agents of loan markets perceive that these persons will have difficulties in meeting loan repayments, since they do not have suitable collateral to back up the credit. Older persons in such households reach retirement age without savings for their old age and without the income necessary for their own living expenses.

In countries where there are mandatory retirement saving schemes, the poorer the family the lower their participation tends to be, especially in the case of women. This occurs not only because of the limited saving capacity already mentioned, but also because in the jobs that these persons have access to, it is not possible to enforce labour legislation properly and many people end up without retirement savings and thus without an income to meet their living expenses in their senior years. Figure 6 shows contributors to the private pension scheme in Chile, grouped together by poverty level

level, sex and age. It can be clearly seen there that if the criterion for entitlement to benefits is the fulfillment of defined contributions –that is, participation as a saver in the system– this would mean that most women as well as the active members of the poorest families, whose participation in economic activity is more insecure, so that they are less likely to keep up their status as members of the system, would be left without benefits (that is to say, without coverage). Furthermore, many of those who, although they appear on the list of contributors at a given time, do not participate regularly

FIGURE 6

Chile: contributors by poverty level, age and gender



Source: Prepared by the author on the basis of the 1998 National Socio-economic Survey (CASEN) (Ministry of Planning and Cooperation (MIDEPLAN), 1998).

and therefore have a low density of contribution (saving frequency) will also be left without coverage. The same would apply to those who may have contributed regularly but on the basis of very low incomes.

Because of the nature of their financing formula, systems that are designed on the basis of families' saving capacity will limit access to benefits as follows:

i) *Uninsured without capacity to save.* The most extreme case is that of poor families who have to live exclusively on a subsistence income. They have no access to loan markets and therefore face permanent cash flow problems, so that they adjust their living expenses to a subsistence level that matches their current income. Their situation does not change substantially with the cycle, except that there are more and more families joining their ranks. They have no capacity to save and should be the subject of welfare policies as regards saving for old age.

ii) *Highly vulnerable uninsured persons.* Next on an ascending scale are those families which have been able to escape from the situation of living at subsistence levels and can earmark part of their current income for savings, but because of their vulnerability to the

economic cycle and unemployment, they must adjust their expenditure to subsistence levels, interrupting their saving efforts time and again, so that they may never be able to save on a continuous basis at a level that guarantees them a decent pension for their old age. These persons will also be candidates for welfare pensions.

iii) *Partially insured owing to their vulnerability.* Next on the scale are those families that are still vulnerable to the situation of the economic cycle and must adjust their expenses to conditions of uncertainty and liquidity restrictions, albeit to a lesser degree, and that manage to save satisfactorily in terms of continuity but not in terms of the amount needed to afford them a decent pension. For this reason they too will be candidates for support through minimum pensions.

iv) *Fully insured because of their saving capacity.* Lastly, there is a higher income, more highly skilled group which is less vulnerable to the economic cycle. Part of their income can be set aside as savings on a continuous basis and in greater amounts that will be sufficient to self-finance their living expenses (old-age pension) at a satisfactory level.

VII

Contingent liabilities and system design options

The options for designing systems are not neutral and force the representatives of society to take a decision on the type of objectives they are pursuing. The design has enormous repercussions on the way the system's social and economic functions are harmonized.

Non-contributory defined benefit models, administered by distribution (unfunded systems), which draw on general State-administered tax revenue and are obligatory for all residents of the country can be the basis for a universal, equal and solidary system. Their success will depend on their capacity to ensure a satisfactory income for all citizens of retirement age, not only those that contributed to economic activity, thereby attenuating income inequality among retirees and protecting the latter against the uncertainty of sudden social and economic changes. While the accent is on the social function, in ensuring universal access to benefits, such systems are only acceptable and fiscally responsible if the benefits can be funded sustainably over time.

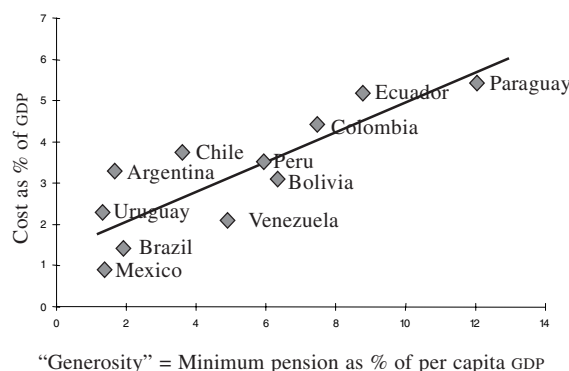
The model applied in New Zealand places emphasis on equity and universality, guaranteeing access to income for the retirement years on the strength of a person's having been a citizen for more than 10 years and having contributed in some way to society, without distinction. However, the financing of this model generates a heavy fiscal burden and does not contribute to the development of capital markets. When financing comes from consumption taxes it may be regressive, but the fact that it is used for equal pensions which are taxable makes it possible in the end to recover part of the cost through the taxation of higher income earners. Since the system is non-contributory, it has the advantage of minimizing distortions that prevent the hiring of labour. Pensions are adjusted in line with inflation but cannot be below 65% of the average wage. The cost of this benefit amounted to 5% of GDP in 2000 and is expected to be rather less than 11% in 2050 (St. John and Willmore, 2001).

Preliminary illustrative calculations for this option for some Latin American countries are given in table 1. They show that the model is sensitive not only to the proportion of persons over 65 years of age but also, and in particular, to the amount of the benefit, which in this case is estimated as being equivalent to the minimum wage and whose “generosity” can be seen in relation to per capita GDP. The economic cost to countries of sustaining this option (measured as a percentage of GDP) depends not only on the proportion of the population over 65 years of age but also, and especially, on the relative generosity of the benefit, measured in terms of the relationship between the minimum wage and per capita GDP. An extreme example is that of Paraguay, where population ageing is incipient but the minimum wage is high (table 1 and figure 7).

At the other extreme is a system that rewards individual effort to finance a pension on the basis of savings accrued during one’s active life. This does not place the accent on the social function, since it does not guarantee universal coverage and the benefit differs between individuals, with large numbers running the risk of being left without insurance. It is based on defined contributions with individual capitalization. In order to contribute to the development of the capital market, there must be an initial phase (until a whole generation joins the system) with high transition costs, which imply significant fiscal responsibilities. The pension provided under this system is based on savings. If these are low—lower than the established guarantees—it can have the effect of shifting many towards the State-

FIGURE 7

Relationship between cost and “generosity” of pensions



Source: Table 1.

subsidized benefits, thus affecting the solvency of the fiscal accounts.

The Chilean model is similar to this alternative, since it distinguishes between those who have the capacity to save and those who do not and, from among the former, it selects those who can be made to contribute by the State and in respect of whom suitable controls can be exercised. Its creation, in replacement of a former unfunded system, generated a heavy fiscal burden to cover the transition costs involved in the payment of current pensions and the recognition of contributions made to the old system by those who have transferred to the new. In addition, it has led to costs in

TABLE 1

Latin America: The challenge of financing a universal pension scheme (For 2001 data)

Country	Amount of pension (dollars)	Percentage of population over 65	Pension as a percentage of per capita GDP	Cost as a percentage of GDP
Argentina	200.1	9.7	2.8	3.3
Bolivia	60.5	4.1	6.5	3.2
Brazil	73.3	5.3	2.4	1.6
Chile	162.5	7.3	3.8	3.3
Colombia	124.4	4.8	6.4	3.7
Ecuador	121.0	4.8	8.7	5.0
Mexico	106.6	4.8	1.7	1.0
Paraguay	182.2	3.5	13.9	5.9
Peru	116.9	4.8	5.8	3.3
Uruguay	82.0	12.9	1.5	2.3
Venezuela	212.3	4.5	4.2	2.3

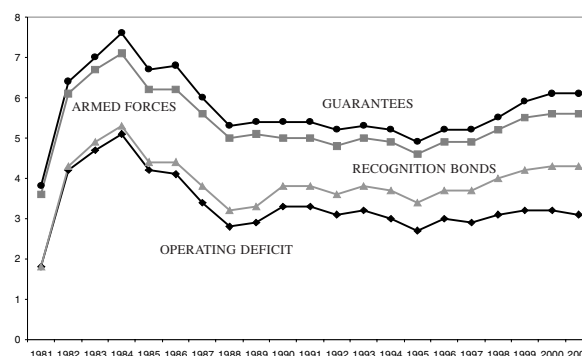
Source: Prepared by the author on the basis of official ECLAC data.

respect of the guarantees of minimum and welfare pensions for the civil population and the pensions of retired members of the Armed Forces.

The annual cost of the transition, the guaranteed minimum pensions and the pensions of the Armed Forces has been estimated at 5.5% of GDP for the first 21 years (figure 8). In the long run, the cost should coincide with the amount corresponding to the guarantees. This will depend on the number of persons who are underinsured or uninsured owing to their low levels of savings and the increase in life expectancy and the pensions of the Armed Forces, for as long as the latter continue with their present system of pensions. The pensions of members who are insured are uncertain, since they depend on the density of their contributions, the profitability that they obtain during their period of contribution, and their life expectancy at retirement. Furthermore, it is necessary to deduct the fees charged by pension fund administration companies during the period of accumulation and the insurance premium for obtaining a life annuity (there are also other options) for the retirement years. The guaranteed benefits in the form of welfare pensions and minimum pensions are currently well below the minimum wage (figure 8).

FIGURE 8

Chile: Total social security deficit
(As a percentage of GDP)



Source: Arenas de Mesa (1999).

The impact on development of the capital market is enhanced if the State finances this cost through higher taxes, lower expenditure in other sectors and income from privatization. Otherwise, the State becomes the principal factor of absorption of the pension fund resources, minimizing their impact on the development of the capital market.

VIII

Current status of capitalization schemes in Latin America

In the structural reforms of contributory models, capitalization or fully funded plans have not always replaced the former unfunded systems. There are four types of models: individually funded plans that take the place of an unfunded scheme (Chile, 1981; Bolivia, 1997; Mexico, 1997, and El Salvador, 1998); mixed plans, where an unfunded system is supplemented with a capitalization system (Argentina, 1994; Uruguay, 1996, and Costa Rica, 2001; parallel schemes, where there is competition between an unfunded system and a funded system (Colombia, 1994 and Peru, 1993), and notional models that apply defined contribution schemes to unfunded models (Brazil, 2000).³

³ See Mesa-Lago (1999) and Carvalho Pinheiro and Paiva Vieira (2000).

There are three fundamental issues that reveal the limitations imposed by the labour market on systems involving individual capitalization accounts: coverage, capital market development, and administration fees.⁴

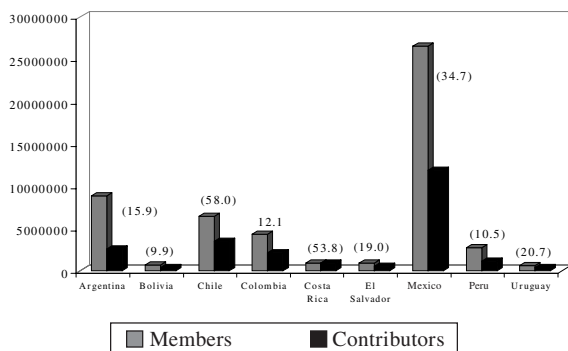
1. Coverage

As may be seen from figure 9, individual capitalization systems continue to exclude a high percentage of the economically active population and therefore place the burden of expanding coverage on other sources of financing. In terms of numbers of members, a report

⁴ The differing characteristics of the countries in general and the individual systems in particular, as well as the different lengths of time they have been in existence, mean that caution should be exercised in making any comparison.

FIGURE 9

Coverage of individual capitalization schemes, December 2001
(Contributors as a percentage of EAP)



Source: AIOS, 2001.

by the International Association of Pension Fund Supervisory Bodies (AIOS) based on a simple average of nine countries shows a high rate of coverage: 63.7% of the economically active population in December 2001. However, only 27.7% of members effectively contribute to the system: that is, approximately six out of every 10 members do not contribute regularly to the system. This difference between members and contributors gives grounds for speculating that the density with which members save in the system is very low, so that they will not be able to accumulate sufficient funds to finance their own pensions and will therefore have to receive subsidies from the State in their capacity as under- or un-insured persons who are entitled to basic (minimum) and welfare pensions.

Figures from the Ministry of Labour of Chile indicate that only 4% of independent workers contribute (although in their case they are not obliged to contribute) and that more than half of women members contribute less than 30% of the time that they work, compared with 40% in the case of men. Another study for Chile indicates that most members contribute just enough to receive the minimum State-guaranteed pension –which today is slightly over US\$ 100– investing their resources instead in other things, such as their children’s education or a house of their own (*El Mercurio*, 2002).

2. Capital market development and profitability

Whether individual capitalization plans will contribute effectively to the generation of employment through the development of capital markets and will result in

more profitable pension solutions depends on many factors. Firstly, there must be a proper context for long-term investment decisions, characterized by inflation that has been reined in and kept at low levels (and/or an indexed financial system); positive but moderate real interest rates, and a realistic exchange rate. The purpose is to create long-term planning time frames which can allow for the efficient allocation of capital resources under internationally competitive conditions.

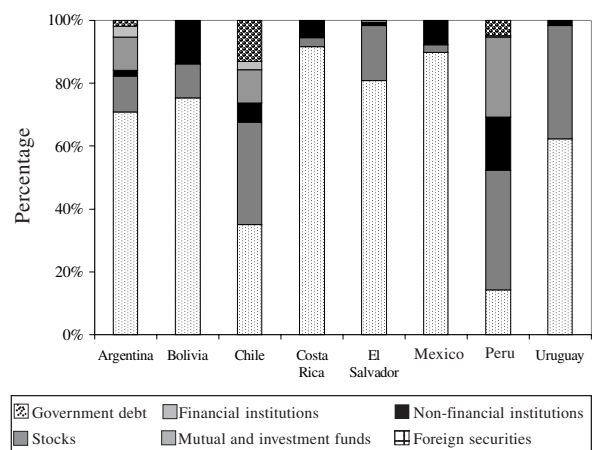
Institutional measures are also needed in the financial sphere to generate sound competition for long-term investment resources. These measures include improving public sector solvency; promoting prudential and organizational regulation of the banking system with a view to avoiding crises, and developing securities markets so as to facilitate transparency in risk analysis and thus make it possible to take informed investment decisions and protect small investors.

Both the lack of such measures and the enforcement of strict regulations on pension funds have so far prevented full diversification of these funds’ investment portfolios, which are concentrated to a large extent in government debt securities. Of the total of the funds administered by these systems, 59% is invested in government debt securities, 18% in financial institutions and only 8% in stocks (figure 10).

The direct impact of the funds on real investment is uncertain. With the exception of investment in mortgage instruments, the counterpart of which is the construction of housing to be acquired by the borrowing

FIGURE 10

Latin America (eight countries): Composition of administered funds



Source: AIOS, 2001.

public, there are no instruments which increase the country's wealth rather than purchasing already existing assets or financing current expenditure.

Gross annual returns⁵ on the funds since their creation have been high in all instances, bearing a relationship with the rise in the value of government debt instruments, but in the last few years sharp reductions have been observed. While the simple average of real historic rates of return⁶ is 10.4%, the figure for January to December 2001 was only 5.9% (figure 11). The returns for each individual will naturally depend on the year of entry into and exit from the individual capitalization scheme and the fund's profitability during this period, after deduction of administration fees.

3. Administration fees

A very important point to note in these circumstances is that those who contribute to a fully funded plan must pay a series of extra charges over and above their contribution to their individual account; these include disability insurance, life insurance and a net commission to cover the administration expenses of the fund in question. According to the AIOS report, in the region, as a percentage of their taxable salary, Latin American workers pay average total charges of 3%, of which 1.25% is for disability insurance and life insurance and 1.75% for the administration fee. Pension fund administration companies must capitalize an average of 9% of their members' taxable salary. The simple average among countries for the cost of these fees as a percentage of workers' total contributions is 25%, and the average as a percentage of the capitalizable contribution is 33%, although there are substantial differences between countries.⁷

Bearing in mind the coverage characteristics and the projections that indicate that many workers will not manage to save enough to benefit from the fully funded system, it may be wondered whether the payment of fees to the pension fund management companies is not a contribution that the system loses

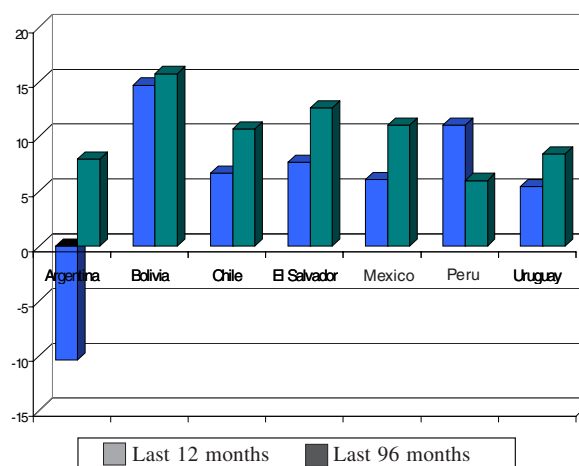
⁵ Without taking into account the effect of fees charged by the administrators.

⁶ That is, deflating nominal profitability for the variation in consumer prices.

⁷ In view of the different concepts and experiences, caution should be exercised when making such comparisons.

FIGURE 11

Latin America (eight countries): Real gross returns on pension funds



Source: AIOS, 2001.

as part of the financing and administration of the State-guaranteed benefits.⁸

The question of fees has been extensively discussed, even with regard to workers who are fully insured under the fully funded plan. In such cases, it is argued that the return on the worker's contribution differs from that of the worker's account because it does not take into account the cost of the fees, which is borne by the worker. This is illustrated in the case of Chile in table 2. Although the return on the contribution (the extent to which the share in the total amount of the funds administered by a pension fund management company appreciates) between 1981 and 1999 was 11.2%, the return on different individual accounts varied significantly depending on the level of income and the period of contribution of each individual. It may be concluded that members assume the cost of the fees and the system's financial risk in a regressive manner. If a member has had to participate in the system when the fees were high and returns on investment low, he would thereby have a significantly lower pension than another member who has participated at times when rates of return have been high and fees low. The situation is much worse for members with low incomes.

⁸ This argument loses force when the contribution and its capitalization are used to finance part of the guarantees of workers who are underinsured and the fee is considered as a payment for the services of capitalizing the worker's balance during this period.

TABLE 2

Chile: Annual rate of return on the individual account and the contribution
(Per cent)

Chilean pesos	80 500	147 954	221 930	443 861	887 722	Contribution
May 1998-April 1999	3.79	3.91	3.95	4.00	4.02	4.81
May 1996-April 1999	3.21	3.28	3.31	3.34	3.35	4.62
May 1993-April 1999	5.04	5.10	5.13	5.15	5.16	7.05
May 1987-April 1999	6.97	7.09	7.14	7.19	7.22	9.09
May 1981-April 1999	7.24	7.41	7.47	7.54	7.57	11.17

Source: Office of the Superintendent of Pension Fund Management Companies (1999).

IX

Conclusions

The fundamental social function of a pension system must be to achieve universal coverage, providing decent old age and disability pensions for income-earners and survivors' benefits for dependents after the death of the contributor, as well as coverage for non-income earners. Fundamentally, the clash with the system's economic functions lies in the fiscal responsibilities that the State may have to assume as a consequence of the challenge that the design of the system may impose on it: providing coverage for different persons, whatever their employment situation.

A contributory unfunded scheme with a graduated average premium and fixed benefits runs the risk of turning into a simple unfunded system as a result of erosion of its reserves, which may eventually call for a high component of public financing. However, its replacement by a system funded by individual savings accounts does not completely obviate this tendency, since the labour market limits the capacity of many of its members to achieve the required contribution density, so that they will eventually become eligible for State guarantees whose costs must be added to those of the transition.

Hence fiscal responsibilities do not disappear and the State must assume several obligations, including:

- Payment of pensions currently due to retirees under the old system.
- Payment of entitlements already acquired by current contributors through their contributions to the old system, when these contributors transfer to the new system.
- Payment of State-guaranteed pensions, whether they be minimum or welfare pensions or those due

to the Armed Forces or to other groups entitled to them by law.

The net reserves of the old system are available for financing these commitments.

It is hard to estimate the cost of these responsibilities, partly because not all countries have opted for total substitution of one system by another, owing precisely to the very high fiscal commitments that this would entail. Generally speaking, however, countries have had to confront this dilemma when designing their pension systems, and in the case of reform, when replacing one system by another, have had to opt for one of the following alternatives:

- Not assuming the responsibilities in question, which has a high political cost and is prejudicial to retirees and workers who contributed to the old system.
- Financing them with new debt, which has a cost for future generations and affects the public sector demand for financial resources.
- Financing them with fiscal surpluses, which has significant fiscal implications and affects current generations.

Faced with these dilemmas, Argentina, Uruguay, Colombia, Peru and Costa Rica opted for two-pillar systems –unfunded and fully funded– and adjusted the unfunded system to make it more viable financially, either by raising the retirement age, increasing contributions and/or reducing pensions. None of these cases makes due provision for the fact that once a capitalization fund reaches maturity:

- Many persons will nevertheless qualify to receive minimum and/or welfare pensions, which will

oblige the authorities to make major adjustments in public finances or reforms of the reforms.

- Those reaching retirement age with sufficient savings will have to adjust their benefits to rising life expectancy, and at the same time will be forced to take decisions relating to a higher retirement age, a reduction in benefits or the payment of additional voluntary contributions.

In view of the heterogeneity of Latin American societies, which is reflected particularly strongly in the

labour market, the conclusion is that further reforms to the pension systems will be necessary. Contributory unfunded solidary financing mechanisms must be strengthened to give coverage to those who, through their particular employment situation, would be left uninsured or underinsured under individually funded systems.

(Original: Spanish)

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Income distribution

in Argentina, 1974-2000

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Over the last quarter-century, the distribution of income in Argentina has deteriorated steadily. This article utilizes microsimulation analysis to decompose the impact that labour changes have had on the distribution of family income. In the 1970s, the deterioration was due to real reduction and relative dispersion of wages; in the 1980s, it was linked to growing unemployment resulting from successive crises; in the 1990s, under the new economic order, the deterioration continued as a result of the unemployment generated by the restructuring of production and the increase in labour force participation, coupled, in the last phase, with greater inequality in wage levels. The article concludes that the new economic model involves, beyond currency appreciation and the ultimate collapse of the macroeconomic regime, a lower employment elasticity of growth –thereby generating more structural unemployment– and a larger wage gap between workers at different skill levels.

I

The evolution of income distribution

Dynamic analysis of income distribution is highly conditioned by the availability of microdata from comparable surveys. In the case of Argentina, such analysis is limited by the availability of data from the Permanent Household Survey (Encuesta Permanente de Hogares (EPH)). For 1974 and for the years since 1980 there are data for Greater Buenos Aires, but only after 1990 did comparable data become available for ten urban agglomerations in the country's interior.¹

However, it is possible to take a longer-term retrospective view, looking only at the probable evolution of inequality, based on measurements derived from various sources –and therefore not strictly comparable– prior to 1974. This has been done elsewhere (Altimir, 1986; Altimir and Beccaria, 2000a; Altimir and Beccaria, 2001), and the results indicate that: i) between 1953 and 1961, with a yearly per capita growth rate of over 2%, inequality among households at the national level appears to have increased by only 5% as measured by the Gini coefficient, although the increase among non-farming households was 10%; and ii) inequality in Greater Buenos Aires (and, presumably, in all urban areas) seems to have remained unchanged throughout the 1960s and the early 1970s up to 1974.²

Our analysis of the evolution of income distribution encompasses the period from 1974 to 2000 and is based on data from the EPH.³ It compares income distribution

in the peak years of each period in which a particular macroeconomic regime and policy prevailed; these were the years in which the level of economic activity reached a relative maximum and, therefore, the economy was closest to its productive frontier⁴ (table 1). The reason for selecting periods in this manner, in addition to considerations relating to the availability of data, was to reduce the influence of cyclical disturbances on the determination of distributive results in order to identify as clearly as possible the trends and structural changes that have shaped income distribution in this quarter-century.

If only the years selected according to the stated criterion are considered, a steady worsening trend in the distribution of household income (and therefore well-being) throughout the quarter-century is noted, resulting in an exacerbation of inequality as evidenced by the rise in the Gini coefficient from 0.36 in 1974 to 0.51 in 2000 (figure 1). Moreover, this trend was compounded by temporary deteriorations during periods of crisis: the hyperinflation of the late 1980s, the “tequila episode” and the most recent recession, which continues today. During the period 1991/1993, in contrast, the level of inequality was below the indicated trend.

However, income distribution among employed individuals (which is more reflective of wages generated in the productive apparatus) evolved somewhat differently: after worsening in 1974/1980 –even more sharply than income distribution among households– the trend (marked in our interpretation by distributive situations closest to the structural distribution) remained relatively stable until 1994⁵ and then rose again, with the Gini coefficient increasing 3% by 1997.

□ We are grateful for the comments of José Antonio Ocampo and Juan V. Sourrouille, who, however, bear no responsibility for the final content of this article.

¹ The twenty-eight urban agglomerations now covered by the EPH have been added gradually over the years by the National Institute of Statistics and Censuses (INDEC), and not all of them have been included every year.

² However, if the data from the surveys are adjusted for the effect of underreporting of income, the concentration may have tended to increase moderately between 1970 and 1974/1975 (Altimir, 1986). As the original survey data show a virtually constant concentration between 1970 and 1975, it can be concluded that despite the notable growth in real wages in the latter year (as seen in figure 4 below), income distribution in that same year (in which economic activity increased markedly) did not differ greatly from that of earlier years.

³ This does not mean that we have overlooked the possible underestimation and omissions of income in the EPH or the effect that they may have had on the concentration of income; in that

connection, see Altimir (1986) and Altimir and Beccaria (2000a). It is assumed, however, that the underestimation and omissions have not changed significantly, meaning that they have not increased or decreased the relative difference between measured and actual inequality.

⁴ This was not the case, however, in 1990, which was chosen because it was the last year prior to the change of regime, nor was it the case in 2000, during which the recession that had begun in 1998 continued; however, it is the last year for which data were available.

⁵ The 3.8% decrease, between 1980 and 1986, in the value of the Gini coefficient of this distribution is statistically significant at 95%, based on the confidence intervals estimated by a bootstrapping

TABLE 1

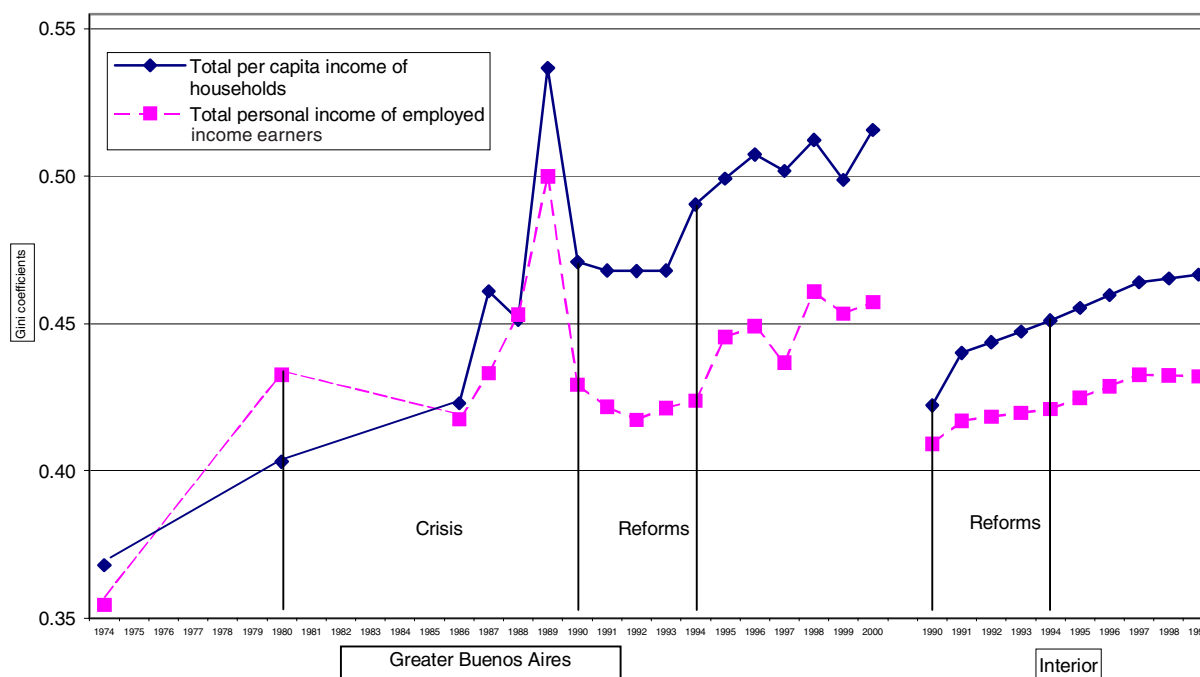
Argentina: macroeconomic framework for the observations of income distribution

Macroeconomic periods	Date of observation	Real per capita mean income of households, Greater Buenos Aires	GDP level (1980=100)		Urban employment (1980=100)	Urban unemployment (%)	Monthly inflation (%)	Real wage (1980 = 100)	Real exchange rate	
			Total	Non-farm						
1973-1975	Populist stabilization	III 1974	110.1	90.0	89.2	92.8	3.4	3.0	118.5	125.3
1976-1980	Orthodox stabilization with liberalization	III 1980	100.0	101.8	101.4	100.0	2.5	4.2	100.0	100.0
1981-1984	Chaotic adjustment and return to populism									
1985-1986	Transitory stabilization	III 1986	91.7	99.7	98.7	108.5	5.2	7.6	92.6	268.2
1987-1990	Slide to hyperinflation	III 1990	62.8	91.2	97.4	114.8	6.2	13.9	62.9	168.7
1991-2000	Stabilization and new economic regime	III 1991	72.7	100.5	99.4	118.8	6.0	1.9	70.0	124.5
		III 1994	82.4	126.9	126.8	120.4	12.2	0.6	81.0	101.9
		III 1997	81.0	141.5	142.1	129.1	13.7	0.3	75.4	105.1
		III 2000	81.2	139.9	140.2		14.7	0.1	78.4	113.3

Source: Developed by the authors on the basis of data from ECLAC and the EPH.

FIGURE 1

Argentina: income distribution among households and individual income earners, 1974-2000
(Gini coefficients)



Source: Developed by the authors on the basis of data from the EPH.

Subsequently, with the economy already in recession, inequality oscillated around a rising trend, and by 2000 the Gini coefficient was 4.7% higher than in 1997, the last “normal” year from the perspective of economic activity (figure 1).

The contrast between the evolution of income distribution among households and employed individuals has been determined –as will be revealed in the analysis that follows– by changes in labour-market participation and unemployment. The influence of these two factors, coupled with that of the structure of wages, on household income distribution is analysed by means of a microsimulation exercise.

II

Real incomes

1. Deterioration by income deciles

The evolution of the relative distribution of nominal household income described above also implies an unequal evolution in real terms. The real per capita mean income of households in Greater Buenos Aires showed a downward trend from 1974 to 1990/1991 and then fluctuated around a level 20% below that of 1980⁹ (table 1). This evolution includes the loss of purchasing power due to the increase in the relative prices

procedure that made it possible to generate our alternatives. The differences between the Gini coefficient values for 1986, 1990 and 1994, on the other hand, did not exceed 3% and are not statistically significant.

⁶ The aggregate values of the Gini coefficient for the ten cities showed very little variation from this trend (figure 1).

⁷ The urban agglomerations for which microdata from the EPH were available for the 1990s were Córdoba, Jujuy, La Plata, Mendoza, Neuquén, Rosario, Salta, Santa Rosa, Río Gallegos and Tucumán.

⁸ The differences in the Gini coefficient values for the two domains were not statistically significant (around 1%) for 1991, 1994 and 1997, but not in 1990, when the Gini coefficient of income distribution for the interior cities was 5% under that of Greater Buenos Aires. If 1990 is taken as the reference year, the inequality of personal income increased more than in the metropolitan area.

⁹ The mean income for the whole set of urban areas (Greater Buenos Aires plus the ten cities of the interior) has suffered an equal or greater decline: both in 1991 and in 1994 it was around 8% below the mean income of the metropolitan component; by 1999/2000 it had dropped to 10% below that level, with the resultant lag in the interior urban component.

The evolution of income inequality in the cities of the interior in the 1990s did not differ greatly from the pattern observed in Greater Buenos Aires, especially in the years for which the trend was analysed,⁶ during which the degree of concentration of personal income in the ten cities studied⁷ was very similar to that of the Buenos Aires metropolitan area.⁸ The inequality of family income in the interior also showed a similar pattern –though at lower Gini coefficient levels– to that observed in the distribution among metropolitan households, except that among households in the other cities the greatest worsening occurred in 1991, rather than 1994 (figure 1).

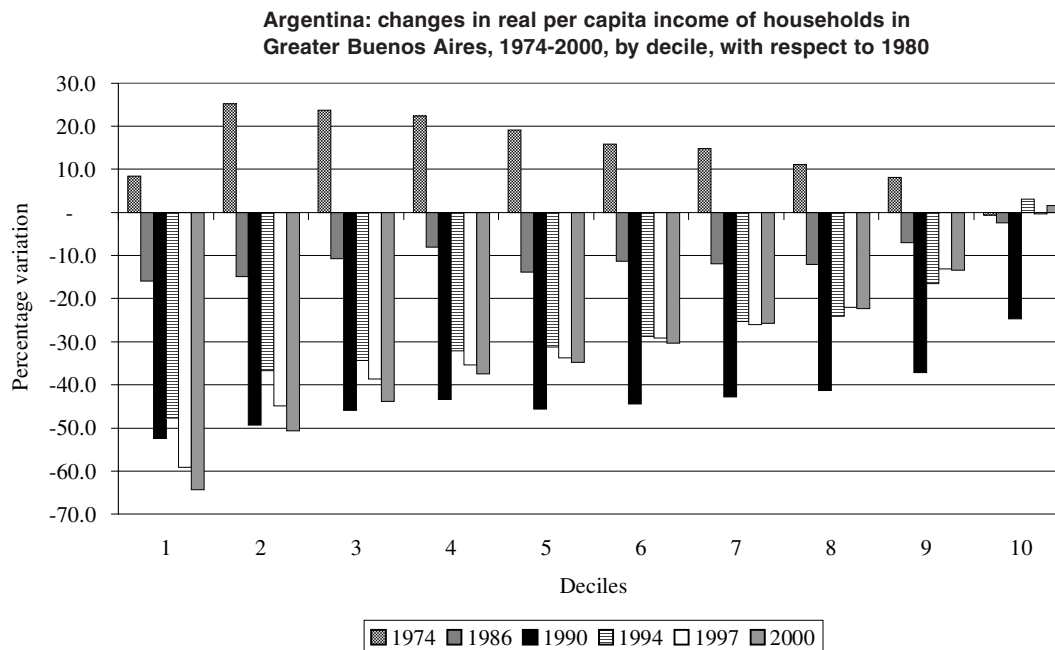
applicable to household incomes stemming from the rise in the exchange rate beginning in 1990.¹⁰

If 1980 is taken as a basis for comparison (as in figure 2),¹¹ the relative losses of real income between 1974 and that year diminished with income level, except in the lowest decile –in which the loss was similar to the average loss– and the top decile, which suffered hardly any loss. On the other hand, the loss in real terms between 1980 and 1986 –8% on average– was more evenly distributed, although it was always smaller in the uppermost income quintile. The steep drop in incomes associated with the crisis and the hyperinflation of the late 1980s and early 1990s was quite generalized, and its effect on the middle and low income strata was almost neutral (especially in comparison to 1986); however, the loss of the top decile was smaller than the average. The partial recovery of incomes between 1990 and 1994 was also inequitable, growing with income

¹⁰ The rise in prices of non-tradable goods was manifested in increases in the consumer price index (CPI) that were around 35% higher than the evolution of the GDP implicit price index. This is the principal reason why real mean household income increased much less in the 1990s than per capita national income (table 1).

¹¹ The year 1974 is not a suitable basis of comparison for the entire period, given that the highest maximum real wage for the period 1960/2000 was achieved in that year (see figure 4 below), in a macroeconomic context that proved unsustainable. In contrast, the level of real wages registered in 1980 had already been reached by the mid-1960s and early 1970s, and wages then returned to that level in the mid-1980s.

FIGURE 2



Source: Developed by the authors on the basis of data from the EPH.

level, to the point that real income in the top decile rose to a higher level than in 1980. The subsequent evolution of real incomes was clearly regressive. The incomes of the lowest 60% of households deteriorated—in a manner inversely proportional to their respective levels—while the real incomes of the top three deciles improved. Hence, the distributive situation at the end of the twentieth century exhibited, in real terms, a notable regression with respect to 1980 (figure 2).

2. Poverty

The incidence of poverty in Greater Buenos Aires¹² rose throughout the period, over and above the jump it registered with the hyperinflation of 1989/1990. In 1974 fewer than 5% of households were poor, in 1980 the figure was closer to 6%, in 1986 it exceeded 9%, and in 1990 it climbed to 25% of households, later falling to under 15% in 1994 and then rising again to 21% in the year 2000.

If, in order to identify the poor, income distribution is partitioned by a poverty line that remains the same

in real terms, the incidence of poverty varies with the real income of the set of households and their distribution by income levels. Table 2 decomposes the changes in poverty incidence in the various subperiods.¹³

During the decade of crisis, two-thirds of the considerable growth in absolute poverty was due to the fall of real household income associated with the recession and the deterioration of the terms of trade.¹⁴ However, one-third of the increase in poverty incidence was the result of changes in income distribution. The recovery and expansion of the economy between 1991 and 1994 had an effect that favoured poverty reduction, but it was cancelled out completely by the unfavourable impact of the distributive changes. Between 1994 and 1997, the combination of declining real income and worsening income distribution prompted a new increase

¹² Until very recently, there was a single official poverty line for all of Greater Buenos Aires, and official estimates of the incidence of poverty in Greater Buenos Aires began to be published only in 1986. The figures for 1974 and 1980 therefore come from Altimir and Beccaria (1998) and were obtained by replicating the procedures utilized for calculating official estimates.

¹³ $P(0)$, one of the Foster-Greer-Thorbecke poverty indicators, which measures the proportion of poor households out of total households. The magnitude of the change in poverty incidence follows, but does not coincide exactly with, the trend of official estimates because those figures are based on EPH income data adjusted for underestimation (Altimir y Beccaria, 1998).

¹⁴ This occurred towards the end of the decade as a result of the effect of currency devaluation on the price of tradable goods in the CPI.

TABLE 2

**Greater Buenos Aires: Decomposition of the change
in incidence of absolute poverty**
(Percentage points)

Period	Total change	Effect of mean income	Effect of distribution	Interaction
1974–1980	...	1.5	-1.4	0.1
1980–1986	3.2	2.1	0.8	0.3
1986–1991	2.7	1.4	1.8	-0.5
1991–1994	0.4	-2.3	2.7	0.4
1994–1997	4.1	2.6	1.9	-0.4
1997–2000	1.4	-0.6	2.1	-0.1

Source: Developed by the authors on the basis of data from the EPH.

in the incidence of absolute poverty. In contrast, in the years that followed, up to 2000, the ongoing

deterioration in income distribution alone was responsible for the rise in poverty (table 2).

III

Labour market trends

The labour force grew slowly in the 1970s and 1980s, but it underwent rapid expansion in the 1990s. The urban activity rate trended downward throughout the 1970s,¹⁵ reaching 38.5% in 1980. In the first half of the 1980s, the participation rate stagnated but then rose steadily in the second half of the decade, in a context of income reduction and instability. Thereafter, the aggregate activity rate in urban areas rose from 39.5% in 1991 to more than 42% of the total population as of 1997 (figure 3).¹⁶

The rate of job creation –in both the formal and informal sector– in the 1980s was not sufficient even to match the moderate rate of growth in supply, and the result in the 1990s was a notable deficiency of labour absorption, even at times when economic activity was growing rapidly. Consequently, urban unemployment

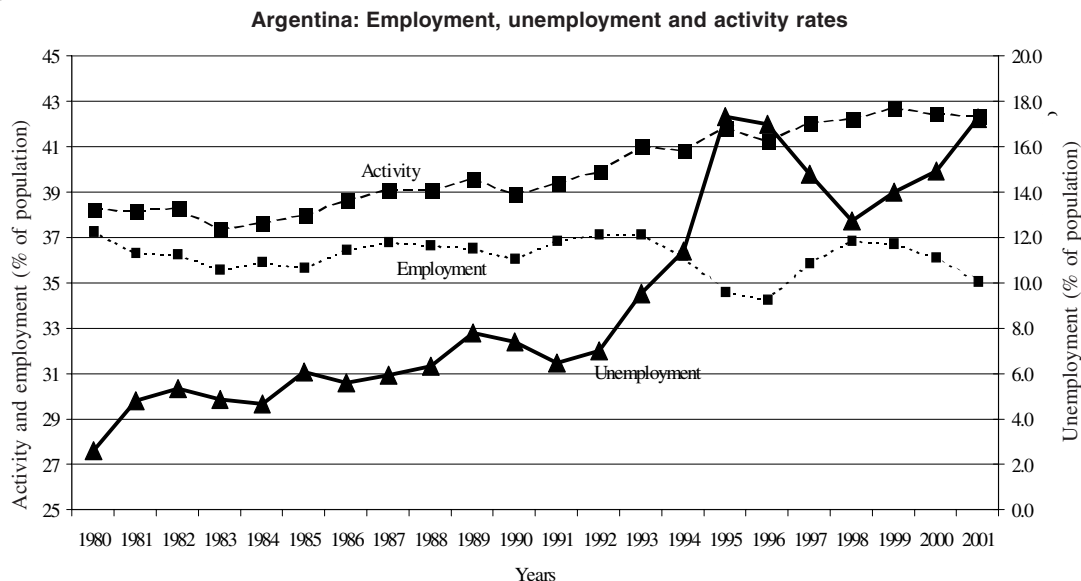
rose by three percentage points during the 1980s, climbing from around 5% in the early years to around 6% in 1985/1988 and to over 7% with the onset of the hyperinflationary crisis. With the arrival of reforms and stability, unemployment soared: in three years (between 1992 and 1995/1996, in the midst of the adjustment period following the tequila crisis), the proportion of the urban labour force that was out of work increased from 7% to more than 17%, later falling to around 14% (between 1997 and 1999) and then shooting up again –with the onset of recession– to above 17% in 2001 (figure 3).

The growth in unemployment in the 1990s was a generalized phenomenon encompassing the entire country and affecting a variety of population groups with differing characteristics. Young people continued to experience the highest rates, but all age groups were affected similarly by the increase in unemployment. Nevertheless, the rates did rise somewhat more among women than men, paralleling the growth in female participation in the labour force. At the same time, there was an alarming increase in unemployment among heads of household, which jumped from 2%-3% to about 10% during the last period of expansion (1997) and then grew even worse in the later recession (Altimir and Beccaria, 2000b). The rise in unemployment was also quite generalized among income levels, although

¹⁵ During the first half of the decade this was a result of the income effect associated with the wage hike. During the second half of the decade, in contrast, the decline was due to the substitution effect –linked to the reduction in wages– and discouragement over the creation of fewer jobs in the formal sector (Altimir and Beccaria, 2000b).

¹⁶ This considerable increase in the overall urban rate was due almost exclusively to the increase registered in Greater Buenos Aires, where the rate of labour market participation climbed from 40.9% to more than 45%, largely due to the growth of female participation (Altimir and Beccaria, 2000b).

FIGURE 3



Source: Developed by the authors on the basis of data from the EPH.

it was somewhat more marked in some of the middle income strata and—in combination with lower activity rates —affected the well-being of the lower-income strata more severely, as will be seen below (table 3).

The total employment rate has ranged between 35% and 37% of the population since 1980, with generally cyclical oscillations that grew larger in the 1990s¹⁷ (figure 3). However, total employment includes both informal employment in activities of low productivity and involuntary time-related underemployment. Damill, Frenkel and Maurizio (2002) analysed the evolution of full-time employment (including voluntary underemployment) and found a clear downward trend that began to steepen in the early 1990s, falling from a level of 35%-36% in the early 1980s to the rate of 32% registered in 1994 and also in 2000. This means that involuntary underemployment has grown steadily from around 2% of the urban population to 6%.

The drop in full-time employment has affected males and heads of household, in particular. Moreover, it has been concentrated in the manufacturing sector, where employment rates among women and secondary workers have also decreased, although the participation of these groups in the service sector has increased (Damill, Frenkel and Maurizio, 2002).

Between 1974 and 1980, aggregate labour productivity in non-farm activities virtually stagnated.¹⁸ Ten years later, in the early 1990s, non-farm output was lower and urban employment had expanded 10%, with a consequent reduction in labour productivity (table 1). This decline was partially associated with the growth in informal-sector activity, which increased from 38% to 42%, but the formal sector was also affected by the deterioration in productivity: a survey of medium-sized and large enterprises in the industrial sector revealed a stagnation of productivity between 1980 and 1990 (Altimir and Beccaria, 2000b).

Between 1991 and 1994, non-farm output grew 28%; however, urban employment scarcely changed (table 1). This signified a rapid increase in the mean productivity of labour, which reflected the absorption of idle capacity associated with the revival of economic activity and partly an increase in output per capita on the production frontier, linked to the restructuring of production.¹⁹ In contrast, between 1994 and 1997 the

¹⁸ After having expanded by more than 3% a year between 1960 and 1970, when output grew at a rate of close to 5% and urban employment increased at a rate of 1.4% a year.

¹⁹ Frenkel and González Rozada (1998) estimate that half the mean increase in industrial productivity is explained by the cycle effect (increased efficiency in the use of existing resources, owing to the upsurge in economic activity) and the other half by the increase in the capital-output ratio and the use of new technology.

¹⁷ During the recession of 1995/1996, the rate fell below 35%.

TABLE 3

Unemployment and activity rates by per capita family income group

Decile of per capita family income ^a	1974		1980		1986		1989		1990		1994		1997		2000	
	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate	Acti- vity rate	Unem- ploy- ment rate
Greater Buenos Aires																
1	21.1	10.4	20.9	5.1	21.9	20.6	23.6	30.2	22.4	30.0	27.8	47.2	32.4	40.6	30.4	44.9
2	25.0	4.6	23.6	1.2	23.1	10.3	27.5	16.3	24.8	9.5	29.2	21.3	33.2	25.6	31.9	22.4
3	27.3	3.9	29.2	4.3	30.7	8.2	25.7	11.0	24.9	9.4	30.2	21.4	33.4	21.5	36.4	23.8
4	31.9	2.0	32.6	2.5	33.7	5.3	36.4	10.9	32.2	10.5	37.1	16.8	38.4	18.1	35.9	20.3
5	34.0	3.6	32.8	1.0	29.0	3.9	33.8	7.1	35.7	7.8	40.7	16.2	41.7	16.6	38.7	16.5
6	36.5	3.2	38.9	3.2	38.5	3.3	35.3	8.5	33.4	4.8	41.5	13.4	42.9	14.9	45.7	11.9
7	45.3	2.1	45.3	1.8	46.6	3.4	42.8	4.0	41.5	4.8	48.6	10.0	47.4	11.5	50.1	13.3
8	50.9	1.3	49.9	1.2	47.0	1.6	48.2	2.9	47.3	3.2	51.9	7.1	54.4	9.3	51.4	8.3
9	53.7	1.5	48.4	1.6	52.8	1.9	51.4	1.5	54.9	1.5	53.7	5.1	60.1	5.9	58.1	7.4
10	61.6	0.8	52.9	0.8	57.0	0.8	58.2	1.8	64.2	2.3	65.4	2.2	62.6	4.1	63.9	3.3
<i>Total</i>	<i>38.7</i>	<i>2.7</i>	<i>37.5</i>	<i>2.0</i>	<i>38.0</i>	<i>4.6</i>	<i>38.3</i>	<i>7.5</i>	<i>38.2</i>	<i>6.6</i>	<i>42.6</i>	<i>13.4</i>	<i>44.6</i>	<i>14.7</i>	<i>44.2</i>	<i>14.9</i>
Ten interior cities																
1											24.4	33.7	27.5	38.2	28.5	44.6
2											30.0	19.9	29.1	26.2	30.9	27.1
3											31.7	15.1	31.5	17.5	33.2	20.6
4											34.0	10.9	34.1	13.4	37.1	19.3
5											37.5	10.8	38.4	15.3	37.8	16.3
6											42.2	8.4	39.1	13.5	42.1	14.2
7											44.5	5.2	41.9	9.9	41.2	10.6
8											45.2	4.8	45.6	7.7	45.6	9.6
9											48.8	2.9	48.3	5.8	50.1	7.5
10											54.4	3.1	52.6	3.5	56.2	2.7
<i>Total</i>											<i>37.6</i>	<i>11.0</i>	<i>38.8</i>	<i>13.4</i>	<i>40.3</i>	<i>15.1</i>

Source: Developed by the authors on the basis of data from the EPH.

^a Excludes households that did not answer, totally or partially, the question on income, but does include households without income.

11.5% rise in the level of economic activity was accompanied by 7.2% growth in urban employment, which then increased another 5% during the subsequent recession of 1998/2000.

Damill, Frenkel and Maurizio (2002) found that full-time employment in Greater Buenos Aires had shown a significant change in the 1990s, which was reflected in a contraction of the employment rate and which was interpreted as the impact of the new macroeconomic scenario and incentives on demand for full-time employment. They also found that the period of adjustment to the new environment can be considered to have ended by late 1996.²⁰ These authors point out,

in addition, that the 2.7% drop in the full-time employment rate among the urban population between 1992 and 1998 is largely attributable to the reduction in the employment rate in the manufacturing and commerce sectors (-2.1% and -1%, respectively) during that period.

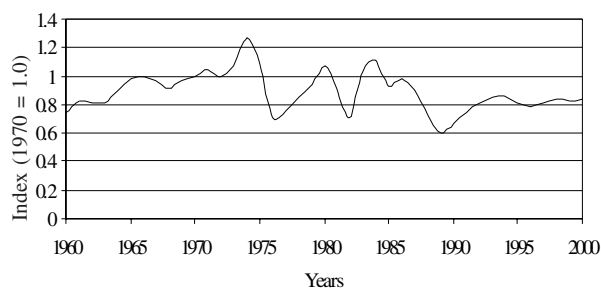
During the last quarter of the twentieth century, wages were established under different regimes. In 1976, collective bargaining was suspended and the government set wages. In 1987, labour negotiations resumed. In 1991, reforms were introduced with a view to encouraging decentralized negotiations, at the company level, but with little success (Marshall, 2002).

²⁰ These authors developed a labour demand model that views the adjustment of demand to a new environment as a gradual process, for which purpose they use two dummy variables: one for the decade of the 1990s and another for observations made after 1996. The coefficient of the first dummy variable (for the entire decade)

implies an additional contraction of the full-time employment rate; the coefficient of the second dummy variable (for post-1996 observations) is positive and more or less offsets the contractive effect of the coefficient of the first variable (Damill, Frenkel and Maurizio, 2002, p. 47).

The real wage level reached a maximum in 1974, marking the culmination of an upward trend that had begun more than a decade earlier (figure 4). It then suffered declines of 14% in 1975 and 36% in 1976, the latter as a consequence of the stabilization policy that froze wages, devalued the peso and liberalized prices. After that, wages gradually recovered, finally reaching near 1975 levels five years later in 1980. In a context of large new fluctuations, in 1986 the average wage was more than 7% lower than it had been in 1980. The hyperinflation and recession of the late 1980s and early 1990s brought the real value of wages down to an absolute minimum: 37% below the 1980 level. The recovery and later oscillations, in an environment of price stability, have kept the real wage fluctuating at between 20% and 25% below that level (table 1 and figure 4).

FIGURE 4

Argentina: Evolution of real wages

Source: For 1960–1974, see: Llach and Sánchez (1984); for 1974–2000, see data from EPH (Greater Buenos Aires).

IV

Impact of labour market changes on family income distribution

Taking into account the large extent to which household income distribution and its evolution is determined by labour incomes, we chose a quantitative approach that would enable us to examine the influence of various labour market variables on changes in the inequality of household income distribution. The method utilized for that purpose was microsimulation analysis, a tool which makes it possible to quantify the effect of changes in the supply of labour, unemployment and relative wages. The latter are then analysed in greater detail by means of conventional regression analysis.

1. Microsimulation analysis

The microsimulation technique consists in simulating, for each individual in the working-age population during a period t , the labour situation (activity/passivity, employment/unemployment, occupational category, sector of activity, educational level, wage level) that would have prevailed at time $t + k$ if he/she had experienced the changes in the labour variables that occurred between t and $t + k$,²¹ taking into account the

socio-demographic characteristics of each individual in period t . The incomes of this counterfactual population and the corresponding households are then fed into the model to simulate the distribution of household income in $t + k$.

This technique makes it possible to assess changes in the entire distribution of income –utilizing microsimulated counterfactual populations and assigning to each observation the change that would have occurred in accordance with behaviour functions estimated on the basis of the microdata themselves– and quantify the effect of all the explanatory variables considered (in an alternative or sequential manner).²² This procedure contrasts with current methods of decomposing changes in some summary measure of inequality (or poverty) to determine what proportion of those changes reflect changes in the relationships between mean incomes of different population subgroups, variation in the relative importance of each subgroup or changes in the distribution within each subgroup and are therefore attributable to factors other

²¹ In the case of Argentina, the analysis of labour market changes must be limited to the labour and income characteristics included in the EPH.

²² For more detailed information on microsimulation modelling of income distribution dynamics, see Bourguignon, Fournier and Gourgand (1998) and Bourguignon, Ferreira and Lustig (2001).

than the variable used to partition the population for decomposition purposes.²³

In our case, the procedure consisted in sequentially simulating counterfactual populations –of men and women– that replicated in the population in t the values registered in $t + k$ for the following variables: participation rates; participation and unemployment rates; the two preceding variables and the educational structure of the employed population; and, lastly, this labour force structure with wages calculated by applying the coefficients of the income functions for $t + k$ estimated by regression. In the first three simulations, incomes were assigned either to individuals whose status would have changed because they were included in the simulated population with labour income or to those whose income changed as a result of changes in educational attainment. In each simulation, the family incomes that would have resulted from combining the incomes of the counterfactual population were computed, which made it possible to obtain a simulated distribution of household income and calculate the corresponding measures of concentration and poverty. The analysis of the effect, between t and $t + k$, of each change considered is done by comparing the inequality of the distribution simulated with the change and the inequality of the distribution simulated (earlier in the sequence of simulations) without that change.

As is explained in the methodological appendix, the first step was to estimate –by means of the maximum likelihood method– a polychotomous logit model of labour market participation, for males and females and for each year, that would determine the probability that each person in the working-age population would be inactive, unemployed or employed, as a function of age, marital status, years of formal education, being the head of household or not, having minor children (in the case of women) and attending an educational institution. On that basis and by ranking the individuals according to those probabilities, it was possible to simulate, for each

year $t + k$,²⁴ which individuals in the sample would have become active or inactive (depending on the aggregate change in the male/female participation rate between t and $t + k$), unemployed or employed (according to changes in unemployment rates).

The second step was to estimate labour income functions for males and females and for each year, depending on age (as a proxy variable for experience), age squared and five dummy variables corresponding to different levels of formal education.²⁵ On that basis, it was possible to impute a wage to individuals who became employed.

By comparing the original distribution for year t with the simulated distribution for the counterfactual population generated using the participation rate for $t + k$, the effect of the change in that variable on family income distribution can be quantified. Similarly, comparing the latter distribution with the simulated distribution for the counterfactual population generated using the participation and unemployment rates for $t + k$ reveals the additional effect of the change in unemployment.²⁶

To quantify the effect of change in the educational structure of the population, the counterfactual population generated using the participation and unemployment rates for $t + k$ were ranked, within each sex and activity category, by educational attainment level in t . As the probability of having a certain educational level was not modelled, individuals were ranked within each group and level according to a previously assigned random number. This ranking made it possible to select which individuals entered and left each educational level, in accordance with the aggregate change in the educational structure between t and $t + k$. For individuals who changed educational category, wage level was corrected according to the ratio, in year t , between mean incomes for the new category and mean incomes for the original category.

²³ See in Altimir and Beccaria (2000a) an exercise in decomposing changes in the Theil index of the hourly wage distribution of individuals employed full-time for Greater Buenos Aires (1974/1997) and for a larger group of urban agglomerations (1991/1997), by five alternative partitions (characteristics) of that population. Also, Altimir and Beccaria (1998) decompose changes in the aggregate incidence of absolute poverty in Greater Buenos Aires (1974/1997), identifying the variations in this measure attributable to changes in the composition of households or heads of households, by different attributes.

²⁴ This exercise was performed for 1980 (for comparison to 1974), 1986, 1990, 1994 and 2000, which were selected for the analytical reasons indicated above.

²⁵ Primary schooling completed, secondary schooling not completed, secondary schooling completed, university schooling not completed and university schooling completed. The labour income function included the sample selection bias correction term for equation [8] in the appendix, which captures the probability of being employed, given the worker's socio-economic characteristics.

²⁶ Naturally, when the distribution generated with both rates changed is compared with the distribution registered in t , a measure of the combined effect of both changes on income distribution is obtained.

This last counterfactual population were assigned the wages that they would have had in $t + k$ in order to show the additional effect of the wage change on income distribution. This was done using the estimated monthly labour income functions, for every year and sex, and assigning the estimated coefficients for year $t + k$ rather than those for t .

The comparison between the counterfactual population with the wages estimated for $t + k$ and the same population with the wages for t shows the effect of the change in wage structure.²⁷

2. Determinants of changes in inequality

The sequential microsimulation exercise was designed to compare the value of an indicator of the concentration of the household income distribution—in this case, the Gini coefficient of per capita income distribution—at the start of the period with the values corresponding to the distributions that would have resulted from different counterfactual working-age populations—of both males and females, simulated separately—generated by replacing, in a cumulative sequence, activity rate, unemployment, educational structure and wages at the end of the period, but keeping constant the other characteristics of the population at the beginning of the period. The microsimulations performed have a margin of error attributable to the fact that wages for those who are not employed and those who changed educational level were obtained by generating a random disturbance. The simulations were therefore repeated 1 000 times, in a Monte Carlo exercise, in order to establish confidence intervals for the estimation of the measures of inequality and poverty.

This exercise made it possible to assess the effect of various changes in the labour market situation on the distribution of family income in Greater Buenos Aires for different subperiods in the last quarter of the twentieth century.²⁸

Table 4 summarizes these changes in terms of the indicator of inequality of counterfactual distributions

of household income.²⁹ The value shown in the row labelled “Change in participation” is the Gini coefficient of the distribution that would have existed if the activity rate had been what it was in the final year, rather than the initial year, of the subperiod. The following rows show the Gini coefficient of the household distribution that would have existed if the participation and unemployment rates registered at the end of the subperiod had prevailed at the beginning, and so on, successively incorporating changes in educational structure and earnings.

Table 5 shows the effects of each of those changes, in the sequence in which they were simulated, in terms of point changes in the Gini coefficient from one successive counterfactual population to the next, for each of the subperiods. The difference between the Gini coefficient for the distribution that incorporates all the changes considered and the actual coefficient at the end of the subperiod is the part of the variations in effective concentration of per capita income that is not explained by this labour market model; it is therefore attributable to the effect of changes in other factors, some also labour-related—such as the sector of activity or occupational category—and others unrelated to labour—such as non-labour income or household size and composition. Judging from the values in table 5, these factors had a significant influence—similar to that of the set of factors considered in the simulation model—on the increase in inequality.³⁰

²⁷ As reflected in monthly labour income, which in turn is determined by hourly earnings and number of hours worked, in addition to what might be earned from a possible secondary occupation.

²⁸ The exercise was limited to Greater Buenos Aires in order to compare the various subperiods identified as relevant over such a lengthy period, since the microdata available for the rest of the country covered only the 1990s.

²⁹ The 95% confidence intervals for the estimation of each coefficient are included. These intervals, calculated by means of a Monte Carlo procedure that involved 1 000 simulations for each one, make it possible to determine whether the effect of each variable (represented by the difference between the mean Gini coefficient estimated by changing the values of the variable at the end of the period and the coefficient estimated with the values at the beginning of the period) on inequality is statistically significant. This is established by testing the hypothesis that the difference between the two Gini coefficients is null or, in other words, that the Gini coefficient estimated without modifying the variable falls within the confidence interval for the estimation of the Gini coefficient with the variable modified, in which case the difference (the effect of that variable) is not statistically significant.

³⁰ However, the other labour-related factors appear to have been of secondary importance. In a similar microsimulation exercise for the period 1991–1998, Frenkel and González Rozada (2000) also considered the effect of changes in the structure of employment by sector of activity. Those changes, which were simulated by those authors after considering changes in participation and unemployment rates but before looking at modifications in the educational structure, appear to have had a relatively minor effect in terms of lessening inequality.

TABLE 4

Argentina: Estimates of inequality of per capita household income in successive counterfactual populations, various periods^{a, b}
(Gini coefficients)

Period	1974-1980	1980-1986	1986-1990	1990-1994	1994-2000
Coefficient observed at start of period	0.367	0.394	0.419	0.459	0.482
Change in participation	0.360 (0.359, 0.360)	0.400 (0.399, 0.403)	0.411 (0.409, 0.413)	0.455 (0.453, 0.458)	0.468 (0.465, 0.471)
Change in participation and unemployment	<i>0.360</i> (0.359, 0.361)	0.438 (0.437, 0.440)	0.416 (0.412, 0.418)	0.469 (0.467, 0.473)	<i>0.469</i> (0.466, 0.472)
Change in participation, unemployment and educational structure	<i>0.360</i> (0.359, 0.362)	0.403 (0.401, 0.407)	<i>0.415</i> (0.413, 0.418)	0.457 (0.452, 0.463)	0.463 (0.459, 0.467)
Change in participation, unemployment educational structure and earnings	0.378 (0.377, 0.378)	0.395 (0.394, 0.396)	0.434 (0.432, 0.435)	0.470 (0.465, 0.474)	0.493 (0.490, 0.496)
Coefficient observed at end of period	0.394	0.419	0.459	0.482	0.510

Source: Developed by the authors on the basis of data from the EPH.

^a The figures in italics are estimates whose difference from the preceding estimate in the sequence is not statistically significant at 95% confidence level.

^b The figures between parentheses are 95% confidence intervals for the Gini coefficient estimates for the simulated distributions.

TABLE 5

Argentina: Sequential effects of changes in employment and earnings structure in each period
(Point change in Gini coefficient)

Period	1974-1980	1980-1986	1986-1990	1990-1994	1994-2000
Gini coefficient at start of period	0.367	0.394	0.419	0.459	0.482
Effect of participation	-0.007	0.006	-0.008	-0.004	-0.014
Effect of unemployment	... ^a	0.038	0.005	0.014	...
Effect of educational structure	...	-0.035	...	-0.012	-0.006
Effect of earnings	0.018	-0.008	0.019	0.013	0.030
Unexplained change	0.016	0.024	0.025	0.012	0.017
Gini coefficient at end of period	0.394	0.419	0.459	0.482	0.510
Change in inequality	0.027	0.025	0.040	0.023	0.028

Source: Developed by the authors on the basis of data from the EPH.

^a (...) indicates that the change was not significant at 95% confidence level.

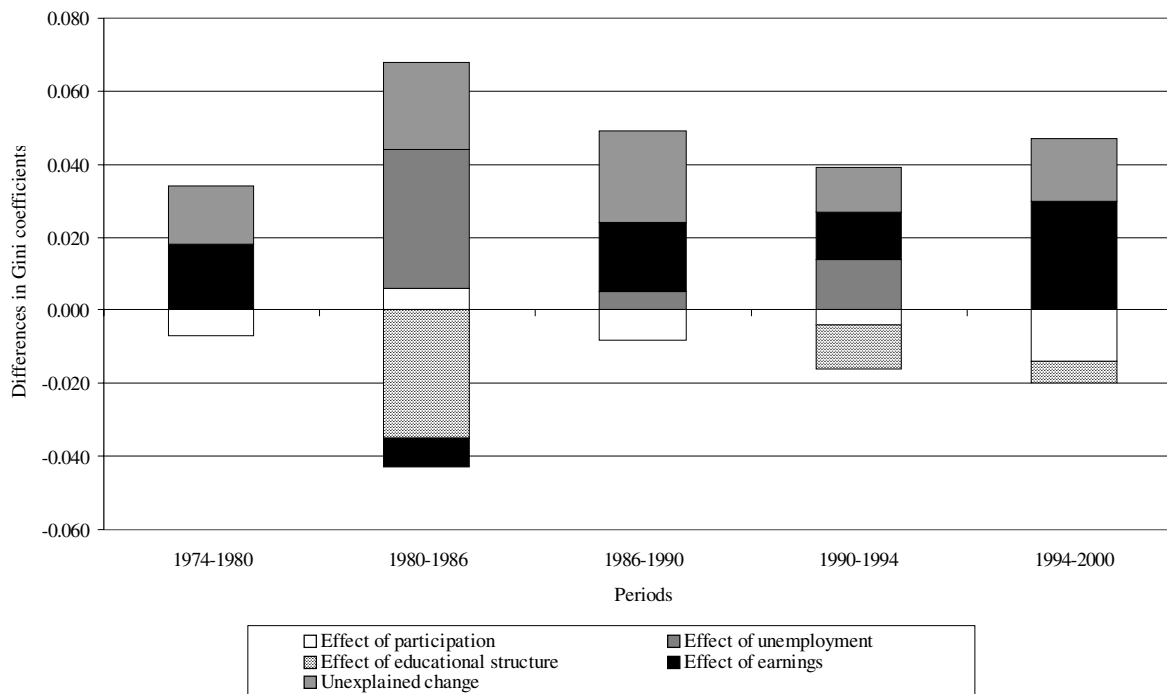
The change in participation rates almost always had a favourable effect in terms of reducing inequality, although it was of secondary importance. The increase in unemployment, on the other hand, had a pernicious effect, especially in the subperiods 1980-1986 and 1990-1994. The change in educational structure had a consistent equalizing effect, although of variable

importance. The change in earnings contributed substantially in almost all subperiods to an increase in inequality (figure 5).

For the 1970s, as from 1974, more than half of that increase can be attributed to the change in relative earnings (table 5), whose effect was only partially offset by that of the change in activity rates, which went down

FIGURE 5

Argentina: Sequential effects, by period, of changes in employment and earnings structure on household income distribution
(Point changes in Gini coefficients)



Source: Developed by the authors on the basis of data from the EPH (Greater Buenos Aires).

significantly among households in the upper deciles of the distribution. An increase in inequality of similar magnitude between 1980 and 1986, on the other hand, is not well explained by the labour market changes considered in the model. The effect of the notable increase in unemployment in the first deciles of the income distribution during this period (table 3) was offset by the equalizing impact of the changes in the educational structure.³¹ Similarly, the slight unequalizing influence of the changes in participation rates was offset by a counter-trend in earnings. Between 1986 and 1990, inequality in per capita family income distribution increased almost as much as in the two preceding periods. Around half of that increase is

³¹ During this period, the proportion of the unemployed population with no schooling or incomplete primary schooling decreased from 16% to 11.6%, while the proportion of the employed population that had completed secondary school or had received some (but had not completed) post-secondary schooling increased from 22% to 26.4%.

explained by the greater dispersion of relative earnings by education level, whereas the equalizing effect of the changes in activity rates was almost totally neutralized by the negative influence of increased unemployment.

Between 1990 and 1994, the inequality of family incomes again worsened significantly. Only half of this deterioration was due to labour market changes resulting from: (i) the spectacular increase in unemployment in the lowest income strata (table 3), (ii) the amplification of earnings differences by education level and (iii) the continual change in the educational structure of workers, which exercised a countervailing influence. The increase in activity rates, which reached unprecedented levels in 1994, was quite generalized and therefore had little effect on income inequality.

The subsequent rise in inequality between 1994 and 2000, also, is only partly explained by labour market changes, namely: (i) a substantial widening—larger than in any previous subperiod—of the income gap between workers with different educational levels,

TABLE 6

Argentina: Evolution of employment by education level
(1991 = 100)

	1974	1980	1986	1991	1994	1997	2000
<i>Total for all urban agglomerations</i>	...	...	...	100.0	101.3	108.6	114.1
Primary level not completed	...	...	...	100.0	81.9	82.6	66.1
Primary level completed	...	...	...	100.0	98.0	96.2	94.0
Secondary level not completed	...	...	...	100.0	102.4	111.6	113.2
Secondary level completed	...	...	...	100.0	105.3	110.1	127.3
Higher/university level not completed	...	...	...	100.0	106.0	135.7	153.2
Higher/university level completed	...	...	...	100.0	117.9	136.5	162.0
<i>Greater Buenos Aires</i>	82.5	87.6	93.5	100.0	100.3	107.1	110.3
Primary level not completed	193.0	146.5	126.6	100.0	76.0	80.6	65.3
Primary level completed	89.7	98.3	94.6	100.0	97.6	92.5	88.0
Secondary level not completed	70.5	80.3	94.7	100.0	99.8	108.6	112.3
Secondary level completed	52.4	66.6	80.1	100.0	107.1	108.3	122.9
Higher/university level not completed	57.7	71.9	84.3	100.0	106.9	142.4	145.7
Higher/university level completed	37.8	56.3	83.1	100.0	117.6	141.8	166.8
<i>Interior cities</i>	...	...	...	100.0	102.8	110.9	119.5
Primary level not completed	...	...	...	100.0	89.4	85.0	67.2
Primary level completed	...	...	...	100.0	98.6	102.7	104.1
Secondary level not completed	...	...	...	100.0	106.1	116.0	114.5
Secondary level completed	...	...	...	100.0	102.5	112.9	134.1
Higher/university level not completed	...	...	...	100.0	104.9	127.1	162.0
Higher/university level completed	...	...	...	100.0	118.3	129.9	156.1

Source: Developed by the authors on the basis of data from the EPH.

a trend that was offset only partially by (ii) the effect of another increase in activity rates, which was comparatively more intense among low-income households, and (iii) the acknowledged equalizing effect of changes in the educational structure of the working population, among whom the proportion with secondary and higher education continued to grow (table 6).

3. Unit earnings and hours worked

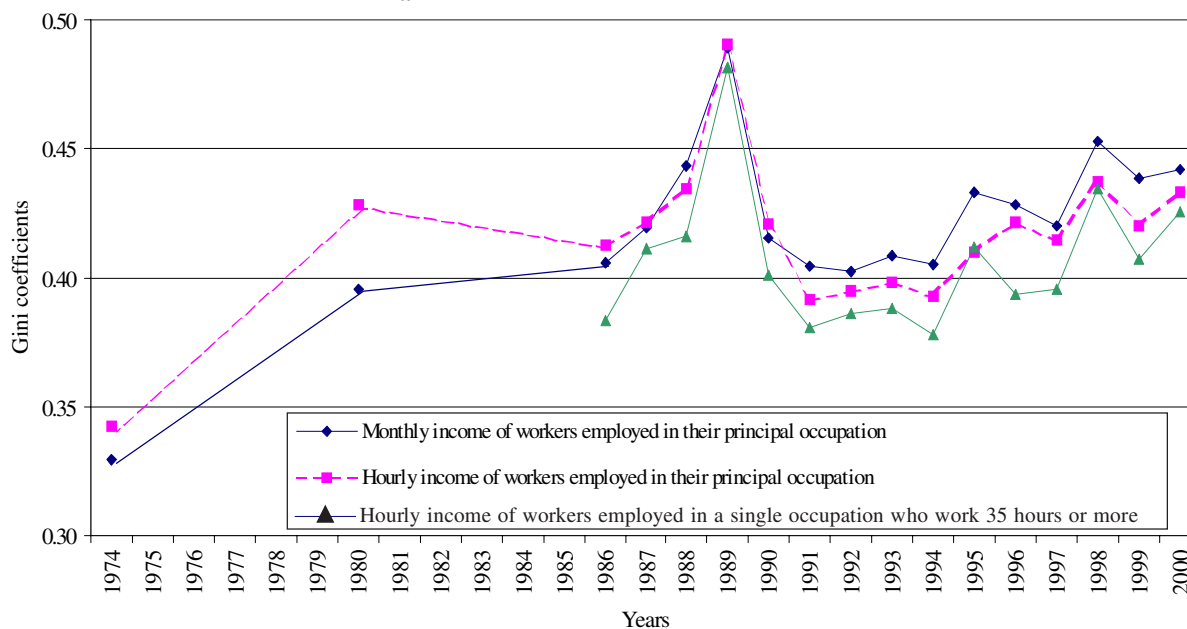
The income used in the simulations described above is the monthly labour income of employed individuals. Its effects on the distribution of family income reflect a combination of the effect of changes in the inequality of unit earnings and the effect of changes in the differences in hours worked. Those changes have exercised a significant effect only in some periods, sometimes lessening and sometimes worsening the inequality of unit wages. Between 1974 and 1980, the considerable increase in the inequality of hourly earnings was mitigated by improvement in the

distribution of hours worked. The opposite occurred between 1980 and 1986, when the decrease in the inequality of hourly earnings changed into a moderate increase in the inequality of monthly incomes (figure 6). However, between 1990 and 1991, the significant reduction in the inequality of hourly earnings resulted in only a slight reduction of the inequality in monthly incomes, owing to an increase in the disparity in hours worked by members of different income strata. During the period 1996-2000, on the other hand, the changes in this differential intensity of work attenuated the increase in inequality of hourly incomes. Hence, changes in the differences in hourly incomes have, in essence, determined the trend in distribution of personal income among employed workers (figure 6).

However, the distribution of hourly incomes encompasses occupations of all types and of differing duration and therefore includes situations of both voluntary and involuntary underemployment which, as noted above, increased during the 1990s. For that reason, we also analysed the evolution of hourly income distribution among employed individuals with a single

FIGURE 6

Argentina: Distribution of monthly and hourly income among employed workers in Greater Buenos Aires, 1974-2000
(Gini coefficients)



Source: Developed by the authors on the basis of data from the EPH.

occupation who worked at least 35 hours a week, as that is the survey concept that most closely approximates unit earnings for full-time jobs. Although it shows a greater natural variability, the trend exhibited by the concentration of that distribution, between the years selected as those of greatest relative macroeconomic normality (figure 6), is even clearer than that exhibited by the concentration of the distribution of all hourly earnings: Gini coefficient of 0.38 in 1986, 1991 and 1994, which rose to almost 0.40 in 1997, although it later jumped to 0.44 in the first phase of the current recession.

4. Determinants of changes in relative earnings

Underlying this evolution of the inequality of hourly earnings there may be changes –sometimes counteracting changes– in the earning differentials associated with differing characteristics of employed individuals that might reveal the influence exerted, from period to period, by variables of labour supply and demand. To find evidence to support this idea, Mincer-type income functions were estimated, in which the logarithm of hourly earnings for full-time principal occupations (for the sample for each year selected) is

related to the characteristics of employed persons with a single occupation: education level, sector of activity,³² occupational category, age, sex and head-of-household status (table 7). The coefficients estimated for each category of a characteristic –controlling for the others– represent the “earning differential” or “reward” for that category with respect to the category taken as a reference.

The evolution of earning differentials by educational level provides more information on the trends at work in each period behind the unequalizing effect of the changes in the structure of remuneration of human capital on household income distribution. This effect was quantified in the simulation exercise and is shown in figure 5. The rewards to the highest educational levels (completed secondary schooling, tertiary education) increased throughout the last quarter of the twentieth century. Almost all those increases occurred between 1974 and 1980. By the end of the crisis decade of the 1980s, despite a sharp decline (39% on average) in real hourly earnings, the differences between levels were similar to those that had existed in

³² Disaggregated into five sectors in accordance with the size of the sample.

TABLE 7

Greater Buenos Aires: Income functions, selected years^{a,b}
(Dependent variable, logarithm of hourly wage in principal occupation)

	1974	1980	1986	1990	1994	1997	2000
<i>Education</i>							
Primary level completed	-0.1318178	-0.1860587	-0.1654524	-0.1574174	-0.1368625	-0.2008298	-0.1820582
Secondary level not completed	0.1674785	0.1476424	0.2028399	0.1513331	0.2252899	0.1848086	0.1665152
Secondary level completed	0.3589101	0.5126224	0.4044073	0.4949932	0.4127261	0.4530148	0.4450138
Tertiary level not completed	0.4276585	0.657878	0.646664	0.7833223	0.669927	0.6419327	0.6814434
Tertiary level completed	0.8239498	1.042674	0.9171951	0.9802195	0.9826189	1.08574	1.149472
<i>Individual characteristics</i>							
Sex	0.3736265	0.343417	0.2720114	0.201527	0.1710177	0.1896878	0.2040489
Age	0.0418729	0.0469294	0.0552483	0.0494946	0.0478113	0.0450942	0.0438228
Age ²	-0.0004466	-0.0004912	-0.0005819	-0.0004927	-0.0004959	-0.0004092	-0.0003891
<i>Sectors of activity</i>							
Construction	-0.0493249 ^c	-0.029007 ^c	-0.1515462	-0.1601648 ^d	0.0064477 ^c	0.0028718 ^c	-0.012539 ^c
Commerce	-0.1575408	-0.0511649 ^c	-0.1715423	-0.1603177	-0.1629117	-0.259589	-0.2428781
Transport and finance	-0.022376 ^c	0.0679954 ^c	0.047942 ^c	0.0532897 ^c	-0.0119688 ^c	-0.0496745 ^c	-0.1161936
Public administration	0.1287654 ^d	0.0014316 ^c	-0.0855258 ^c	-0.2636433	0.0670934 ^c	-0.0076822 ^c	0.070859 ^c
Other services	-0.1911927	-0.0769389 ^d	-0.126884	-0.1847071	-0.0366766 ^c	-0.121029	-0.0938155
<i>Occupational category</i>							
Unregistered wage-earners ^f	-0.2526092	-0.1478836	-0.1049085	-0.2737152	-0.1390019	-0.2548484	-0.2722385
Non-wage-earners	-0.0689237	0.1508761	0.1042153	-0.0804171 ^d	0.0252879 ^c	-0.0822184	-0.1526577
Constant	1.172632	7.18064	-1.225262	6.94072	-0.2307537	-0.2137342	-0.2440764
Adjusted R ²	0.3555	0.3345	0.3508	0.2956	0.3038	0.3956	0.4057
Number of observations	3423	2836	3271	1914	2534	2642	2597

Source: Developed by the authors on the basis of data from the EPH.

^a Excluded categories: Education: primary school completed; Position in household: not head of household; Sex: females; Sector: industry; Occupational category: registered^f wage-earners.

^b Regression coefficients significant at 1%, unless otherwise indicated.

^c Not significant at 10%.

^d Significant at 5%.

^e Significant at 10%.

^f I.e., not registered with the social security system.

1980.³³ In 1994, at the culmination of the period of recovery and growth, the rewards for intermediate levels of qualification (completed secondary and incomplete tertiary education) had diminished. By around 1997, the returns to completed tertiary education had exceeded those reached in 1980, while those corresponding to other education levels remained close to the 1980 levels. This differentiation became even more pronounced during the later recession, when the returns to completed primary education and incomplete secondary education decreased, but those for completed tertiary education continued to grow (table 7).

³³ The only noteworthy change is the increase in the rewards to incomplete tertiary education and the reduction in rewards to completed tertiary education (table 7).

In the urban agglomerations of the interior, the returns to higher education are of lesser magnitude than in Greater Buenos Aires. Throughout the 1990s, this has meant smaller relative differences in wages, which helps to explain the lower levels of inequality in income distribution among employed workers in those cities (figure 1).

The relative importance of the change not explained by the factors considered in the simulation exercise has already been noted (figure 5). Part of that effect may be due to changes in the relative earnings for the various occupational categories. The equations from table 7 show, between 1974 and 1980, a significant widening of the gap between the incomes of non-wage-earners (mainly self-employed workers) and those of wage-earners registered in the social security system.

The gap narrowed in the 1980s and finally, during the 1990s, turned to a larger negative differential than had existed in 1974. As for wage-earners not registered with the social security system, their (negative) income differential improved in the 1980s and then again in 1994, and by 1997 had returned to its 1974 level.

The changes in differential incomes for the various sectors of activity, also, were not explained by the simulation exercise. However, their impact in the evolution of inequality appears to have been more diffuse. Among the significant changes, the following are worth noting: the deepening of the wage differential

for public administration (*vis-à-vis* industry) between 1974 and 1986, which then lessened somewhat in the 1990s; the deterioration, beginning in 1997, of the differential for commerce; and the improvement of the differential for other services, both in 1980 and again in 1994 (table 7).

With regard to the gender earnings differential, the income advantage of males declined, particularly in the 1980s, and then the trend levelled off in the 1990s. In contrast, the age advantage –among employed individuals– remained stable throughout the period studied.

V

Influence of other resources on household income distribution

The trend of household income distribution has been determined mainly by the evolution of the inequality of labour incomes and opportunities for obtaining them by offering time and human capital on the labour market. However, household members possess other assets –fixed and financial– that generate income, as well as entitlements to cash transfers from social welfare systems (pensions, etc.).³⁴ Changes in the distribution of this non-labour income can influence, in the short term, the evolution of the concentration of household income and can even modify the trend of labour income.

These effects can be appreciated indirectly by examining the evolution of the inequality of the various types of income (see table 8) between the top and bottom quintiles of the household income distribution. With regard to retirement pensions, although between 1980 and 1986 the disparities between strata lessened, both in the proportion of pensioners and the mean value of pensions, they grew larger thereafter. In general, pensions have a regressive influence on the aggregate distribution; consequently, the growing disparity

between strata had some impact –though moderate in comparison with that of the labour variables– on the increase in inequality among households in the 1990s.³⁵

The evolution of property income also contributed to a widening of the disparity in household income in the 1990s. According to data from the EPH,³⁶ between 1994 and 1997 the mean value of this type of income increased considerably for the upper strata of the

³⁴ The EPH does not provide sufficient information to obtain estimates of the value of the transfers received in the form of free or highly subsidized public services (education, health, food, etc.), nor does it include questions on gross income prior to deductions or payment of contributions. For these two reasons, the household income distribution analysed here relates mainly to the total “take-home pay” of household members.

³⁵ In a previous work (Altimir and Beccaria, 2000a), the authors used a model of per capita income formation to decompose different measures of inequality (ratio between mean values for the top and bottom income quintiles and Gini coefficient), in terms of labour and non-labour variables –like those in table 8– and performed alternative simulations, for each year, of what the inequality of the aggregate distribution would have been if the inequality of each variable considered in the model had not existed, thus assessing the effect of the variable on overall inequality. The analysis of the effect of non-labour income in this section is based on the results of that study.

³⁶ The EPH is presumed to underestimate cash property income, owing both to the difficulty of including the few recipients of this type of income in the sample and to underreporting and other response biases that affect the capture of data on non-labour income. Moreover, a significant portion of profits and other property income generated in the productive process are retained, institutionally and from an accounting standpoint, by businesses. This income is thus incorporated directly into the business owners’ equity and is never reflected in the flow of income that they receive as members of households. For those two reasons, analysis of the effect of property income on aggregated income distribution based on data from the EPH is limited and biased.

TABLE 8

Argentina: Inequality of certain characteristics between the top and bottom quintiles of the per capita household income distribution
(Mean value for the fifth quintile/mean value for the first quintile)

	1974	1980	1986	1990	1994	1997	2000
Per capita household income	6.77	8.04	8.91	11.71	12.6	15.04	17.09
Proportion of pensioners	1.34	1.24	1.09	1.14	1.50	2.05	3.08
Mean value of pensions	2.12	2.80	2.15	2.52	3.87	4.54	3.83
Proportion of recipients of other income	1.82	2.78	2.66	1.83	1.30	1.11	0.78
Mean value of other income per recipient	5.18	4.59	5.13	3.60	4.76	7.53	8.4
Proportion of individuals over age 15	1.5	1.46	1.45	1.54	1.48	1.49	1.46
Activity rate among over-15 individuals	1.74	1.52	1.60	1.72	1.43	1.29	1.28
Proportion of active population employed	1.03	1.05	1.14	1.22	1.45	1.57	1.58
Employment rate	1.80	1.60	1.82	2.09	2.07	1.57	2.02

Source: Developed by the authors on the basis of data from the EPH.

distribution, in comparison with the lower strata (table 8). However, this situation, which was associated to a large extent with the growth in time deposits, may be somewhat deceptive in a context of price stability if the survey included property income that had not previously been captured or which had been expressed in terms of capital gains resulting from an increase in the value of assets.³⁷

Another significant contributor to inequality—in orders of magnitude comparable to the differences in activity rates—is the differences in the demographic structure of households in different strata, which

generally work in favour of the wealthy (Altimir and Beccaria, 2000a). However, the variations in this inequality, which have remained relatively stable around an almost stationary trend, have had little influence on the evolution of inequality among households. Perhaps the most noteworthy effects have been those exercised by the narrowing of the disparities between 1974 and 1980, which helped mitigate the growth in the inequality of per capita household income distribution, and the temporary increase in the differences in demographic dependency in 1988/1991, which had the opposite effect (table 8).

VI

Deterioration of the distribution of family income

Unquestionably, as can be seen in figure 1, the evolution of household income distribution has been strongly influenced by the distribution of labour income. However, on two occasions, the trend of inequality among households diverged from that of inequality among individual income-earners: in the first case, this divergence later reversed; in the second, it became more pronounced, which meant that the trend of inequality rose more sharply among households than among individuals. Between 1974 and 1980, the considerable

increase in the disparities between earnings and between income-earners had hardly any impact on household income distribution, owing to the equalizing of participation rates among strata. The divergence narrowed between 1980 and 1986, partly as a result of growing disparities in participation rates, but mainly due to the rise in unemployment, which affected the lower strata almost exclusively (table 3). In 1989, at the height of the hyperinflationary period, household inequality jumped 0.037 Gini coefficient points above inequality among individual earners (whereas the previous year the two figures had been about the same).

³⁷ Such as dollar holdings, for example.

This difference held steady until 1994, when it expanded again.

In 1989, unemployment increased, but once again the increase was concentrated in the lower income strata, in which the rate rose to over 20%, climbing more than six percentage points. The incipient economic revival of 1990, which marginally lowered aggregate unemployment, did not significantly reduce the high rates of unemployment in the lower strata, and at the same time the disparity in activity rates between strata grew (table 3).³⁸ Around 1994, households in the lower half of the income distribution exhibited very high unemployment rates, which exacerbated the inequality of the distribution, distancing it even further from that of individual wage-earners and sharpening its upward trend. As was observed in the microsimulation exercise, during the period 1990-1994, the unequalizing impact of unemployment was counterbalanced only to a small extent by the equalizing effect of participation, which increased significantly in all income strata, with little differential effect. In fact, the behaviour of labour supply in this period, in the face of existing demand, points to an association between the increase in the participation rate³⁹ (from 38.2% to 42.6% in the aggregate) and the unemployment rate (from 6.6% to 13.4% of the active population): the increment in the latter amounted to more than half the enlargement of the active population, but in households earning less than the median income the ratio was even greater. This suggests that, in most cases, the attempt to move from inactivity to employment was unsuccessful and, based on the results of the microsimulation (figure 5), probably contributed significantly to the increase in inequality among households as we measured it.⁴⁰ Between 1994 and 1997

the activity rate continued to rise (reaching 44.2% of the population), as did unemployment,⁴¹ which affected 14.7% of the now expanded labour force. Once again, the increase in unemployment amounted to more than half the growth in the active population, but this phenomenon occurred unevenly across the income pyramid, and it therefore had little distributive effect (table 3). In 2000, in the midst of the recession, aggregate rates of participation and unemployment did not differ greatly from those registered in 1997. However, during this period some changes did occur in participation rates among the rich and the poor, the net result being the equalizing effect detected in the microsimulation exercise.

These events led to a steady rise –between the years with the least cyclical component– in the inequality of household income, while, at the same time, income inequality among employed individuals remained relatively unchanged between 1986, 1990/1991 and 1992/1994. The unequalizing effect of the increase in unemployment at the end of the 1980s never reversed and is, therefore, at the root of the deterioration of the distribution of family income.⁴² The situation was compounded by the effect of a new wave of unemployment, whose structural nature became clearly apparent in 1994, when the economy reached a high utilization of its recently expanded productive capacity. Between 1994 and 1997, however, the increase in the inequality of household incomes was more closely linked to the exacerbation of inequality within the productive apparatus (figure 1), an influence that continued to make itself felt in the later increase during the recessionary phase, up until the year 2000.

In comparison with labour income (earnings, participation and unemployment), the evolution of non-labour incomes has only marginally affected the increase in inequality of household income. As has already been noted, the evolution of both pensions and property income contributed in the 1990s to an increase in inequality, but only to a small extent in relation to the overall increase⁴³ (table 8).

³⁸ This evolution is not apparent in the decomposition undertaken through the simulation exercise, in which the negative effect (i.e., reduction of inequality) of the change in participation rates between 1986 and 1990 (table 5) reflects the effect of the favourable changes that occurred between 1986 and 1988, the virtual neutrality of those that occurred in 1989 and the unequalizing effect of those in 1990. The positive effect (i.e., increase in inequality) of the changes in unemployment during that same period occurred between 1986 and 1988 and, especially, in 1989.

³⁹ This increase was more marked among women and young people (Altimir and Beccaria, 2000b).

⁴⁰ From another perspective, the fact that formerly inactive, non-income-earning members of a household become active but remain unemployed and still do not earn an income causes no change in the actual flow of income to the household. Nevertheless, the household's well-being can be considered to have changed, since the household member's desire to work (for whatever reason) and to exercise his/her freedom to choose how to apply the assets he/she possesses is thwarted by the lack of opportunities to do so.

⁴¹ Even without considering the significant rise in unemployment posted during the recession of 1995/1996 (figure 3).

⁴² There may also be other factors not considered in the microsimulation exercise –which would therefore be operating inside the “black box” comprising the unexplained portion of the change in inequality– which may have acted with a certain hysteresis or may have undergone permanent changes that have fostered inequality among households but not among individual income earners.

⁴³ If only the property income captured by the EPH is considered. Such income constitutes a minor proportion of total household income which could be estimated if information were available on

VII

The role of economic policy and reforms

Economic policies have a decisive impact on income distribution. The success or failure of macroeconomic regulation influences the level of activity and employment. The macroeconomic regime, sectoral regimes and regulation of markets give rise to the system of incentives that drive investment, which, in turn, influences the demand for labour and wages. Fiscal policy, too, has numerous distributive repercussions. However, it would be a mistake to attribute all responsibility for the evolution of income distribution to economic policy. In mixed economies, income distribution is also shaped by the autonomous decisions of businesses and by the behaviour of households, given the distribution of wealth, in an environment created by the incentives arising from markets –both internal and external–, institutions that regulate the economic order, the macroeconomic regime and provisions that regulate markets, in a scenario in which the State is also a major economic actor.

This discussion of the “environmental” role of economic policy is intended to strip it of the image of omnipotence with which it is often analysed, both in terms of its origins and its consequences, with the corollary that economic policy is seen as accounting for everything that happens in the economy. It is also intended to point up the strong influence of patterns of structural change –including those that shape the political system and the government apparatus– which act largely outside the economic policy sphere. All that said, it cannot be denied that public policy does have tremendous power to influence and foster the achievement of results –or to generate shocks– especially in fledgling economies with incipient institutions and many incomplete markets.

Given the difficulties of effectively modelling the complex relationships between economic policy and the distribution of wealth and income, we attempted to assess the influence of the former on the latter by looking at the temporal association of major changes in economic policy (institutional reforms, macroeconomic regime and labour regulation) and the ensuing changes in the system of incentives with the apparent behaviour of the demand for labour revealed by the changes in the labour market which, according to our microsimulation analysis, have had the greatest distributive impact.

1. The reform attempt of the 1970s

The three year period between 1973 and 1975 was dominated by the ultimately unsuccessful attempt of the Perón government to stabilize the economy on the basis of a social pact that froze prices and wages after a generalized wage increase. The stabilization policy resulted in the aforementioned rise in real income across the distribution, but it did not significantly alter the relative distribution of income that had prevailed up to the beginning of the decade. In 1975, the economy entered a recession, and by early 1976 the spectre of hyperinflation loomed (Gerchunoff and Llach, 1998).

Between 1976 and 1980 a series of policies were instituted –most of them of an orthodox nature– with a view to reining in the inflation and, at the same time, liberalizing the economy. The stabilization policy –whose main elements were a wage freeze and a programmed devaluation of the exchange rate, in a framework of repression of labour unions that also served the political interests of the military regime– triggered a collapse of real wages. The labour policy, meanwhile, included limitations on unemployment, imposed by the military authorities on the economic authorities and by the latter –informally– on businesses (Canitrot, 1981), aimed at minimizing social unrest in the environment of repression. As a result, unemployment in 1980 was scarcely 2%.

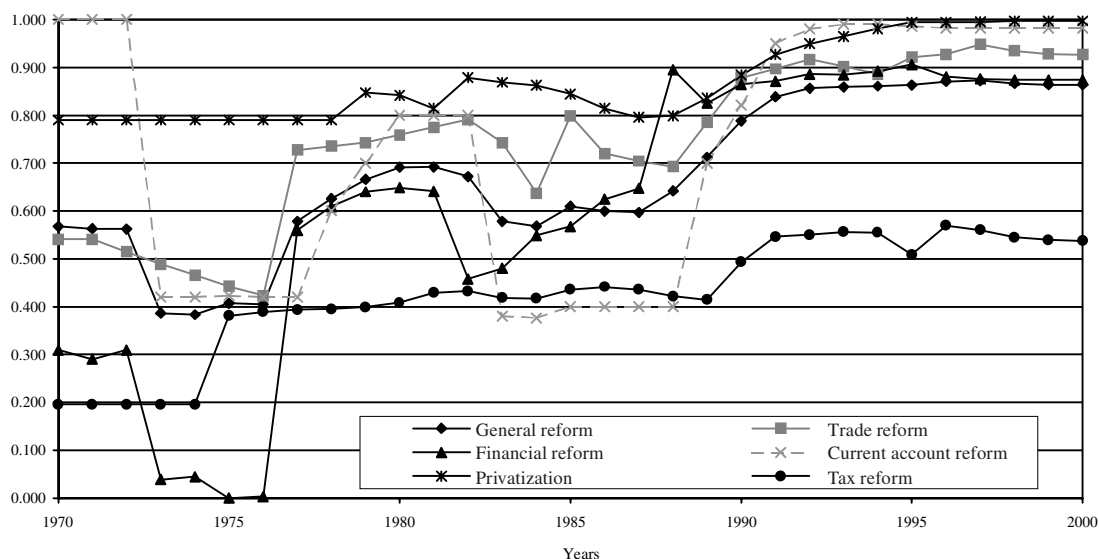
The reforms of the 1970s included a substantial liberalization of trade⁴⁴ and of the capital account of the balance of payments, coupled with deregulation of the internal financial market (figure 7). These reforms were considered essential components of the stabilization program, which was founded on the monetary approach to the balance of payments. One of their consequences was a substantial appreciation of the exchange rate which, combined with the reduction

cash income earned nationally but not declared or captured by the EPH, retained earnings from local businesses and income received as returns on household assets placed abroad.

⁴⁴ Although relatively moderate (in view of the redundancy of existing tariffs) and gradual: the liberalization process provided for tariff reductions of around 50%, with differential treatment for basic industries, to be completed by 1984 (Canitrot, 1993).

FIGURE 7

Argentina: Evolution of structural reforms
(Standardized indices between 0 and 1)



Source: ECLAC, Economic Development Division.

of tariffs, greatly reduced protection for domestic activity. Another consequence was an expansion of economic activity through external borrowing (Canitrot, 1993), together with hypertrophy of financial activity. The reduction of tariffs for capital goods by almost half, coupled with a 20% rise in the value of the currency, lowered the value of investment, although the high real levels of active interest rates (25% on average) exerted an opposing effect. In addition, businesses benefited from modification of labour union relations that worked to their advantage and from the suppression of employer contributions to the pension system—at least until they were affected by the acceleration of inflation and the contraction of the market owing to competition from imported substitutes.

The investment made under these conditions entailed a process of productive transformation. In industry—where the volume of production shrank 20%, reducing the sector's share of output by almost four points—the metalworking and electric industries lost ground to industrial commodities manufactured from natural resources and to traditional regional industries, aided in both cases by tax exemptions. In general, vertical integration tended to increase as a means of retaining qualified personnel and thus avoiding retraining costs⁴⁵ (Katz and Kosacoff, 1989).

⁴⁵ This attitude revealed the belief that the future would bring a revival, not a transformation.

In these circumstances, it is not surprising that wage inequality grew, as did the rewards to education. Businesses applied a strategy of sheltering their most highly qualified staff from inflation, in order to retain and motivate them, while the least-skilled personnel—who now lacked union protection—fell behind, though not so far as to become unemployed. Moreover, during this period, there was a significant increase in the number of self-employed workers, who, possessing relative freedom to set prices in a context of high inflation and lack of wage security, were better able to protect their real incomes⁴⁶ (table 9).

2. The decade of crisis

Argentina's economic policy underwent a number of ups and downs during this decade, responding, but also contributing, to the macroeconomic volatility. The monetary approach to the balance of payments was abandoned in 1981. In 1982, the contraction of external financing, the fall in the export prices and high international interest rates combined to create a critical situation that led to closing of the country's markets to imports and a de facto moratorium on foreign debt

⁴⁶ Although the most informal segment of these contingents may have changed categories as an alternative to unemployment, this appears to have occurred in only a minority of cases, owing to the labour market situation.

TABLE 9

Greater Buenos Aires: Evolution of real mean income from principal occupation, by education level

(Employed workers with a single occupation who work 35 hours or more a week.
Percentage change between beginning and end of period)

	1974-1980	1980-1986	1986-1990	1990-1994	1994-1997	1997-2000
<i>All workers</i>						
Primary level not completed ^a	-19.4	-14.2	-31.0	25.4	-16.7	0.5
Primary level completed	-18.5	-13.0	-36.8	24.4	-12.5	-3.5
Secondary level not completed	-21.3	-7.0	-35.9	21.9	-19.0	-3.2
Secondary level completed	-9.4	-14.0	-41.3	32.4	-10.5	-1.4
University level not completed	4.5	-18.4	-30.1	29.6	-23.8	0.7
University level completed	9.5	-14.9	-30.7	10.3	-1.4	3.3
<i>Wage-earners</i>						
Primary level not completed ^a	-27.7	-9.4	-33.9	27.7	-5.5	-7.5
Primary level completed	-25.4	-8.8	-35.4	24.2	-12.9	-0.7
Secondary level not completed	-25.6	-7.4	-28.9	14.0	-20.1	-0.9
Secondary level completed	-16.8	-17.4	-36.7	22.1	-4.4	-1.9
University level not completed	4.8	-21.1	-30.3	21.9	-18.5	0.0
University level completed	2.6	-24.8	-23.3	15.6	-8.0	9.6
<i>Non-wage-earners</i>						
Primary level not completed ^a	-1.2	-19.3	-44.1	-5.2	-35.6	164.0
Primary level completed	-15.2	-4.2	-47.9	20.6	-8.1	102.4
Secondary level not completed	20.3	-9.8	-48.6	34.7	-12.5	100.9
Secondary level completed	2.7	-5.1	-25.0	52.8	-17.8	42.9
University level not completed	22.8	1.1	-39.7	42.8	-34.7	46.7
University level completed	-13.2	...	...	5.1	10.7	14.9

Source: Developed by the authors on the basis of data from the EPH.

^a Includes persons with no formal schooling.

payments. The defeat in the Malvinas war sealed the fate of the military regime. The constitutional government that came to power in 1983 tried initially to continue the expansive wage policy initiated in the waning days of military rule and negotiate a political solution to the debt crisis. By around 1984, the trends of trade liberalization, capital account liberalization and financial reform had reversed (figure 7). In 1985, the Alfonsín administration succeeded in reaching an agreement with the International Monetary Fund (IMF) and renegotiating the external debt, adopting a heterodox program of stabilization that froze prices at previously adjusted relative levels and laid out a plan for reducing the fiscal deficit, establishing the rule that currency emission would not be used as a means of financing the deficit. By around the third quarter of 1986, GDP had recovered to 1980 levels, but inflation had also begun to accelerate again. Although employment had reached a new high, unemployment

continued to grow, while real wages were shrinking (table 1).

In 1987, a succession of political problems, the subsequent drop in external prices and the upsurge in inflation necessitated the introduction of a new stabilization program, with external support made contingent on reforms (among them a tariff reduction). The anticipated electoral victory of the Peronists, with their program of populist measures and unilateral moratorium, prompted a sharp decline in the value of the currency in early 1989, which triggered hyperinflation and accentuated the recession that had begun more than a year earlier.

Although the new government's announcement of its plans for liberalization, privatization and fiscal austerity calmed the uncertainty and slowed inflation, steady currency appreciation and the use of domestic credit to finance the tax deficit led to a second bout of hyperinflation in early 1990. This was overcome with

a monetarist strategy, a truce with external creditors and a “cash” fiscal policy. The abandonment of the latter and the renewed use of domestic credit by fiscal authorities again raised the threat of hyperinflation.

In this conflictive period, the economy suffered from a lack of consistent economic policy and, at the same time, from too many short-lived policies that ended in failure, thereby generating even more instability. As a result, the system of incentives underwent radical variations, and investment weakened and became unfocused, leading to fragmentation of the earlier process of productive transformation. Argentina did not return to the path of liberalization and deregulation until 1988 (figure 7).

In the first part of the decade, the weakness in the productive sector began to manifest itself in the growth of unemployment and the increase in informal-sector employment. However, the stabilization of 1986 led to some improvement in real wages. In the new context of labour union freedom, the least-skilled wage-earners experienced the greatest relative growth in wages, which resulted in a smaller wage differential by educational level and lower relative earnings for self-employed workers. In the later context of escalating inflation, workers at all skill levels experienced a relatively even deterioration in real wages (table 9). Hence, as the decade of crisis drew to a close, the rewards to education and the dispersion of hourly earnings were not substantially different from what they had been at the beginning of the decade, thanks to a demand for labour hesitant without significant biases.

3. The reforms of the 1990s and the convertibility regime

a) *Macroeconomic policy and trends*

In early 1991, Argentina adopted a strategy of liberal reforms and quick disinflation, establishing a system of convertibility, pegging the national currency to the United States dollar, and imposing strict rules to prevent monetary financing of the fiscal deficit. Tax reforms and rapid privatization of public enterprises were announced, controls on the movement of capital were lifted and trade was liberalized considerably, thus dramatically accelerating a process that had been developing slowly since the end of the previous decade (figure 7). In addition, taxes on exports and quantitative restrictions on imports were eliminated and tariffs were reduced significantly with the aim of establishing a system of neutral incentives between exports and imports.

Inflation fell rapidly, dropping to a monthly rate of around 1% within a few months. The recovery of real wages and the increase in consumer credit spawned growth in demand. At the same time, tax collection doubled in real terms and the fiscal deficit began to abate. Macroeconomic stability and structural reforms inspired investor confidence and combined with external factors to generate a massive inflow of voluntary private capital, in the framework of the new liberal system of capital movement.

As a result of the combined effect of the sudden liberalization of trade and the fixation of the exchange rate, industrial prices behaved like those of fully tradable goods, lagging behind prices for the non-tradable goods. This evolution of relative prices, in the context of a fixed rate of exchange, led to a considerable appreciation of the currency between 1991 and 1994. In addition, interest rates fell drastically, with passive rates turning negative in real terms for several months.

Around 1994, the influx of capital slowed, whereas the current account deficit continued to grow. Some sectors of production showed early symptoms of recession. But the possibilities for a gradual contraction that had been hinted at were brutally cut off by the effects of the Mexican crisis, which sparked an abrupt contraction of credit, together with a deterioration of expectations, as a result of which internal demand plunged. The collapse of the program was avoided through the introduction of monetary measures, and by the third quarter of 1996 GDP had recovered the level of the corresponding period in 1994. The increase in aggregate demand translated into a significant expansion of imports. However, with the increase in the value of exports, the balance-of-trade equilibrium was maintained and the renewed inflow of capital easily financed the current account deficit. In 1997, growth was vigorous (8%) in an environment of absolute price stability.

The simultaneous deterioration of the current account of the balance of payments and of fiscal accounts made macroeconomic sustainability even more dependent on capital inflow. Under these conditions, the reduction of capitals flows as a consequence of the Russian crisis triggered a credit contraction that marked, in 1998, the beginning of a decline in activity level, which continued and exacerbated the dependence on increasingly elusive external capital. In 1999, the Menem administration relaxed fiscal policy in an effort to obtain political support for its continuity. Faced with a rising tax deficit and endeavouring to assure the credibility of its policies

vis-à-vis investors, the new government resorted to contractive fiscal measures in early 2000. But the erosion of confidence continued, hastened by the perception of brewing political conflict, in a process that would culminate at the end of 2001 in the collapse of the banking system and the abandonment of the convertibility regime.

b) *Influence on labour performance and income distribution*

The evolution and characteristics of labour demand during the 1990s, in the framework of incentives established under the new economic order and the convertibility regime, had distributive impacts, both through their effect on the level of full-time employment, underemployment and the resulting unemployment and through their influence on the intensity of demand for workers with various qualifications.

Beyond the cyclical behaviour,⁴⁷ the two expansive phases of the decade, which culminated, respectively, in 1994 and 1997/1998, represented two different stages in the behaviour of aggregate demand for labour. In the first, the recovery and later growth of GDP (at an annual rate of 8.7%) was based almost entirely on increases in productivity, while total employment increased slowly (at a rate of 0.8% annually) and industrial employment contracted (table 10). As was mentioned above, the considerable increase in productivity should be attributed partly to the renewal of economic activity, in the new context of stability and capital inflows, and partly to the displacement of the production frontier with technical change. This displacement, in turn, resulted from investments facilitated by the liberalization process, exchange rate appreciation and external financing, as well as reorganization of work processes with little investment –both strategies motivated by the quest for greater international competitiveness in the new context (Altimir and Beccaria, 2000b).

During the second expansive phase,⁴⁸ on the other hand, GDP growth (at an annual rate of 8%, close to that of the previous phase) was supported in similar proportions by the expansion of employment and by increases in productivity, although in industry it was

the productivity growth that continued driving the process and constraining job creation (table 10).

The aforementioned study by Damill, Frenkel and Maurizio (2002) concurs with these assessments in the sense that their econometric results suggest that the contractive period during which full-time employment adjusted to the new environment was completed in 1996. However, in the case of manufactured goods, that adjustment appears to have continued beyond 1996.

The establishment and deployment of the new economic order and macroeconomic regime had repercussions on the evolution of the demand for labour, primarily through investment. The latter reached a peak in the 1990s –supported by the flow of external capital– in response to the stabilization of the economy, the new rules, the expansion of aggregate demand and the change in relative prices which favoured capital accumulation (Ramos and Martínez, 2000). The reduction of tariffs and the appreciation of the exchange rate brought about by the new macroeconomic regime radically changed the relative prices of labour and capital: while industrial wages doubled in dollars, the value of capital goods plummeted.⁴⁹ This encouraged a process of technological updating that had been postponed owing to the weakness of investment in the 1980s, and provided an incentive for the substitution of capital for labour across the economy, which brought more intensive use of capital in production and a reduction of employment-output elasticity.⁵⁰ At the same time, the opening up of imports, together with the rise in exchange rates, led Argentine producers to attempt to increase their international competitiveness on the domestic market by substantially improving productivity⁵¹ and seeking savings on labour.

However, there was also some elimination of jobs associated with the institution of the new order. The liberalization of trade resulted in disinvestments –with a consequent loss of jobs– by provoking the closing of businesses and plants, especially small and medium-sized industries. Moreover, part of the productivity gains were obtained by means of reductions in personnel as

⁴⁷ Described by Damill, Frenkel and Maurizio (2002), among others.

⁴⁸ The upward phase of the cycle is considered to have run from the start of the recovery following the tequila episode in the third quarter of 1995 to the fourth quarter of 1997 (although this phase lasted until mid-1998, when the recession began to develop).

⁴⁹ To an extent that minimized the effect of the rise in real interest rates, which with the advent of price stability turned positive.

⁵⁰ Employment-output elasticity between the first quarter of 1990 and the fourth quarter of 1994 was 0.16, compared to 0.37 between mid-1985 and the third quarter of 1987. In contrast, during the second expansive phase, between the first quarter of 1995 and the fourth of 1997, elasticity was 0.48 (Altimir and Beccaria, 2000b).

⁵¹ In the export sector, on the other hand, although investments were also favoured by the price of capital, currency appreciation created a disincentive.

TABLE 10

Argentina: Evolution of GDP, employment and productivity in the 1990s
(Mean rate of yearly change between first and last period)

	Gross domestic product				Total employment				Productivity			
	1991(I) 1994(IV)	1994(IV) 1995(III)	1995(III) 1997(IV)	1991(I) 1997(IV)	1991(I) 1994(IV)	1994(IV) 1995(III)	1995(III) 1997(IV)	1991(I) 1997(IV)	1991(I) 1994(IV)	1994(IV) 1995(III)	1995(III) 1997(IV)	1991(I) 1997(IV)
<i>Total</i> ^a	8.7	-10.3	8.0	6.2	0.8	-2.2	3.9	1.5	7.9	-8.3	4.0	4.7
Industry subtotal	8.9	-13.2	8.8	6.1	-2.3	-6.3	1.3	-1.6	11.5	-7.3	7.4	7.9
Food, beverages and tobacco	5.1	8.2	1.7	4.3	0.0	8.8	-2.2	0.2	5.1	-0.6	4.0	4.1
Textiles and garments	1.4	-19.5	5.3	0.0	-12.0	0.3	2.5	-6.1	15.2	-19.7	2.7	6.5
Wood, furniture and other industries	9.7	-29.4	26.8	9.6	3.3	-30.6	5.2	-0.6	6.2	1.7	20.5	10.2
Paper and printing	13.0	-11.9	6.7	7.8	7.7	-10.5	-4.8	1.3	4.9	-1.5	12.0	6.5
Petroleum and chemicals	9.5	-13.1	6.5	5.7	-2.5	4.1	3.6	0.2	12.3	-16.4	2.8	5.5
Non-metallic mineral products	11.5	-20.7	11.0	7.2	0.2	22.3	-6.5	0.1	11.2	-35.1	18.6	7.0
Metalworking	14.3	-24.6	17.2	10.0	-0.7	-15.7	3.7	-1.0	15.1	-10.6	13.0	11.2
Construction	17.0	-24.9	16.1	11.1	3.4	-11.5	7.9	3.1	13.1	-15.1	7.6	7.8
Commerce	8.7	-15.2	11.0	6.5	-0.5	-9.3	2.4	-0.6	9.3	-6.5	8.4	7.1
Hotels and restaurants	10.2	-12.3	10.6	7.6	6.2	11.4	-3.6	3.4	3.8	-21.2	14.7	4.1
Ground transport	7.5	-14.4	5.8	4.3	5.8	-6.4	6.4	4.6	1.6	-8.5	-0.6	-0.3
Auxiliary transport services	2.8	-12.8	7.7	2.5	35.0	18.7	-2.4	19.5	-23.9	-26.5	10.3	-14.2
Banking and insurance	17.4	-9.2	14.2	13.1	3.4	0.1	5.4	3.7	13.5	-9.3	8.3	9.0
Privatized public services	10.7	6.8	8.3	9.4	0.9	19.8	0.7	2.8	9.7	-10.9	7.5	6.5
Professional and corporate services	13.5	-1.7	4.8	8.8	3.2	18.4	5.5	5.6	10.0	-17.0	-0.6	3.1
Private education and health services	2.1	0.2	0.3	1.3	2.0	-0.5	6.1	3.1	0.1	0.7	-5.5	-1.7
Government	5.3	-2.0	-4.9	1.0	1.7	3.0	3.9	2.6	3.5	-4.9	-8.5	-1.6
Other services	5.8	-7.5	5.6	4.2	-2.9	1.8	5.8	0.4	8.9	-9.1	-0.2	3.7
Domestic service	2.5	-7.2	4.7	2.1	2.3	-1.0	3.7	2.4	0.2	6.3	1.0	-0.3

Source: Developed by the authors on the basis of data from the EPH.

^a Excludes primary activities.

work processes were rationalized, without additional investment in fixed capital. Workers were also let go from privatized enterprises, though those job losses explain only a small part of the growth registered in total unemployment.⁵²

Investments in new technology presumably also biased the demand for labour in favour of the most highly skilled workers, at least in the case of those whose skills complemented the new capital (or the organizational structures) involving the use of more recent technology. This bias is apparent, at the aggregate level, not only in employment, but also in wages, although more so in the second phase of expansion than in the first.

⁵² Tentative estimates indicated that around 150 000 jobs were lost in public enterprises between 1991 and 1995. That figure amounts to 10% of the unemployment registered only in the cities covered by the EPH (Altimir and Beccaria, 2000b).

These indirect effects –not all intentional– of the economic policy on the labour and distributive situation are only part of the story, however. Another important aspect of the role played in this area by economic policy is the extent to which it has been able to sustain the level of activity and, therefore, the level of demand for employment and productivity. The reforms to the economic order and the macroeconomic regime of convertibility were highly successful in terms of stabilizing the economy, reviving investment and engendering economic recovery and growth, until the tequila crisis. The country's ability, with international help, to deal effectively with that crisis restored confidence in a macroeconomic regime whose inflexibility –though originally its strength– was revealing itself to be a weakness.

The fixed parity not only combined with overvaluation of the currency to limit the competitiveness of exports, it also robbed the

stabilization policy of a key instrument and –together with the dollarization of credit– made the foreign exchange policy the frame of reference for contracts and left domestic credit and the activity level wide open to external shocks (Heymann, 2000). The fiscal equilibrium suffered as a result of growing tension between the need to offset the foreign exchange policy with tax cuts aimed at boosting competitiveness, stimulate employment and address growing social and

political demands. The rising external public debt, to close the fiscal equation, formed the prelude to the situation that ultimately led to the collapse of late 2001. There is little doubt that the tenacious adherence to a regime that was dangerously vulnerable and would prove ultimately unsustainable was largely responsible for the social crisis that erupted after its collapse, though the analysis of that phenomenon is beyond the scope of this article.

VIII

Conclusions

The persistently upward and largely structural trend of inequality in family income has been determined mainly by labour market forces, which have been reflected in the structure of wages, in the evolution of the labour supply and in the imbalances between supply and demand, giving rise, *inter alia*, to growing unemployment. However, income inequality has been influenced by various combinations of factors, which have changed from period to period.

As a stylized picture, the deterioration of the distribution of well-being in the last quarter-century took place in four phases: (i) in the 1970s, through the real reduction of wages and their relative dispersion, in the context of an orthodox adjustment (but with restriction on unemployment) and a liberalization process; (ii) in the 1980s, through the impact of growing unemployment due to successive crises, with little restructuring and a certain resilience of the wage structure; (iii) in the first phase of expansion in the 1990s, under a new economic order, more open to the exterior, in a context of declining State activism and price stability, through the growing unemployment generated by inelastic demand for labour –as a consequence of the restructuring of production– and a labour supply enlarged by greater desire for participation; and (iv) in the last phase of expansion, through greater wage inequality.

Earnings also showed a trend towards increasing inequality –though to a lesser extent than family income– between 1974 and 2000, but as a result of two waves of worsening: one in the second half of the 1970s and the other in the 1990s. In both instances, that increase was a decisive factor in the increase registered by the concentration of household income.

The two liberalization processes –the attempt of the 1970s and the reform of the 1990s– appear to have brought about a restructuring of employment that had negative distributive consequences. In the 1970s, the strong drop in real wages enhanced competitiveness but also substantially widened the wage gap between workers at different skill levels and, at the same time, maintenance of the employment level curtailed the productive restructuring. The new economic order of the 1990s, on the other hand, utilized liberalization as an instrument for a profound restructuring, allowing unemployment to reach unprecedented levels at a time of expansion. In the first phase, the restructuring –mainly in industry– focused on rationalizing employment and saving labour, with the consequent rise in unemployment, while the bias arising from the demand for skilled labour had a relatively lesser importance. In the second phase, the roles were reversed: the bias in favour of higher skill levels in the demand for labour translated into an intensification in wage differences, whereas the employment level was maintained and its elasticity increased, with smaller increases in productivity. This may indicate that the restructuring had, within a short time, enabled a recovery of most of the technological lag, at least from a medium-term business perspective.

The stylized history of the distributive deterioration presented here can thus be interpreted as one dimension of the long and uncertain process of transformation from a post-war style of development –characterized by import-substituting industrialization led by the State– to a more functional style of integration into the international economy and globalization processes in which market forces prevail.

From this standpoint, the two attempts at reforming the economic order involved strategies for stabilization, deregulation and liberalization, aimed at transforming the style of development. However, the concrete aspects of the anti-inflationary policy had a decisive impact on the process of productive transformation. The wage freeze in the 1970s favoured competitiveness but also deepened wage differences. The fixed exchange rate of the 1990s dramatically intensified the liberalization of imports, artificially lowered the price of capital goods, raised dollar wage costs and hampered exports, particularly of labour-intensive products –all incentives against increased employment. In the process of the 1990s, the quest for labour savings generally seems to have taken precedence over the demand for more qualified labour, although that demand did nevertheless increase the wage differential.

However, it might be assumed that –despite these distortions which exaggerated the negative effects of both the first attempt at liberalization and the most recent reform of the economic order– greater economic freedom enabled the development of market forces that guided investment towards a production pattern that was

more integrated into the international economy. That transformation process, however, was guided only by market signals, since the design of the reforms did not include industrial or technological policy mechanisms that would have contributed to the development of dynamic comparative advantages.

The new economic model led, in addition to currency appreciation and the ultimate collapse of the macroeconomic regime that accompanied the institutional reforms and gave rise to the current crisis, to a decline in the employment elasticity of growth, thereby generating more structural unemployment, and a larger wage gap between workers at different skill levels. Nevertheless, against this backdrop, there is room for public policy to attempt, on the one hand, to guide productive forces towards a more dynamic integration into the international economy, in a way that will create quality jobs and raise wages across the board, and on the other, to develop effective systems of social protection to address the numerous situations of vulnerability that emerge from the new style of development.

(Original: Spanish)

APPENDIX

Microsimulation model and methodology

The methodology is based on estimation of a polychotomous or discrete model of individual labour force participation. In this model, each individual of working age may fall into one of the following three mutually exclusive categories: (1) employed, (2) unemployed or (3) outside the labour force. It is assumed, with no loss of generality, that there are N_1 employed individuals, N_2 unemployed individuals and N_3 non-participants in the labour force, such that $N = N_1 + N_2 + N_3$.

Assume that V_{ij} is the maximum utility achieved by an individual i who chooses alternative j . If V_{ij} is linear,

$$[1] \quad V_{ij} = \delta_j' x_i + u_{ij} \quad i = 1, 2, \dots, N$$

where x_i is a vector of the characteristics of the individual that capture all information relevant to the selection of the alternative for which V_{ij} is the maximum, and u_{ij} is an error term that is assumed to be independent and identically distributed with a double exponential or Gumbel distribution.

For each of the three alternatives, there is a utility function like [1], and the alternative s ($s=1,2,3$) is selected only if it offers the greatest utility, i.e.,

$$V_s > \max_{j \neq s} V_j$$

defining

$$[2] \quad \pi_s = \max_{j \neq s} V_j - u_s$$

The alternative s will be selected only if $\delta_s' x_s > \pi_s$. As u_{ij} is distributed independently and identically with a Gumbel distribution and if X is a vector of exogenous variables ($X = [x_1', x_2', \dots, x_N']'$), the distribution $F(\pi_s)$ of π_s is

$$[3] \quad F(\pi_s) = \exp(\pi_s) / \left[\exp(\pi_s) + \sum_{j \neq s} \exp(\delta_j' X) \right]$$

and the probability that alternative s will be selected is:

$$P_s = \frac{\exp(\delta_j' X)}{\sum_{j \neq s} \exp(\delta_j' X)}$$

which is the conditional logit model (see McFadden, 1974) estimated by means of the maximum likelihood method.⁵³

⁵³ The probabilities for each of the three alternatives are:

$$P(s=1) = \frac{e^{x\delta_1}}{e^{x\delta_1} + e^{x\delta_2} + e^{x\delta_3}} \quad P(s=2) = \frac{e^{x\delta_2}}{e^{x\delta_1} + e^{x\delta_2} + e^{x\delta_3}}$$

$$P(s=3) = \frac{e^{x\delta_3}}{e^{x\delta_1} + e^{x\delta_2} + e^{x\delta_3}}$$

This model, however, is not identified in the sense that there is more than one solution for δ_1 , δ_2 and δ_3 that has the same probabilities for $s=1$, $s=2$ and $s=3$. To identify the model, the usual procedure of selecting one of the three alternatives as the base

For microsimulations, it is also necessary to assign labour incomes to those individuals in the working-age population who do not have earnings because they are unemployed or inactive, in case they are selected to change activity category and also in order to estimate the effects of changes in rewards to various socio-demographic characteristics (see below).

If the individual is employed, his/her labour income (in logarithms) is given by:

$$[4] \quad W_{ii} = \beta'_1 Z_{ii} + \varepsilon_{ii}, \quad i = 1, 2, \dots, N_1$$

where the subindex i refers to i^{th} individual, Z_{ii} is a vector of exogenous characteristics and ε_{ii} is a random term.

In equation [4] there is sample selection bias if the errors ε_{ii} and the disturbances u_{ij} in [1] are correlated. This problem is corrected by using the method proposed by Lee (1983), which makes it possible to transform the polychotomous model of participation into a binary decision problem, as indicated above.

If Φ denotes the function of the standard normal distribution, the transformation $J = \Phi^{-1}F$ is strictly increasing and the transformed random variable π_s^* [equation 2], where $\pi_s^* = J(\pi_s)$, will also be a standard normal variable. Hence, the alternative s will be selected only if $J(\delta'_s X) > \pi_s^*$. This specification implies that, provided alternative s is selected,

$$[5] \quad W_s = \beta'_s Z_s - \rho_s (\phi(J(\delta'_s X_s))/F(\delta'_s X_s)) + \xi_s \\ = \beta'_s Z_s + \omega_s,$$

where $E(\xi_s | s \text{ selected}) = 0$, ϕ is the density of a standard normal and X_s is a partition of X (see Lee, 1983).

Hence, equation [5] is estimated for $s=1$, using the estimators for the parameters δ calculated from the logit model. Replacing those estimators in [5], in the second stage it is estimated that

category was followed—i.e., making the coefficient for that category zero (in this exercise, the base category was that of individuals who are non-participants in the labour force). Multiplying and dividing these probabilities by $e^{-X\delta_3}$ yields:

$$P(s=1) = \frac{e^{x(\delta_1 - \delta_3)}}{e^{x(\delta_1 - \delta_3)} + e^{x(\delta_2 - \delta_3)} + 1} \quad P(s=2) = \frac{e^{x(\delta_2 - \delta_3)}}{e^{x(\delta_1 - \delta_3)} + e^{x(\delta_2 - \delta_3)} + 1} \\ P(s=3) = \frac{1}{e^{x(\delta_1 - \delta_3)} + e^{x(\delta_2 - \delta_3)} + 1}$$

In other words, the estimated coefficients can be interpreted as the effect of the difference between the actual coefficient of the category and the coefficient of the category selected as the base category over the probability. Thus, for example, the relative probability for employed workers compared with non-participants in the labour force is:

$$\frac{P(s=1)}{P(s=3)} = e^{x(\delta_1 - \delta_3)} = e^{x\beta}$$

and the estimate of β is the impact on relative probability.

$$[6] \quad W_1 = \beta'_1 Z_1 - \rho_1 (\phi(J(\delta'_1 X_1))/F(\delta'_1 X_1)) + \xi_1.$$

The disturbances in equation [6] are heterocedastic and are correlated through the various sample observations. An asymptotically correct matrix of variances and covariances is constructed, utilizing a modification of the procedure followed by Lee, Maddala and Trost (1980).⁵⁴

Based on this equation, it is then possible to assign a wage to those individuals of working age who are not earning a wage because they are unemployed or inactive, in case they are selected to change activity status. For that purpose, it is necessary to generate an error term for each of the individuals as if he/she were employed. As the residual of the wage equation, ω_1 , is not observed for these individuals, it is generated conditioned on what is observed. This is done by generating ψ_1 from a standard normal distribution and then calculating:

$$[7] \quad \hat{\omega}_2 = -\hat{\rho}_1 (\phi(J(\delta'_1 X_2))/F(\delta'_1 X_2)) + \hat{\sigma}\xi_1 \psi_1$$

The first term in equation [7] is the expected value of ω_2 , conditioned on the person's being employed. The estimate of the standard deviation of ξ_1 ($\hat{\sigma}\xi_1$) is obtained from the estimate of the quadratic minimum of [6]. Therefore, wages or earnings for unemployed and inactive individuals are calculated as

$$[8] \quad \hat{W}_s = \hat{\beta}'_1 Z_s \hat{\omega}_2,$$

where $s = 2, 3$.

Microsimulation procedures

The probabilities obtained from estimating the polychotomous model of participation and the estimated coefficients for the labour income functions for year t are used to assess the effect on per capita household income distribution, between that year and $t+k$, of changes in economic participation, unemployment, educational attainment of the labour force and the earnings of human capital. To that end, several counterfactual populations were simulated, replicating sequentially and cumulatively in the population for year t the values of the variables registered in $t+k$. The effect of changes in those variables is quantified by comparing the indicators of inequality for the actual income distribution with those for the distributions computed using the counterfactual populations.

i) Effect of change in the participation rate

Estimating the polychotomous model of participation in year t makes it possible to obtain, as explained above, the marginal probabilities that each individual will be employed ($P_{t,1}$), unemployed ($P_{t,2}$) or outside the labour force ($P_{t,3}$).

The next step is to rank the individuals in the population for year t according to $P_{t,in}$, the probability of being active (which is the sum of $P_{t,1}$ and $P_{t,2}$) and $P_{t,1}$ such that the first

⁵⁴ For a more detailed explanation of this correction procedure, see González Rozada and Menéndez (1999).

places in the sample are occupied by those individuals with the greatest probability of belonging to the labour force. If $f\%$ is the proportion of individuals who participate in the labour force in year $t + k$, this ranking will make it possible to identify the overall $f\%$ of individuals in the population for year t who would be labour force participants. Thus, the participation rate for year $t + k$ is substituted for the rate for year t . The $f\%$ of the population for year t who would be labour force participants is ranked (by $P_{t,1}$) such that those individuals with the greatest probability of being employed, based on their characteristics in t , appear first. Hence, by identifying in this ranking the proportion ($e\%$) of persons employed in year t , the members of the active population are classified as employed or unemployed.

This counterfactual method of organizing the population for year t ensures that the $f\%$ of the population with the greatest probability of belonging to the labour force, given their characteristics in that year, would actually have belonged to that population and that the $e\%$ of the active population for year t with the greatest probability of being employed would have been employed.

Once the counterfactual population has been organized, labour income must be assigned. For individuals whose activity status does not change, nothing is modified: for those who are unemployed or inactive, a wage of zero is registered, and for those who are employed, their declared wage is used. For those who go from being unemployed or inactive in t to being employed in the counterfactual population, the income obtained using equation [8] is assigned.

Family income and the indicators of its distribution are recalculated using these individual earnings. By comparing various measures of inequality for the original distribution in year t with the distribution computed using the counterfactual population it is possible to quantify the effect of the change in the participation rate between t and $t + k$ on the distribution of family income.

ii) *Effect of change in the unemployment rate*

To capture the additional effect of the change in unemployment rate (given the change in the participation rate) between t and $t + k$, the same procedure as that described in section (i) is used, i.e., first the counterfactual population is re-ranked using $P_{t,in}$ and then using $P_{t,2}$ such that individuals with the least probability of being unemployed, given their characteristics in year t , appear first. If $d\%$ is the proportion of unemployed individuals in $t + k$, the new simulated population obtained identifies the group of individuals who would have been unemployed in t if the unemployment rate in $t + k$ had prevailed. Once the counterfactual population has been simulated, earnings are assigned, either by maintaining the actual income registered or—for those whose status changes—the wage obtained using equation [8]. By comparing the resulting family income distribution (which has been simulated using the activity and unemployment rates for $t + k$) with the counterfactual distribution calculated in the section (i) above (which has been simulated using the

participation rate for $t + k$ and the unemployment rate for t), the effect of the change in unemployment can be assessed.

iii) *Effect of change in the educational structure of the employed population*

The first step was to calculate the proportion of individuals with a complete or incomplete primary education ($p\%$), complete or incomplete secondary education ($s\%$) and complete or incomplete university education ($u\%$) in the population for year $t + k$. The second step was to rank the counterfactual population calculated in section (ii) within each activity category (employed, unemployed, inactive), with the group having a primary education appearing first, followed by those with a secondary education and, finally, those with a university education. The individuals in the first of these strata (employed people) were randomly ranked within each educational category, utilizing the random number generated for each person in order to assign the counterfactual wages. Then, selecting from this ranking the proportions of people with primary education ($p\%$), secondary education ($s\%$) and university education ($u\%$) in $t + k$, the counterfactual population that reflects the educational structure of the employed population for $t + k$ was constructed.

The next step was to assign earnings to the individuals in this population who changed educational category. These individuals were assigned an income—either declared or calculated using equation [8]—equivalent to multiplying the earnings they had by the ratio, in year t , between the mean income for their new and old educational categories. Once the incomes of the counterfactual population have been calculated, it is possible to calculate family income and its distribution. By comparing the latter with the simulated distribution from section (ii), the effect of changes in educational structure on the distribution of family income can be appraised.

iv) *Effect of changes in earnings*

The earnings of the counterfactual population obtained in section (iii) were modified such that they reflected the structure of earnings for year $t + k$. Each individual was assigned an income generated using equations [6] and [8], but with the estimated coefficients of both equations for year $t + k$. All members of the population thus have the earnings that they would have received in $t + k$, given their socio-demographic characteristics. For those who changed educational category, this new earning is multiplied by the ratio, in year $t + k$, between the mean income for their new and old educational categories. After thus modifying the earnings of the individuals, it was possible to calculate the distribution of family income in this counterfactual population. By comparing that distribution with the distribution for the counterfactual population obtained in (iii), the additional effect of changes in earnings structure on income distribution can be evaluated.

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United States interest rates, *Latin American debt and* financial contagion

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This article analyses the way in which Latin American bond spreads were affected by the changes in United States interest rates in the second half of the 1990s. Empirical analysis shows that, contrary to theory, in this period the spreads of emerging market bonds and United States interest rates moved in opposite directions; that there was financial contagion; that contraction of liquidity and financial contagion can offset the effects of those interest rates on the spreads of emerging market bonds at times of economic and financial turbulence and thus become the most important factors in the evolution of those spreads; and that the increased financial integration associated with the current globalization process has heightened the vulnerability of the developing economies to external shocks.

I

Introduction

In the 1990s, as the world economy became increasingly global, emerging markets grew to be more dependent on developments in mature markets, and especially in the U.S. economy. Capital flows to emerging markets rose significantly, driven not only by sound domestic macroeconomic policies and wide structural reforms in these markets, but also by changing conditions in industrial countries that encouraged investors to diversify their portfolios.

Emerging market countries are affected by changes in U.S. monetary policy, through its effects on the cost and availability of funds, as well as on creditworthiness. In addition to the impact of changes in U.S. interest rates on local interest rates, bond spreads respond to changes in the monetary policy of that country. In turn, debt issuance and maturities respond to changes in spreads.

This paper aims to examine empirically how emerging debt markets (especially those of Latin America) responded through the behaviour of bond spreads to changes in U.S. interest rates in the second half of the 1990s. It also reviews the effects of U.S. interest rates on the bond spreads of emerging markets, their interaction with the debt flows and terms of borrowing of those markets, and the behaviour of other high-yield assets. Section I is the present Introduction.

Section II focuses on how emerging market bond spreads responded to movements in U.S. interest rates.

Section III analyses the U.S. high-yield market and its behaviour during the period in question, while section IV looks at Nasdaq's performance and its linkage with emerging market bond spreads, particularly those of Latin America.

The empirical evidence indicates the presence of financial contagion due to market turbulence during most of the period. Emerging market bond spreads and U.S. interest rates moved in opposite directions in the second half of the 1990s, suggesting that the effect of financial contagion on bond spreads worked in the opposite direction to changes in U.S. interest rates. Nevertheless, there were several episodes in the early 1990s, prior to the Mexican financial crisis, when emerging market bond spreads and U.S. interest rates moved together.

The focus of section V is on how contagion changed over the period and the different market and global conditions during the Russian default and the Argentine crisis.¹ These factors could explain the different levels of contagion (very strong then but hardly noticeable in the more recent period). Finally, section VI presents a summary and the paper's conclusions.

II

United States interest rates and their effects on emerging market bond spreads

It has been widely recognized that external factors play a fundamental role in the availability of external financing for emerging markets. For example, Calvo, Leiderman, and Reinhart (1993) stress the importance of U.S. interest rates in driving the international capital

flows cycle and show that the surge of capital inflows in the 1990s was closely associated with a combination of three factors: lower U.S. interest rates, lower stock market and real estate returns, and a slackening in economic activity.

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¹ The "Argentine crisis" refers to events that took place in that country under the convertibility regime, in the period from October 2000 to December 2001, prior to the default on the nation's debt.

Fernández-Arias (1995) shows that international interest rates have both a direct effect on the cost of capital in an economy that is financially integrated in the world, and also an indirect channel of influence, by which they affect countries' creditworthiness and hence risk spreads and the cost of capital. This indirect channel of transmission is due to the fact that a country's capacity to pay depends on the present value of its future resources, which increases as the discount rate declines. In countries with high-risk spreads, this indirect effect may be large and may predominate over the direct effect.

Evidence presented in Fernández-Arias (1995) and Frankel and Roubini (2000) suggests that country-risk and creditworthiness in many emerging markets are indeed influenced by international interest rates in such a way that the interest cycle in industrial countries is amplified. During the Russian crisis, however, spreads increased dramatically without there having been any measurable change in domestic fundamentals and world interest rates. Calvo and others (2001a) attribute this change to a new residual external factor, which they termed "financial contagion".

All else being equal, lower U.S. interest rates would ease debt service payments for emerging market borrowers, reducing both the likelihood of default and also, as a result, the corresponding risk premium incorporated into bond spreads. Evidence for the early 1990s indicates that there were several episodes (prior to the Mexican financial crisis) where spreads in emerging markets and the U.S. federal funds target rate moved together. In the second half of the 1990s, however, correlation coefficients between emerging market bond spreads and U.S. interest rates indicate that they moved in opposite directions.

Theoretically, a rise in U.S. interest rates would lead to an increase in emerging market spreads through its impact on the ability of debtor countries to repay loans. A rise in U.S. interest rates could also reduce investors' appetite for risk, reducing their exposure in risky markets and the availability of financial resources in borrowing countries.² Conversely, a fall in U.S. interest rates would ease debt service payments, reducing the likelihood of default and, as a result, reducing emerging market spreads. Another reason for a positive correlation between a fall in U.S. interest rates and in emerging market spreads is that investors, seeking to enhance the overall return on their portfolios,

switch to emerging market debt whenever yields in mature markets fall.

The empirical evidence on how U.S. monetary policy affects emerging markets spreads, however, is less conclusive, as we can see in tables 1 and 2. For the period from March 1996 to September 2001 we find a statistically significant (at 95% level of confidence) negative (rather than positive) correlation of -0.6 between the 10-year U.S. Treasury Bond yield and EMBI+ and EMBI+LAT spreads.³ The correlation between emerging market spreads and the U.S. federal funds target rate over the period was also negative and statistically significant, albeit less strong: -0.3 for EMBI+ spreads and -0.5 for EMBI+LAT. In both cases, however, the correlation was negative, meaning that the effect of financial contagion on emerging market spreads worked in the opposite direction to the changes in U.S. interest rates and in the indebtedness indicator, more than compensating for them.⁴

Many authors have argued that the episodes of market turbulence in the second half of the 1990s were periods of "liquidity crisis". Kaminsky and Reinhart (1998), Valdés (1997), and more recently Calvo and others (2001a) have emphasized the financial aspects of contagion, which would result primarily from the interaction of investors with liquidity constraints who had invested in emerging market assets, which are potentially highly illiquid. The new feature of the second half of the 1990s, therefore, would be that even if an emerging market's long-term capacity to pay was sufficient to cover obligations, it "could be rendered

³ EMBI+ stands for J.P.Morgan's "Emerging Markets Bond Index Plus". EMBI+LAT is the Latin American component of EMBI+.

⁴ In much of the existing literature the yield on U.S. Treasury bonds has been used as a proxy for U.S. monetary policy. According to the IMF's International Capital Markets Report (August 2001), the 10-year U.S. Treasury bond yield is an approximate benchmark for the J.P. Morgan Emerging Markets Bond Index, since the yield on the EMBI+ will be approximately equal to the yield on the 10-year U.S. Treasury bonds plus the EMBI+ interest rate spread as reported by J.P. Morgan Chase. However, there are occasions when shocks to U.S. Treasury yields are not necessarily the result of changes in U.S. monetary policy. Tables 1 and 2 show, for example, that the correlation between the yield on 10-year U.S. Treasury bonds and the federal funds target rate was not always very marked in the second half of the 1990s. Likewise, during the Asian crisis short-term U.S. Treasury bond yields fluctuated dramatically even in the absence of changes in U.S. monetary policy. The U.S. federal funds target rate seems to be a more direct measure of the stance of monetary policy in that country, so both measures—the yield on 10-year U.S. Treasury bonds and the U.S. federal funds target rate—were used when calculating correlations with emerging market spreads and debt flows to Latin America.

² See Kamin and von Kleist (1999).

TABLE 1

Correlations between U.S. interest rates and EMBI+ spreads^a

	FED fund (effective) (%)	10-year U.S. bonds	EMBI+ (%)
Whole period: March 1996-December 2001^b			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.47	1	
EMBI+ (%)	-0.33	-0.57	1
Period of easier U.S. monetary policy: June 1998-January 1999			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.76	1	
EMBI+ (%)	-0.26	-0.52	1
Period of tighter U.S. monetary policy: May 1999-June 2000			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.54	1	
EMBI+ (%)	-0.89	-0.63	1
Period of easier U.S. monetary policy: November 2000-December 2001			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.63	1	
EMBI+ (%)	-0.62	-0.67	1

Source: ECLAC, on the basis of data from the Federal Reserve (FED) and J. P. Morgan.

^a EMBI+ = J.P. Morgan's Emerging Markets Bond Index Plus.

^b The starting point of the period was determined by the availability of data on EMBI+ spreads.

TABLE 2

Correlations between U.S. interest rates and the Latin American component of the EMBI+ index

	FED fund (effective) (%)	10-year U.S. bonds	EMBI+ LAT (%) ^b
Whole period: March 1996-December 2001^a			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.47	1	
EMBI+ LAT (%)	-0.53	-0.62	1
Period of easier U.S. monetary policy: June 1998-January 1999			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.76	1	
EMBI+ LAT (%)	0.19	-0.43	1
Period of tighter U.S. monetary policy: May 1999-June 2000			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.54	1	
EMBI+ LAT (%)	-0.64	-0.71	1
Period of easier U.S. monetary policy: November 2000-December 2001			
FED fund (effective) (%)	1		
10-year U.S. bonds	0.63	1	
EMBI+ LAT (%)	-0.77	-0.71	1

Source: ECLAC, on the basis of data from the Federal Reserve (FED) and J. P. Morgan.

^a The starting point of the period was determined by the availability of data on EMBI+ spreads.

^b EMBI+ LAT = Latin American component of EMBI+.

TABLE 3

Correlations between debt flows to Latin America and U.S. interest rates

	Latin American debt paper issued abroad	EMBI+LAT ^a	FED fund (effective)	10-year U.S. bonds
First quarter 1996-fourth quarter 2001				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.59	1		
FED fund	0.19	-0.59	1	
10-year U.S. bonds	0.53	-0.68	0.49	1
Second quarter 1997-first quarter 1999 (Asian, Russian and Brazilian crises)				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.80	1		
FED fund	0.60	-0.70	1	
10-year U.S. bonds	0.74	-0.86	0.71	1
Second quarter 2000-fourth quarter 2001 (Argentine crisis)				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.43	1		
FED fund	0.13	-0.95	1	
10-year U.S. bonds	0.20	-0.76	0.82	1

Source: ECLAC, on the basis of joint statistics from the Bank for International Settlements (BIS), International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD) and data from J. P. Morgan and the Federal Reserve.

^a EMBI+ LAT = Latin American component of EMBI+.

insolvent if a critical mass of investors exited at once” (Calvo and others, 2001a, p. 19). When facing liquidity needs in one particular class of asset or country, investors would tend to withdraw liquidity from another class of assets or another country. A need for liquidity could be precipitated by an exogenous shock, and would become one of the main transmission channels of financial turmoil across assets and countries.

If we isolate periods of changes in U.S. monetary policy in the second half of the 1990s the correlations between U.S. interest rates and emerging market spreads are negative. These negative correlations between emerging market spreads and cuts in the federal funds target rate (June 1998 to January 1999, and November 2000 to December 2001) were concurrent with extreme events in emerging markets, such as the Russian default and the Turkey and Argentina crises in 2000 and 2001. A sharp widening of spreads during these periods was associated with an easing of monetary policies by the Federal Reserve, which supports the liquidity crunch and flight-to-quality argument: an asset substitution event that would lead to a negative correlation between U.S. interest rates and emerging market spreads.

The correlation was also negative in a period of tighter monetary policy by the U.S. Federal Reserve

(May 1999 to June 2000). This may be explained by the fact that economic fundamentals in emerging markets, particularly in Latin America, were going through a period of relatively calm, given the strength of the United States economy and Brazil’s rapid recovery from its currency crisis in January 1999. While this strength was causing fears of inflation in U.S. markets, it positively affected the prospects of emerging market economies, increasing their creditworthiness.

The behaviour of debt flows to Latin America during the period analysed here seems to support the liquidity contraction and flight-to-quality argument, since it seems to have been due more to changes in the bond markets than to interest rates. There was a strong and statistically significant (at 95% level of confidence) positive (rather than negative) correlation between U.S. interest rates and debt flows to Latin America, while the correlations between those flows and the Latin American component of EMBI+ were even more pronounced (table 3).⁵ The correlation was particularly

⁵ All the coefficients in table 3 are statistically significant at a 95% level of confidence, except for the period corresponding to the Argentine crisis. The data that could be obtained on debt flows to Latin America are only on a quarterly basis, so all the correlation coefficients were calculated on that basis.

strong in the period of the Asian, Russian and Brazilian crises (figure 1).

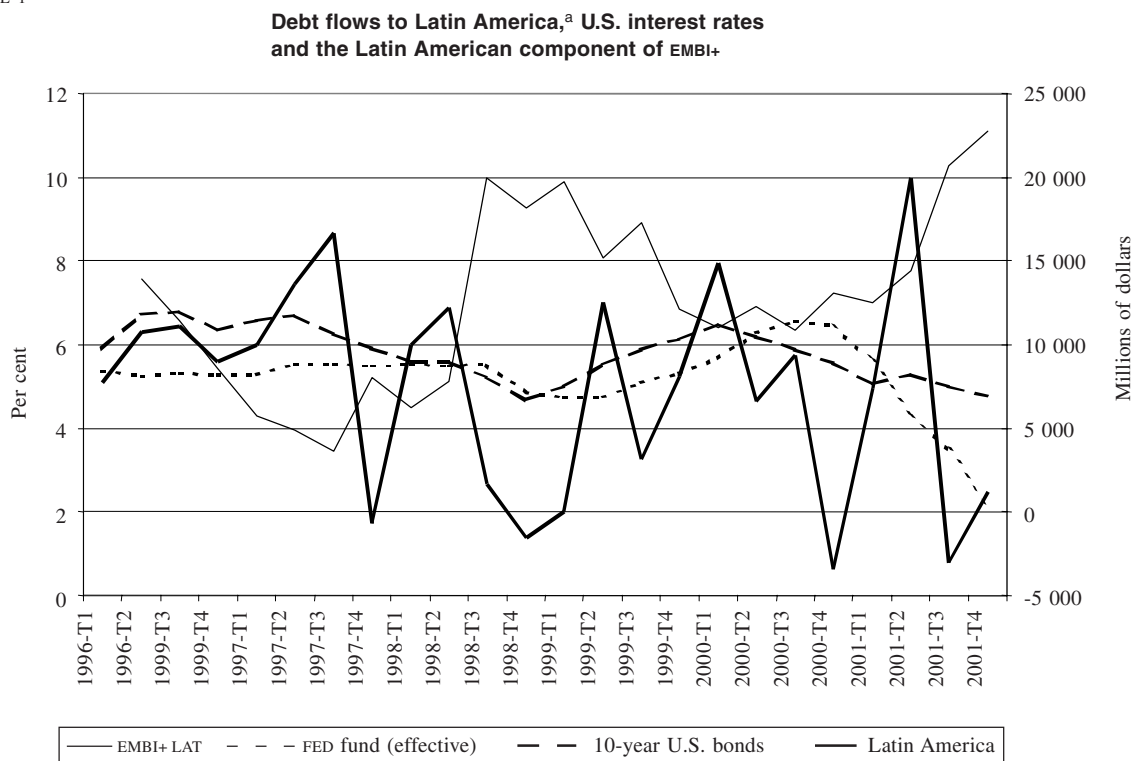
Basing their findings on the aftermath of the Mexican crisis, Calvo and Reinhart (1996) indicated that, other things being equal, increases in U.S. interest rates were linked with capital outflows from Latin America. In the same vein, Calvo and others (2001b) concluded that, for the period from 1970 to 1999, in years when U.S. monetary policy was easing (i.e., the federal funds rate was declining), emerging markets in all regions received a markedly higher volume of capital inflows. When periods of easing (declining federal funds target rate) and tightening (increasing federal funds target rate) are isolated, however, the correlation between debt flows to Latin America and U.S. interest rates does not have the expected sign (table 4).

In the first period of easier U.S. monetary policy (second quarter of 1998 to first quarter of 1999), the correlation was positive (and statistically significant at 95% level of confidence), rather than negative, so

that declining U.S. interest rates were associated with capital outflows from Latin America. This period also covered the Russian default and Brazilian devaluation, and the correlation between debt flows and spreads was very strong and negative (as well as statistically significant at 95% level of confidence). Although U.S. interest rates were declining, Latin American spreads were skyrocketing, and as a result debt flows to Latin America were negative. These results corroborate the liquidity crunch argument once again. Due to financial contagion, there were capital outflows from Latin America during a period of easier U.S. monetary policy.

In the period of tighter U.S. monetary policy (second quarter of 1999 to second quarter of 2000) and in that of easier policies (third quarter of 2000 to fourth quarter of 2001) the correlation between debt flows to Latin America and the U.S. federal funds target rate was weak, whereas the correlation with Latin American spreads was negative and stronger.

FIGURE 1



Source: ECLAC, on the basis of joint statistics from Bank for International Settlements (BIS), IMF, OECD and the World Bank on the external debt, and data from the Federal Reserve and J.P. Morgan.

^a Debt flows include debt securities issued abroad but do not include Brady bonds.

TABLE 4

Correlations between debt flows to Latin America and U.S. interest rates in periods of easier and tighter U.S. monetary policy

	Latin American debt instruments issued abroad	EMBI+ LAT ^a	FED fund (effective)	10-year U.S. bonds
Period of easier U.S. monetary policy: second quarter 1998-first quarter 1999				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.94	1		
FED fund (effective)	0.68	-0.49	1	
10-year U.S. bonds	0.93	-0.75	0.79	1
Period of tighter U.S. monetary policy: second quarter 1999-second quarter 2000				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.55	1		
FED fund (effective)	-0.07	-0.65	1	
10-year U.S. bonds	0.20	-0.78	0.74	1
Period of easier U.S. monetary policy: third quarter 2000-fourth quarter 2001				
Latin American debt instruments issued abroad	1			
EMBI+ LAT	-0.43	1		
FED fund (effective)	0.11	-0.94	1	
10-year U.S. bonds	0.21	-0.81	0.85	1

Source: ECLAC, on the basis of joint statistics from Bank for International Settlements (BIS), IMF, OECD and the World Bank on the external debt, and data from the Federal Reserve and J.P. Morgan.

^a EMBI+ LAT = Latin American component of EMBI+.

A cross-section analysis for the period as a whole (table 5) shows that Argentina, Brazil and Mexico displayed the strongest correlations between debt flows, spreads and U.S. interest rates. Since those countries accounted for the biggest share of the EMBI+ during that period, the correlations between debt flows to Latin America and Latin EMBI+ spreads were heavily influenced by developments in them.⁶ The correlations between debt flows, spreads and U.S. interest rates during the period of the Asian, Russian and Brazilian

crises are stronger, especially in the case of Brazil. The fact that the correlation between debt flows to Latin America, spreads and U.S. interest rates is weaker for the period covering the Turkey and Argentina crises gives support to the argument that financial contagion in this period was not as strong as it was during the Russian crisis (tables 6 and 7).

⁶ After Argentina's debt default in December 2001, its share in the J.P.Morgan EMBI+ index fell substantially.

TABLE 5

**Correlations between debt flows to selected Latin American countries,
spreads and U.S. interest rates, first quarter 1996-fourth quarter 2001**

	Argentina	EMBI+ ARG	Brazil	EMBI+ BRA	Colombia	EMBI+ COL	Ecuador	EMBI+ ECU	Mexico	EMBI+ MEX	Peru	EMBI+ PER	Venezuela	EMBI+ VEN	LATIN AMERICA	EMBI+ LAT ^a	FED fund (effective)	10-year U.S. bonds
Argentina	1.00																	
EMBI+ ARG	-0.24	1.00																
Brazil	0.38	-0.32	1.00															
EMBI+ BRA	-0.26	0.46	-0.67	1.00														
Colombia	0.57	0.26	0.08	-0.04	1.00													
EMBI+ COL	-0.22	-0.25	-0.32	-0.14	-0.44	1.00												
Ecuador	0.02	-0.12	0.28	-0.28	-0.21	-0.13	1.00											
EMBI+ ECU	0.02	0.05	-0.09	0.42	-0.11	-0.13	-0.11	1.00										
Mexico	0.10	-0.31	0.33	-0.39	0.26	-0.29	0.26	-0.11	1.00									
EMBI+ MEX	-0.24	-0.12	-0.47	0.57	-0.18	0.05	-0.08	0.08	0.12	1.00								
Peru	-0.17	-0.08	-0.07	0.13	-0.37	-0.44	0.38	-0.11	0.02	0.21	1.00							
EMBI+ PER	-0.11	0.32	-0.60	0.77	0.25	0.48	-0.41	0.20	-0.49	0.47	-0.11	1.00						
Venezuela	0.24	-0.11	0.28	-0.34	-0.15	-0.42	-0.02	-0.20	0.03	-0.32	-0.10	-0.42	1.00					
EMBI+ VEN	-0.26	0.32	-0.58	0.87	0.00	0.01	-0.24	0.38	-0.22	0.74	0.16	0.80	-0.33	1.00				
Latin America	0.78	-0.37	0.74	-0.58	0.47	-0.36	0.23	-0.10	0.59	-0.30	-0.13	-0.48	0.36	-0.48	1.00			
EMBI+ LAT	-0.30	0.69	-0.62	0.94	0.06	-0.21	-0.27	0.36	-0.40	0.50	0.05	0.77	-0.34	0.88	-0.59	1.00		
FED fund (effective)	0.03	-0.82	0.30	-0.43	-0.30	0.54	0.00	0.11	0.21	-0.02	-0.03	-0.17	0.05	-0.21	0.19	-0.59	1.00	
10-year U.S. bonds	0.18	-0.53	0.53	-0.70	-0.04	-0.02	0.46	0.02	0.58	-0.14	-0.18	-0.66	0.09	-0.51	0.53	-0.68	0.49	1.00

Source: ECLAC, on the basis of joint statistics from Bank for International Settlements (BIS), IMF, OECD and the World Bank on the external debt, and data from the Federal Reserve and J.P. Morgan.

^a EMBI+ LAT = Latin American component of EMBI+.

TABLE 6

**Correlations between debt flows to selected Latin American countries,
spreads and U.S. interest rates, second quarter 1997-first quarter 1999**

	Argentina	EMBI+ ARG	Brazil	EMBI+ BRA	Ecuador	EMBI+ ECU	Mexico	EMBI+ MEX	Peru	EMBI+ PER	Venezuela	EMBI+ VEN	LATIN AMERICA	EMBI+ LAT ^a	FED fund (effective)	10-year U.S. bonds
Argentina	1.00															
EMBI+ ARG	-0.53	1.00														
Brazil	0.66	-0.87	1.00													
EMBI+ BRA	-0.48	0.95	-0.89	1.00												
Ecuador	-0.11	-0.43	0.49	-0.40	1.00											
EMBI+ ECU	-0.42	0.90	-0.81	0.97	-0.27	1.00										
Mexico	0.07	-0.57	0.67	-0.57	0.94	-0.42	1.00									
EMBI+ MEX	-0.51	0.97	-0.85	0.97	-0.39	0.89	-0.55	1.00								
Peru	-0.39	0.02	-0.02	0.12	0.45	0.04	0.25	0.23	1.00							
EMBI+ PER	-0.50	0.99	-0.85	0.93	-0.44	0.86	-0.57	0.97	0.04	1.00						
Venezuela	0.66	-0.49	0.44	-0.46	0.01	-0.41	0.21	-0.47	-0.33	-0.42	1.00					
EMBI+ VEN	-0.47	0.97	-0.80	0.95	-0.34	0.89	-0.47	0.99	0.19	0.97	-0.39	1.00				
Latin America	0.78	-0.82	0.95	-0.80	0.47	-0.69	0.66	-0.80	-0.13	-0.79	0.65	-0.72	1.00			
EMBI+ LAT	-0.50	0.98	-0.88	0.99	-0.40	0.94	-0.56	0.99	0.12	0.97	-0.46	0.98	-0.80	1.00		
FED fund (effective)	0.32	-0.57	0.66	-0.78	0.24	-0.78	0.44	-0.67	-0.35	-0.51	0.37	-0.61	0.60	-0.70	1.00	
10-year U.S. bonds	0.28	-0.82	0.74	-0.86	0.70	-0.76	0.79	-0.86	-0.08	-0.81	0.47	-0.81	0.74	-0.86	0.71	1.00

Source: ECLAC, on the basis of joint statistics from Bank for International Settlements (BIS), IMF, OECD and the World Bank on the external debt, and data from the Federal Reserve and J.P. Morgan.

^a EMBI+ LAT = Latin American component of EMBI+.

TABLE 7

**Correlations between debt flows to selected Latin American countries,
spreads and U.S. interest rates, second quarter 2000-fourth quarter 2001**

	Argentina	EMBI+ ARG	Brazil	EMBI+ BRA	Colombia	EMBI+ COL	Ecuador	EMBI+ ECU	Mexico	EMBI+ MEX	Peru	EMBI+ PER	Venezuela	EMBI+ VEN	LATIN AMERICA	EMBI+ LAT ^a	FED fund (effective)	10-year U.S. bonds
Argentina	1.00																	
EMBI+ ARG	-0.25	1.00																
Brazil	0.38	-0.54	1.00															
EMBI+ BRA	-0.18	0.79	-0.54	1.00														
Colombia	0.72	0.24	0.16	0.10	1.00													
EMBI+ COL	-0.24	-0.69	0.02	-0.75	-0.56	1.00												
Ecuador	0.14	0.21	-0.14	0.30	-0.17	-0.03	1.00											
EMBI+ ECU	0.19	-0.32	-0.00	-0.33	-0.39	0.43	0.24	1.00										
Mexico	0.14	-0.11	0.44	-0.61	0.38	0.11	-0.60	-0.02	1.00									
EMBI+ MEX	-0.43	-0.15	-0.56	0.00	-0.45	0.35	-0.48	0.35	-0.12	1.00								
Peru	0.39	0.20	0.38	0.19	0.33	-0.65	-0.17	0.19	0.26	-0.17	1.00							
EMBI+ PER	0.26	-0.21	-0.13	0.04	0.40	0.05	-0.08	-0.55	-0.25	-0.07	-0.55	1.00						
Venezuela	0.02	0.19	0.07	0.18	0.43	-0.52	-0.83	-0.37	0.41	0.28	0.53	0.02	1.00					
EMBI+ VEN	-0.37	0.84	-0.85	0.72	-0.10	-0.35	0.28	0.10	-0.32	0.28	0.02	-0.28	-0.02	1.00				
Latin America	0.91	-0.31	0.64	-0.41	0.74	-0.19	-0.11	0.08	0.51	-0.50	0.48	0.11	0.19	-0.55	1.00			
EMBI+ LAT	-0.25	0.90	-0.59	0.98	0.12	-0.75	0.26	-0.33	-0.47	-0.02	0.20	-0.07	0.20	0.81	-0.43	1.00		
FED fund (effective)	0.00	-0.90	0.43	-0.92	-0.41	0.90	-0.16	0.39	0.27	0.17	-0.39	0.03	-0.36	-0.69	0.13	-0.95	1.00	
10-year U.S. bonds	0.19	-0.70	0.34	-0.74	-0.44	0.76	0.29	0.76	0.10	0.02	-0.16	-0.29	-0.64	-0.42	0.20	-0.76	0.82	1.00

Source: ECLAC, on the basis of joint statistics from Bank for International Settlements (BIS), IMF, OECD and the World Bank on the external debt, and data from the Federal Reserve and J.P. Morgan.

^a EMBI+ LAT = Latin American component of EMBI+.

III

Emerging markets versus U.S. high-yield corporate bonds

Bond spreads showed a tendency to deterioration after the Asian crisis. Although emerging market bond spreads tended to recover soon after each of the periods of crisis, the recovery was never in full, and as a result the level of bond spreads is now a lot higher than in 1997, before the crisis. Calvo and others (2001a) consider three kinds of explanations for this deterioration, based on a reassessment of countries' prospects, changes in the involvement of the official sector, and problems in financial markets.

The most immediate explanation for the increase in spreads in the second half of the 1990s is that investors perceived worse country prospects in emerging markets, including Latin America. However,

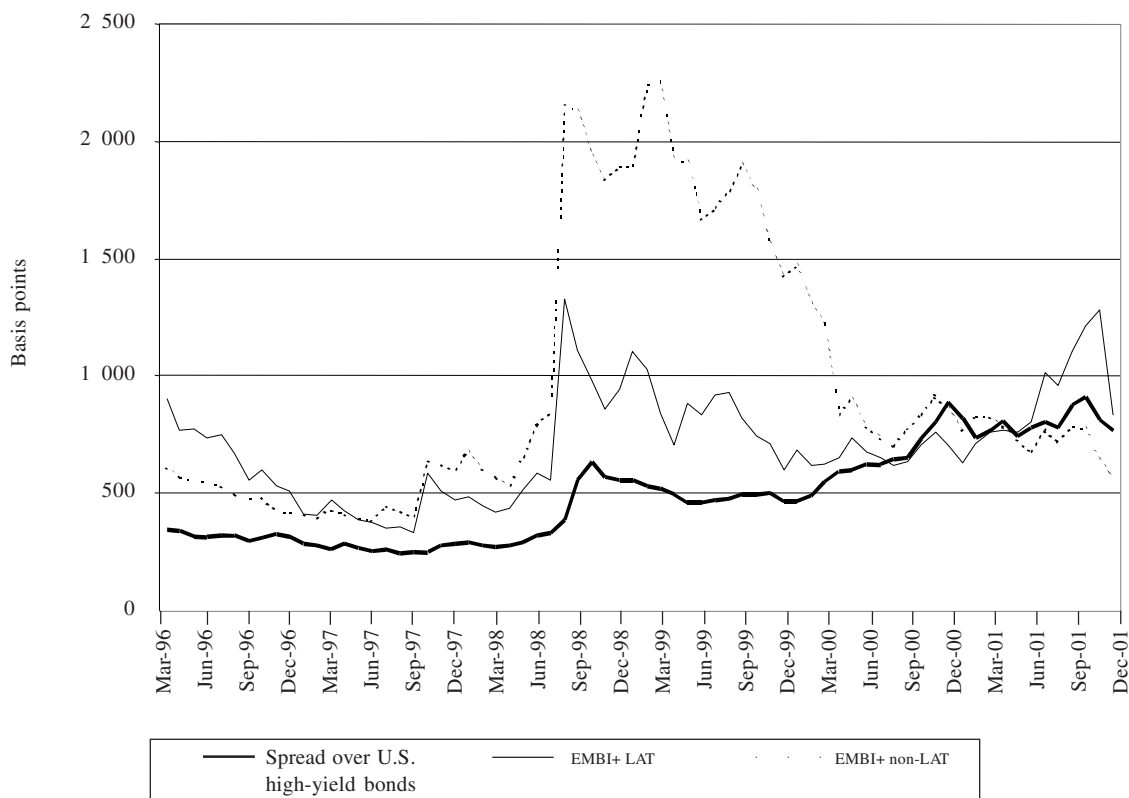
spreads not only increased in emerging countries in general, but also increased substantially for U.S. high-yield corporate bonds (figure 2). The correlation between EMBI+LAT spreads and Merrill Lynch U.S. High Yield Master Index spreads was 0.6 for the period as a whole, but much stronger (0.8) for the period of the Asian, Russian and Brazilian crises (table 8).⁷

The results suggest that the causes of the deterioration of bond spreads after the Asian crisis may be unrelated to reassessments of countries' prospects.

⁷ The correlation coefficients given in table 8 between the spreads of high-yield U.S. bonds and the EMBI+LAT index are statistically significant at a 95% level of confidence.

FIGURE 2

**Merrill Lynch U.S. High-yield Master Index
vs. the J.P. Morgan EMBI+**
(March 1996 to December 2001)



Source: ECLAC, on the basis of data from Merrill Lynch and J.P. Morgan.

Likewise, the explanation based on changes in the involvement of the official sector cannot account for the increase in high-yield bond spreads. The results therefore lend support to the liquidity crunch argument made in the previous section. Investors specializing in high-yield investments taint all high-yield markets through contagion when attempting to hedge through diversification.

Investors have many choices, and do not need to swap into high-yield corporates when they get out of

emerging markets debt. However, on some occasions heightened risk in emerging markets induces investors to lower their risk profile in general and switch to investment grade bonds or other instruments. During the Russian crisis, in the August-October 1998 period, for example, the Merrill Lynch High Yield Master Index widened by 2.75 percentage points against treasury bonds, even though corporate credit quality in the United States was not central to the problem affecting financial markets.

TABLE 8

**Merrill Lynch U.S. High-yield Master Index
compared with the J.P. Morgan EMBI+**
(March 1996 to December 2001)

	Spread over U.S. high-yield bonds	EMBI+	EMBI+ LAT ^a	EMBI+ non-LAT ^b
Spread over U.S. high-yield bonds	1.00			
EMBI+	0.48	1.00		
EMBI+ LAT	0.61	0.90	1.00	
EMBI+ non-LAT	0.23	0.88	0.59	1.00
September 1997 – November 1999				
Spread over U.S. high-yield bonds	1.00			
EMBI+	0.86	1.00		
EMBI+ LAT	0.79	0.98	1.00	
EMBI+ non-LAT	0.92	0.97	0.91	1.00
October 2000 – December 2001				
Spread over U.S. high-yield bonds	1.00			
EMBI+	0.56	1.00		
EMBI+ LAT	0.49	0.97	1.00	
EMBI+ non-LAT	0.17	-0.14	-0.36	1.00

Source: ECLAC, on the basis of data from Merrill Lynch and J.P. Morgan.

^a EMBI+ LAT = Latin American component of EMBI+.

^b EMBI+ non-LAT = Non-Latin American component of EMBI+.

IV

Volatility in equity markets: the linkage between Latin American market interest rate spreads and the Nasdaq

International equity portfolios have been increasingly managed from a sectoral rather than geographic perspective, as financial and economic globalization and the worldwide information technology boom increased the importance of global factors in determining equity prices. Portfolio managers tend to rely on similar risk-management strategies, so that when equity volatility increases, a number of such strategies may prompt them to reduce their overall equity exposure by selling shares in many national markets simultaneously.

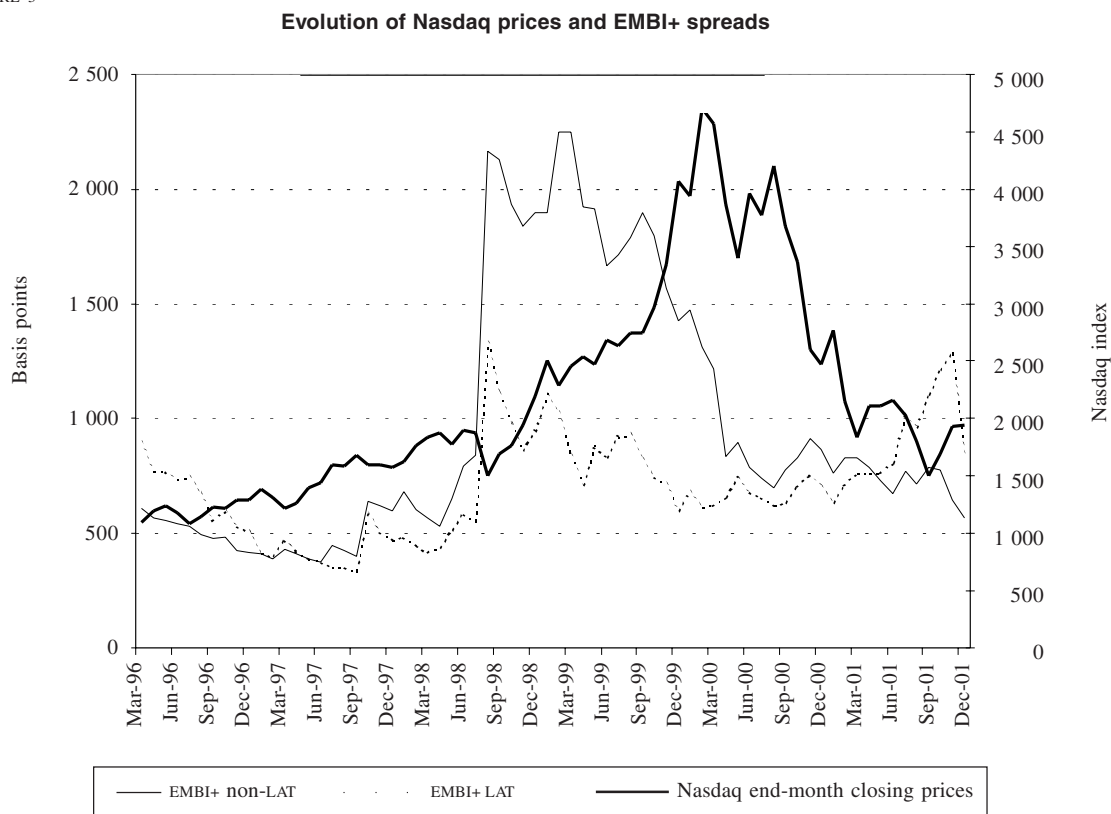
Short-run correlations between emerging and U.S. equity markets have historically been high, though volatile, but since late 1998 a close and unusual association between world equity (U.S. equity in

particular) and emerging bond markets can be noticed as well (figure 3).

Latin American debt markets displayed a stronger correlation with the Nasdaq Composite index after mid-1998 as the technology, media and telecommunications (TMT) phenomenon became global. The correlation between Nasdaq monthly closing prices and EMBI+LAT spreads was a negative 0.34 from March 1996 to August 1998, subsequently increasing to a negative 0.7. The correlation was especially strong throughout 2000 and most of 2001 (table 9).⁸

⁸ The correlation coefficients between the Nasdaq monthly closing prices and the EMBI+LAT spreads are statistically significant at a 95% level of confidence.

FIGURE 3



Source: ECLAC, on the basis of data from Bloomberg Financial Markets and J.P. Morgan.

TABLE 9

Nasdaq prices vs. EMBI+ spreads

	EMBI+ non-LAT	EMBI+ LAT	Nasdaq end-of-month closing price		EMBI+ non-LAT	EMBI+ LAT	Nasdaq Moving Average MA = 0
March 1996-August 1998				March 1996-August 1998			
EMBI+ non-LAT	1			EMBI+ non-LAT	1		
EMBI+ LAT	0.77	1		EMBI+ LAT	0.77	1	
Nasdaq closing price ^a	0.21	-0.34	1	Nasdaq MA = 0	0.50	-0.09	1
August 1998-December 2001				August 1998-December 2001			
EMBI+ non-LAT	1			EMBI+ non-LAT	1		
EMBI+ LAT	0.30	1		EMBI+ LAT	0.30	1	
Nasdaq closing price ^a	-0.13	-0.74	1	Nasdaq MA = 0	-0.73	-0.72	1

Source: ECLAC, on the basis of data from Bloomberg Financial Markets and J.P. Morgan.

^a Closing price on last day of month.

Again, the results here reinforce the argument made in previous sections that when faced by losses in one type of risky asset or losses in a particular emerging market, investors seeking liquidity tend to sell other positions or other emerging market assets, even if these have not suffered losses. Emerging market bonds are regarded as a risky asset class, and movements in the Nasdaq are seen as an indicator of the willingness of investors to take risky trading positions. A sharp fall in the Nasdaq is often taken as a signal that risk aversion has increased, and portfolio managers take action accordingly, selling emerging market holdings. “Crossover investors”, who do not have dedicated allocations to emerging markets but instead “cross over” into (and out of) emerging market assets, retrench from emerging markets during times of volatility in an attempt to limit their risk exposure. Some mutual funds may hold both emerging market bonds and Nasdaq equity positions, and may reduce one position when the other suffers losses. Investors specializing in high-yield investments, as mentioned earlier, contaminate all high-yield markets through contagion when

attempting to obtain liquidity from other asset positions in their portfolio.

The market turbulence in Argentina during 2000 and 2001 illustrates the respective roles of domestic political developments in emerging markets and economic developments in mature markets today. For example, the decline of 30% in the Nasdaq Composite’s returns in April and May of 2000 spilled over into Argentina’s stock market, and this indirectly pressured Argentina’s bond markets by pushing the shares of sovereign securities in pension fund portfolios above the legal limit, forcing them to curtail purchases, which contributed to the widening of Argentina’s secondary market spreads.⁹ Similarly, in October 2000 Argentina’s political turmoil and financing difficulties were exacerbated by a sell-off in high-yield bond markets.

Nevertheless, it is important to note that the correlations between the Nasdaq and EMBI+ spreads were essentially of a short-term and unstable nature. For example, while in 2000 the EMBI+ gave a total return of 16%, the Nasdaq fell by 39%.

V

Did contagion change over the period?

Emerging markets experienced a significant wave of capital inflows in the 1990s. Developments in the United States, especially the decline in U.S. interest rates, were closely associated with the surge of capital flows in the early years of the decade. In the case of Latin America, the impulse provided by declining U.S. interest rates joined with the 1989 Brady Plan to restore the region’s access to international capital markets. The Brady bond exchange created a secondary market for sovereign bonds in Latin America, which allowed high-risk portfolios to include Latin American risk and increased investors’ interest in the region.

The second half of the 1990s was marked by financial crises. The Mexican crisis of late 1994 came as a surprise, given that Mexico’s long-term capacity to pay was sufficient to cover its obligations. However, bondholders refused to roll over short-term public bonds, and Mexico was unable to pay its short-term obligations. As pointed out by Calvo and others (2001a, p. 19), “liquidity crises were shown to be a distinct

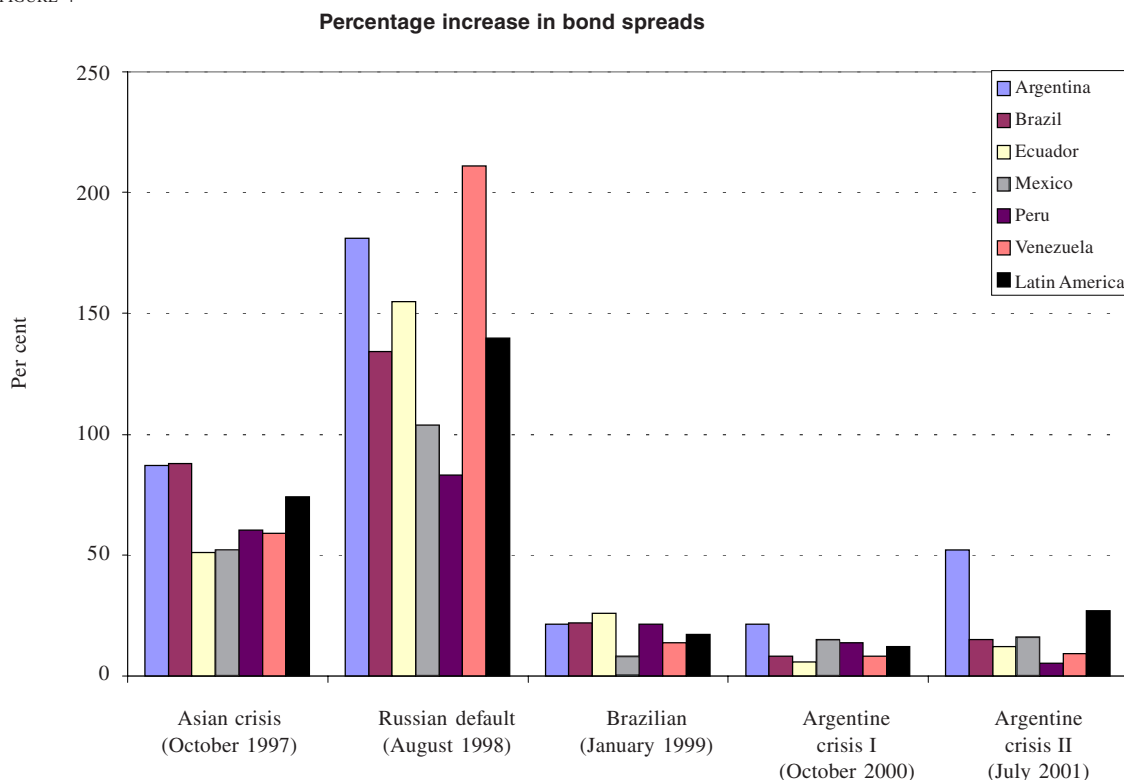
possibility for sovereigns”. Investors exited at once, and Mexico was rendered insolvent.

Many countries lost access to international capital markets for a time as a result of Mexico’s crisis. Financial contagion was felt throughout Latin America in bond spreads and other indicators, and again with the subsequent financial crises that affected emerging markets in the second half of the 1990s. This section will focus on financial contagion in Latin American markets after the Mexican crisis, and the way it changed over the period. The evidence suggests that there were different shades of contagion.

The sensitivity to contagion of selected Latin American countries in the crisis episodes of the second half of the 1990s is shown in figure 4. The percentage increases in bond spreads during the month that marked the beginning of the various financial crises that took

⁹ See IMF (2000).

FIGURE 4



Source: ECLAC, on the basis of data from J.P. Morgan.

place in the second half of the 1990s show that Latin American spreads increased significantly during the Asian crisis, skyrocketed with the Russian default, and increased more moderately during the Argentine crisis. According to this figure, contagion seemed to be strongest during the Russian crisis but much more limited during the Argentine crisis.

The Asian crisis hit Latin America not only through trade channels, depressing export commodity prices, but also through significant financial contagion in bond spreads. The Latin American component of J.P. Morgan's EMBI+ increased 74% in October 1997, by almost 250 basis points. With the Russian crisis, Latin America was hit even harder. Although Russia is a country with very few real linkages with Latin America, the financial contagion was huge. The EMBI+LAT increased 140% in August 1998, by almost 775 basis points. As already noted, many authors pointed out that highly leveraged markets caused financial contagion, so that the accumulated losses due to the Russian default led to a liquidity crunch. When

Russia defaulted on its bonds, investors everywhere faced the need to raise liquidity, causing them to sell their asset holdings. They sold bonds and stocks of other countries in their portfolio, as well as other classes of assets. As suggested by Kaminsky and Reinhart (2000), the analysis of the Russian crisis in 1998 reveals that there were a variety of withdrawals from risk-taking, which drastically reduced market liquidity and increased volatility.

In Argentina's crisis, financial contagion was much more modest. This time, markets were not as highly leveraged as they were at the time of the Russian default, and did not face liquidity constraints as severe as in the previous crisis. The market technicals were better in the emerging markets asset class, as crossover investors had already reduced their emerging market positions substantially in past months. Volatility did not spike and was segmented, being a lot higher for Argentina, but at much lower levels in Brazil and Russia. Dedicated funds also reduced their investments in Argentina for a while, and to some extent in Brazil as well.

There were also a number of other differences between the Argentine crisis and the Russian default. On one hand, the world economy was in worse shape when Argentina's crisis unfolded, as it was going through a synchronized slowdown. Merrill Lynch's technical measure of investor risk appetites, for example, was on the defensive side by historical standards, implying that investors would seek risk only if there was some general improvement in the world environment. This time, there were fewer countries with fixed or quasi-fixed exchange rates: systems that were prone to trouble in previous periods. Performance, volatility and creditworthiness diverged across different countries in emerging markets, suggesting that investors were differentiating among countries on the basis of their fundamentals. Finally, Argentina's crisis was much more foreseen and foretold than previous emerging markets crises (including that of Russia in August 1998), which had had the element of surprise, causing financial markets to react strongly to unanticipated events.

Finally, it is worth noting that contagion during the Asian crisis, the Russian default and the Brazilian devaluation period was widespread across countries, regions and assets, but this has not been the case in the Argentine crisis. For example, the correlation between the Latin American and non-Latin American components of the EMBI+ index was positive by 0.9 in the periods of the Asian crisis, the Russian default and the Brazilian devaluation, whereas during the Argentine crisis it was negative by 0.4.¹⁰ Once again, the evidence reinforces the notion that investors' liquidity constraints and withdrawal from risk were responsible for the widespread nature of financial contagion during the Asian, Russian and Brazilian crises, while in the more recent period investors were not faced with severe liquidity constraints. According to Kaminsky and Reinhart (2000), in the previous periods of crisis not only emerging markets (the periphery), but also mature markets (the centre) were affected, since investors were so highly leveraged. They conclude that if the shock never reaches the center, it is doubtful that it can become widespread across countries and regions.

VI

Summary and conclusions

This paper examined empirically, through the behaviour of bond spreads in secondary markets and new debt issuance and maturity, how emerging debt markets were influenced by changes in U.S. interest rates in the second half of the 1990s.¹¹ In this period, bond financing became increasingly important to Latin American countries, because of the creation of a secondary market for sovereign bonds with the Brady bond exchange. On average, bond financing became

the second major source of funding in Latin America in the 1990s.¹²

The empirical analysis shows that, unlike what might be expected from theory, emerging market bond spreads and U.S. interest rates moved in opposite directions, perhaps reflecting the financial contagion due to the market turmoil that characterized most of the second half of the 1990s and suggesting that the effect of financial contagion on bond spreads worked in the opposite direction to changes in U.S. interest rates. From March 1996 to December 2001 there was a significant negative correlation of -0.6 between the 10-year U.S. Treasury Bond yield and the EMBI+ and EMBI+LAT spreads; the correlation between emerging market bond spreads and the U.S. federal funds target rate over the same period was also negative, albeit less strong (-0.3 for the EMBI+ and -0.5 for its Latin American component).

Debt flows to Latin America seemed to respond more to movements in spreads, rather than to U.S.

¹⁰ See table 8 in section III.

¹¹ Much of the existing literature on the determination of emerging market spreads examines the behaviour of launch spreads, rather than secondary market spreads. Secondary market sovereign spreads, however, can behave differently from launch spreads, as they reflect current market conditions, as well as investors' expectations concerning the ability of debtor governments to service existing debts. Spreads for bonds that are actively traded in secondary markets thus reflect the perceived risk of emerging market debt. Earlier work based on secondary market developments includes Dooley, Fernández-Arias and Kletzer (1996), Calvo, Leiderman and Reinhart (1996), and Arora and Cerisola (2000 and 2001).

¹² See Bustillo and Velloso (2000).

interest rates in the period analysed here. When isolating periods of easing (declining federal funds target rate) and tightening (increasing federal funds target rate) U.S. monetary policy, the correlation between debt flows to Latin America and U.S. interest rates did not show the expected sign. There was a positive (rather than negative) correlation between U.S. interest rates and debt flows to Latin America. Latin American securities issued abroad showed a positive correlation of 0.5 with 10-year U.S. Treasury Bond yields. The correlation was particularly strong in the periods of the Asian, Russian and Brazilian crises.

Movements in high-yield bond spreads were strongly and positively associated with movements in emerging market bond spreads during the Asian crisis, the Russian default and the Brazilian devaluation, with a correlation coefficient of 0.9. The correlation between the Nasdaq Composite and EMBI+LAT spreads was more marked after mid-1998 because of globalization in the areas of technology, media and telecommunications and was especially strong throughout 2000 and 2001.

The results corroborate the view that there was financial contagion and that it was primarily the result of the interaction of investors facing liquidity constraints who had invested in emerging market assets, which are potentially illiquid. A need of liquidity could be precipitated by an exogenous shock, and would become one of the main transmission channels of financial turmoil across assets and countries. When facing liquidity needs in one particular class of assets or a particular country, investors would tend to withdraw liquidity from another class of assets or other countries.

Contagion changed over the period, being strongest during the Russian crisis, and more limited in the Argentine crisis. The level of market leverage (high in the first case and lower in the latter) seems to be one of the main reasons explaining why there was so little contagion in the Argentine crisis. This suggests that emerging markets can dispose of some room to deal with the dynamics of the world capital markets if they pursue strong debt management policies to improve debt profiles, as well as sound fiscal and monetary policies.

The correlation coefficients observed support the notion that although U.S. monetary policy is a fundamental element in determining country risk, liquidity constraints and financial contagion may offset the influence of U.S. interest rates on emerging market bond spreads and may become the main factor

influencing the behaviour of spreads in times of economic and financial turmoil. The coefficients also give strength to the belief that the greater financial integration that has characterized the current process of globalization has increased the vulnerability of developing countries to external shocks, since they have to respond to sudden changes in world capital market conditions.

The financial contagion of the late 1990s is indicative of the international financial system's serious problems of governance. Various ECLAC studies have noted that the instability of the international financial system is associated with the marked asymmetry that exists between the rapid development of world financial markets and the absence of adequate forms of macroeconomic and financial governance at the global level. Given the magnitude and intensity of external financing cycles, the high risk of contagion, and the devastating effects of the volatility of financial markets, a global institutional framework capable of dealing with volatility when it occurs is required.¹³

Although the correlation coefficients observed support the notion of a liquidity crunch and a flight to quality, other causes cannot be ruled out without first of all carrying out more studies and making further efforts to determine the possible influence of other variables. Future studies could also analyse the role played by the length of time that elapses before bond spreads react to changes in United States interest rates: an issue not dealt with in the empirical analysis made in this article.

Finally, it should be noted that the contagion problems deriving from a liquidity crunch are only one of many features of present-day financial markets which have tended to accentuate their volatility. Other features, which are outside the scope of this study, are: insufficient regulation of the activities of both the banking sector and institutional investors and secondary market agents; the procyclical bias of the prevailing rules; the tendency for a number of agents to use the same risk assessment systems, thereby increasing the correlation between the financial behaviour of often disparate instruments; the tendency of institutional investors to assess results over short periods, and the procyclical behaviour of risk assessment agencies.¹⁴

¹³ See Ocampo (2000 and 2002).

¹⁴ See ECLAC (2002), p. 60.

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Making infrastructure reform *in Latin America* work for the poor

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Ten years of infrastructure reform in Latin America can teach us a lot about how to make privatization work for the poor. There are macroeconomic and microeconomic transmission mechanisms through which such reform may affect those sectors. This paper discusses policy instruments to increase their access to services and make the latter more affordable for them. The advantages and disadvantages of each instrument are evaluated and examples are given. The ways in which policy-makers should go about setting social priorities in infrastructure reform and choosing the most appropriate policy instruments in each case are then considered. Emphasis is placed on the need for simple and rapid empirical diagnostic tools, and finally it is stressed that a pro-poor reform strategy requires a political commitment from the outset of the reform process and an integrated approach between privatization, social and regulatory policy.

I

Introduction

Since 1990, more than 120 developing countries have invited the private sector to participate in the provision of infrastructure services. Latin America has achieved a higher degree of private sector participation than any other region, attracting about 50% of private capital flows to developing country infrastructure sectors during the 1990s. Indeed, by the year 2000, 90% of Latin American countries had achieved some degree of private sector participation in their electricity, telecommunications and transport sectors, and almost half have private participation in their drinking water sectors. Notwithstanding the widespread adoption of private sector participation, however, the infrastructure reform process –both in Latin America and beyond– has raised significant social concerns. Many argue that privatization leads to tariff increases that make services unaffordable for the poor, and that it hands over operational responsibilities to profit-orientated multinationals that have no commercial interest in extending services to urban slums and isolated villages. In a number of well-known examples, the social unrest created by private sector participation ultimately led to the demise of the whole process (Cochabamba, Bolivia), or necessitated major contract renegotiations (Buenos Aires, Argentina).

Concern for social issues only came as an afterthought in many reforming countries, and they

were often addressed only in order to resolve conflicts. This is a policy failure in a region where more than a third of the population is poor. Fiscal and efficiency concerns dominated the agenda of policy-makers pressed by the severity of macroeconomic problems (Benítez, Chisari and Estache, 2000). Indeed, almost 60% of the private capital flows to the infrastructure sectors in Latin America during the 1990s were captured by the State in the form of privatization proceeds rather than invested directly in the sector. Even so, overall the infrastructure reform process has brought significant benefits to the Latin America region, generating US\$ 290 billion of private capital flows during the 1990s and leading to substantial improvements in the efficiency of infrastructure services. In Argentina, for example, it is estimated that the efficiency gains resulting from privatization amounted to one percentage point of GDP (Chisari, Estache and Romero, 1999). Moreover, there have also been some positive examples of how privatization can be made to work for the poor and provide the basis for a more conscious strategy of harnessing public-private partnerships to meet social objectives that cannot be fully financed from government resources.

This paper aims to distill the lessons of ten years of infrastructure reform experience in Latin America about how to make infrastructure privatization work for the poor (Estache, Foster and Wodon, 2002; Ugaz and Waddams Price, 2002). The paper is intended for the benefit of countries that are about to embark on infrastructure reform, or to make significant ‘second generation’ policy adjustments. A menu of options is provided, from which policy-makers can select the most suitable pro-poor infrastructure reform strategy for any particular country or sector. The structure of the paper is as follows: section II provides an overview of the macroeconomic and microeconomic transmission mechanisms through which infrastructure reform can affect the poor, with the primary focus centered on the microeconomic linkages, notably the ways in which reform affects access to infrastructure services by the poor and the affordability of those services for them. In section III we discuss policy instruments that can be used to ensure that infrastructure reforms result in increased access to services by the poor. The advantages

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and disadvantages of each instrument are evaluated, and a number of concrete examples provided. In section IV, we review the policy instruments that can be used to ensure that infrastructure services remain affordable to poor households following reform of the sector, and once again the advantages and disadvantages of each instrument are evaluated and examples given.

Section V considers how policy-makers should go about setting social priorities in infrastructure reforms

and choosing the most appropriate policy instruments for each case, with emphasis on the need for simple and rapid empirical diagnostics of how infrastructure services affect the poor, and finally section VI explains why the definition of a pro-poor reform strategy requires a political commitment from the outset of the reform process, as well as the adoption of an integrated approach between privatization, social and regulatory policies.

II

Macro and micro linkages between reform and the poor

From a macroeconomic perspective, there are three ways in which infrastructure reform can have an impact on the welfare of the poor: by promoting economic growth; by affecting employment levels; and by reallocating public expenditures.

Infrastructure investments are important for economic growth, which is in turn one of the main engines of poverty reduction. Evidence from Bolivia, Colombia, Mexico and Venezuela indicates that a 10% increase in infrastructure stocks has been found to lead to a 1.5% increase in GDP (Canning, Fay and Perotti, 1992; Canning, 1998; De la Fuente, 2000), which is important because in Latin America a single percentage point of growth reduces the number of people living in poverty by half a percentage point (Wodon, 2000d). There is also evidence from Argentina and Brazil that differentials in infrastructure endowments (such as roads and access to sanitation) have been a significant impediment to convergence between rich and poor regions over the last 20 years (Eberts, 1990; Estache and Fay, 1995; Ferreira, 1996; Ferreira and Malliagos, 1998).

Another consequence of privatization and reform is the shedding of labour to raise the efficiency and profitability of infrastructure service providers. In Argentina the utilities workforce shrank from 300,000 in the 1980s to around 50,000 by 1993 (Alexander, 2000). The immediate impact of such layoffs can be cushioned by the design of adequate labour redundancy packages, and in the longer run – to the extent that sector reform contributes to economic growth and thereby new jobs – the initial layoffs in the public utilities may be

compensated by job creation in other sectors (Galal et al., 1994). Still, the transition is difficult and should be a major item of concern for policy-makers.

Finally, infrastructure services have traditionally absorbed large volumes of public resources to cover operating subsidies and finance new investments. Reform of the sector and the participation of private capital offer the opportunity to make these services financially self-sufficient, thereby freeing up fiscal resources for other programmes. To the extent that these funds are diverted to programmes whose incidence is more progressive than that of the original infrastructure subsidies, there is potential for reform to benefit the poor (Baffes and Shah, 1998). In Colombia, for instance, subsidies for the consumption of utility services such as water, sewerage, electricity and gas are substantially less progressive than public expenditures on health, education and rural development (Vélez, 1995).

The microeconomic linkages between infrastructure reform and the poor fall into two categories, namely those that affect either access to services by the poor, or their capacity to pay for them. Table 1 summarizes the main linkages between infrastructure reform and the poor, and identifies the corresponding mitigating policy instruments that will be described in greater detail in the following sections.

Reform and private sector participation can affect access to infrastructure services in many ways. Reform may lead to increases in the initial connection fees for infrastructure services that may historically have been provided at minimal charge. Typical connection fees

TABLE 1

Microeconomic linkages between infrastructure reform and the poor

Access	Impact	Mitigating policy instruments
Rising connection charges	The connection charge may increase substantially with the arrival of private operators who must recoup the costs of network expansion.	<ul style="list-style-type: none"> • Select cheaper technologies for network expansion. • Provide credit for repayment of connection charges. • Allow households to contribute labour for civil works. • Cross-subsidize connection costs through user tariffs. • Provide connection subsidies to poor households.
Diluting incentives	It may not be commercially attractive for private operators to serve poor customers who live in costly outlying areas, consume modest amounts of the service, and may not be accustomed to paying.	<ul style="list-style-type: none"> • Impose universal service obligations on operators. • Specify connection targets in low-income areas. • Provide connection subsidies to poor households.
Outlawing alternatives	Privatization may restrict access to some alternative services, especially if connection to public network is mandatory.	<ul style="list-style-type: none"> • Oblige dominant utilities to provide alternative services. • Allow licensed entry of alternative suppliers. • Promote partnerships between dominant utility and alternative suppliers.
Affordability	Impact	Mitigating policy instruments
Increasing tariffs	Average tariff levels can increase substantially (10% to 100%) due to cost recovery requirements.	<ul style="list-style-type: none"> • Introduce lifeline tariffs. • Apply targeted tariff discounts. Provide vouchers for services. • Reduce fixed charges. Control the level
of		<ul style="list-style-type: none"> consumption. • Increase frequency of billing. • Use prepayment devices.
Formalizing payment	In order to improve revenue collection, private operators will formalize illegal connections and enforce billing on pain of disconnection.	See above.
Rebalancing tariffs	The removal of historic cross-subsidies may accentuate increases in tariffs of services used by the poor.	See above.
Raising quality standards	Average tariff levels can increase, due to more demanding quality-of-service standards	<ul style="list-style-type: none"> • Where possible, allow operators to provide different price and quality combinations to different customer groups.

Source: Prepared by the authors.

charged by the private sector are of the order of several hundred US dollars, and are thus beyond the economic reach of poor households, unless there is some kind of option to pay by installments. There is thus a danger that poor households may not be able to afford service connections after the reform process. Low income families tend to live in outlying settlements that are costly to serve and consume only modest amounts of infrastructure services, which they may not even be accustomed to paying for. Since private operators are driven primarily by profit considerations rather than public policy objectives, they may not find it

commercially attractive to extend services to low income customers. Finally, many poor households rely on informal alternatives to modern infrastructure services, such as private vendors, next door neighbours or self-supply. Reform processes sometimes attempt to outlaw these small-scale alternative providers, thereby reducing the options available to the poor.

There are also ways in which reform can raise affordability issues for those among the poor who already enjoy access to the services. First, in order to make infrastructure services financially self-sustaining, it may be necessary to increase tariffs that have been

kept artificially below the cost of provision for many years. Tariff increases can be quite substantial (of the order of 10% to 100%), but they are to some extent a political option and can be mitigated if the government is willing to accept a lower sale value for infrastructure assets. Moreover, where effective competition or incentive-based regulation is introduced, tariffs may decrease over time.

Second, State-owned utilities have traditionally taken a relaxed attitude to illegality and non-payment. In contrast, private operators have a strong incentive to insist on the formalization of illegal connections and enforce service payments (on pain of disconnection), so as to ensure the collection of enough revenue to cover operating costs. As a result, following sector reform, some poor households may find themselves paying for services for the first time. However, this is not necessarily a bad thing, since illegality is often not in the interest of poor households. Informal connections are often unsafe (contaminated drinking water, risks of electrocution), and may entail payments to local mafia bosses. Moreover, establishing a formal relationship with a utility can be a

first step towards obtaining the proof of residence necessary to obtain credit and access to other services.

Third, in sectors where competition is introduced, it becomes necessary to phase out historical cross-subsidies between customer groups, leading to substantial tariff rebalancing. One example is the increase in local telephone charges and the corresponding decrease in long distance and international telephone charges that typically follows sector reform. To the extent that poor households make disproportionate use of services that historically benefited from cross-subsidies, they may be adversely affected (Gómez-Lobo, 1996).

Finally, the desire to improve service quality is often an important motivating factor in infrastructure reform. However, quality improvements generally require significant investments in upgrading infrastructure, and therefore feed through into higher service tariffs for consumers. While raising quality standards is clearly a desirable outcome, it may raise issues of affordability for low income households (Baker and Tremolet, 2000).

III

Policy instruments for improving access to basic services

While improvements in access to infrastructure services are more likely to be pro-poor than the current situation, the evidence suggests that the poor (and especially the very poor) still often do not benefit as much as others from gains in access (Ajwad and Wodon, 2002a and 2002b). Special efforts, programmes and regulatory oversight are needed in order to ensure that the benefits reach the poor. Table 2 reviews a number of instruments available for improving access to services for the poor, together with their advantages and disadvantages (see also Komives, Whittington and Wu, 2000). These instruments are not mutually exclusive, and indeed successful examples of reforms in Latin America combine several of them. The instruments in table 2 fall into three categories: requiring operators to provide access; reducing connection costs; and increasing the range of suppliers.

1. Requiring operators to provide access

Let us first consider requirements to provide access. Regulatory measures can be used to counteract the lack of commercial incentives for serving low income customers. Universal Service Obligations are typically incorporated in licenses and concession contracts and require operators to provide services within a specified time period to any consumer that requests them within a specified geographical area. Although politically appealing, such obligations are not all that meaningful in practice because they fail to take into account the fact that low income households may not be able to afford service, and hence would not be in a position to request it (Chisari and Estache, 1999). They also overlook the fact that for communities that are beyond the existing network, service expansion needs to take

TABLE 2

Summary of instruments for promoting access

	Advantages	Disadvantages
<i>Instruments requiring operators to provide access</i>		
Universal Service Obligations	Provide a legal obligation to serve all customers, including those that may not be commercially attractive.	The obligation is rather vague, and places the onus on the customer to request the service. This may not be very meaningful if poor customers cannot afford connection charges or live far away from existing networks.
Connection Targets	Force a concrete definition of realistic coverage targets, ensuring that unprofitable customers are served. Can be monitored and enforced by use of financial penalties.	Require symmetrical obligation on users to connect, which limits freedom of choice. Attention must still be given to affordability of connection charges if tariffs are to be met.
<i>Instruments reducing the cost of connection</i>		
Low cost technologies	Improve the affordability of infrastructure connections, without generating the need for subsidies, and reduce the overall investment cost of reaching universal access targets.	May lead to reduced quality of service.
Labour contributions	Allow households to contribute in terms of an abundant resource (time) rather than a scarce resource (money). Avoid need for external finance.	There may be significant costs in training and supervising community volunteer labour.
Credit lines	Address what is sometimes the real underlying problem: credit constraints rather than absolute affordability.	If provided by private operator, may lead to increased risk exposure. Otherwise, require collaboration of micro-credit institutions.
Connection subsidies	Target subsidy funds to low income individuals. Administrative costs are relatively low as a proportion of subsidies awarded. For community level subsidies, competitive forces can be used to keep costs down.	Require government finance and are relatively costly per household connected. User co-financing should be required to ensure commitment.
Connection cross-subsidies	Do not require external source of funding and spread cost over a large connected population (often with greater ability to pay than the unconnected population). Somewhat equitable if connections were provided free of charge prior to privatization.	Require the unconnected population to be small relative to the connected population. The connected population may be unwilling to shoulder the subsidy.
<i>Instruments that increase supply options</i>		
Broader service obligations	Ensure that an alternative is available for households which are not able to connect to the network	Except in the case of telephones, there is evidence that even poor households prefer private connections. Communal supply points tend to be unprofitable and therefore need to be closely regulated.
Licensed entry of alternatives	Provides choice to consumers. Increases competitive pressures on the dominant utility.	May make investment unattractive to dominant utility. May be difficult to regulate small suppliers to ensure adequate quality of service.
Promotion of partnerships	Improve quality of supply to communities lacking connections to the dominant utility, while reducing commercial risk to dominant utility from serving marginal communities	May be difficult to achieve collaboration between the formal and informal sectors.

Source: Prepared by the authors.

place in a coordinated fashion, and not simply at the request of an individual.

A tighter approach is to incorporate connection targets requiring the operator to make a specified number of new connections within a certain time period. In 1997, this approach was successfully used in the 30-year water and sewerage concession for the twin cities of La Paz and El Alto in Bolivia (Komives and Brook, 1999; Carbonel, 2000; Foster and Irusta, 2001). The government awarded the concession to the private operator willing to make the largest number of new connections in the low-income neighbourhoods of El Alto. Thus, the winning bidder was contractually obliged to connect 72,000 families to piped water and 38,000 families to sewerage over a five-year period, and as a result the annual rate of new connections to both water and sewerage services increased by about 66% following the reform. Household survey evidence shows that the coverage of water in low income households in El Alto—which was almost static at 65% between 1989 and 1994—jumped to about 98% between 1994 and 1999.

This example illustrates that it is critical that the connection targets be geographically referenced to low income communities, otherwise the operator will meet them simply by taking services to the most lucrative segments of the market (which is what would have happened anyway in the absence of connection targets). Connection targets should be carefully monitored and enforced through financial penalties. Although they represent an improvement on the Universal Service Obligation, concerns about the affordability of connection charges remain valid. In practice, obligations to serve the poor are much more effective when they are combined with financial incentives. This could mean, for example, providing ‘smart subsidies’ to operators that connect poor consumers, or ensuring that the tariff revenue from serving poor customers fully covers the cost of service provision so that they are financially attractive to serve, even if a part of this cost is ultimately subsidized (Jadresic, 2000). These issues will be explored further in the next section.

2. Reducing connection costs

There are several instruments that can help to reduce connection costs for poor households. In many countries, there is a tendency to enforce rigid technological standards for infrastructure networks that are often comparable with those prevailing in industrialized countries (Brook and Tynan, 1999).

Although such standards guarantee a high-quality service, they may also have the effect of making the service so expensive that it is not affordable to the poor. Greater flexibility is called for, and governments should experiment with technologies that may provide a slightly lower quality of service but at a significantly lower cost. Also, while poor households are cash constrained, they may have labour time available, particularly if they live in areas affected by underemployment. It is often desirable to allow people to contribute part of the cost of a new connection ‘in kind’ by volunteering their labour (while recognizing that such volunteer labour may require a commitment from the utility in terms of training and supervision).

The ‘condominium’ approach to water and sewerage networks developed in Brazil during the 1980s shows how technological innovation can be used to reduce the costs of providing services to poor households. By routing networks through backyards and across sidewalks, instead of down the center of streets, savings are made in the length and diameter of pipes and the depth they need to be buried at. Community labour is also used to build the networks, which reduces costs and increases ownership. Overall, savings of the order of 40-50% have been achieved (Foster, 2001).

Another reason why poor households find it difficult to pay connection charges is that they do not have savings, nor access to credit, that would enable them to make a large capital payment. Connection charges may become affordable if they can be spread over a sufficiently long period of time and credit lines can be offered directly by the utility (in the form of payment by installments) or micro-credit institutions. Credits of this kind may also help households to finance housing investments needed to make full use of an infrastructure connection: for example wiring in the case of electricity, and plumbing in the case of water and sewerage (the cost of these complementary investments may be as high as the connection charge itself). There is also the possibility of providing direct government subsidies to cover at least some portion of the connection costs for customers who meet eligibility criteria (connection subsidies are easy to target when a high proportion of unconnected households are poor, and administrative costs can be kept low). Connection subsidies could also be allocated competitively to the operators willing to provide service at the lowest cost. Where public finance is not available, connection subsidies can be funded by a surcharge on all utility bills, or by special funds. This introduces a cross-

subsidy from existing customers to new customers, since part of the cost of network expansion is covered through the service tariff, but it may be equitable if existing customers received their connections on a subsidized basis in the past.

One of the central objectives of the Buenos Aires water concession was to expand the access of low income households (Alcázar, Abdala and Shirley, 1999; Ferro, 1999). However, under the original terms of the contract, an infrastructure charge of 300-600 pesos for water and 800-900 pesos for sewerage was mandatory for new connections, and even with the possibility of paying by installments, such charges were out of reach for poor families living on 200-250 pesos per month. The high level of charges provoked civil unrest, leading to a renegotiation of the original concession contract, and the solution finally adopted was to levy a universal service fee of 6 pesos per month on all water customers and waive the infrastructure charge for new customers. This approach illustrates how the introduction of a cross-subsidy from existing to new customers was successful in overcoming the social problems caused by the original approach.

A slightly different approach has been taken in the telecommunications sector, where many countries have introduced rural funds as part of the reform process. These funds are financed from the proceeds of spectrum license auctions, or via universal service levies of the order of 1% on the turnover of the sector. The funds finance one-time capital grants to private operators willing to operate public telephones in commercially unattractive rural areas for at least 10 years, and they are competitively allocated to the operator requesting the lowest subsidy. Such programmes have succeeded in bringing public telephone services to 19,000 rural communities in four countries. Moreover, every dollar of public subsidy has leveraged at least two dollars of private investment.

3. Increasing the range of suppliers

There are several instruments which can also help to increase the range of suppliers. Many poor households are served by small-scale alternative providers who

frequently offer a balance of cost and quality that is better suited to low income customers than services provided by conventional utilities (Erhardt, 2000). When it is simply not feasible to achieve universal access to network services quickly, alternative services may be the only option available. It is thus important to ensure that the reform process takes into account the potential role of these providers in reaching the poor (Solo, 1999a and 1999b; Solo and Paniagua, 1999).

In some instances there may be genuine problems in relying on alternative service providers: for example, if they represent a major water quality risk or involve irrational exploitation of common-property water resources. Where this is the case, it makes sense to redefine the legal obligation of the dominant utility from providing a particular *technology* (e.g., piped water) to providing a *service* (e.g., drinking water to the household) by whatever technological means is appropriate (whether it be public tankers, public standpipes, or resale via a street vendor or neighbour). In this way, the dominant utility is required to take into account the needs of all the population and not simply those that are already connected to a modern infrastructure network.

In cases where alternative providers do not present conflicts with the public interest, they should be regarded as part of the solution, rather than part of the problem. Thus, far from being outlawed they should be given full legal status equivalent to that enjoyed by the formal utility (Kariuki and Acolor, 2000). Where feasible and appropriate, they should also be submitted to some regulatory control to ensure that they do not exploit customers, either in terms of the prices that they charge or the safety of the services they provide. Finally, small-scale alternative providers may work in partnership with the conventional utility, each building on their respective strengths and complementarities. For example, the utility may have a comparative advantage in the bulk production of potable water, while small-scale providers may have a comparative advantage in billing and distributing water in precarious peri-urban settlements. The regulatory framework should be sufficiently flexible to contemplate such partnerships when they are in the interests of the end consumer.

IV

Policy instruments for improving consumption affordability

Infrastructure reform processes often lead to tariff increases. Tariff structures that have significant standing charges or minimum monthly consumption charges can be particularly unfavourable to low-income customers who consume small amounts of the service. From a social perspective, it is desirable to keep these charges low, while recognizing that for the utility such charges may be an important reflection of the fixed costs associated with billing and servicing customers. In general terms, table 3 suggests instruments that can be used to safeguard the affordability of services, together with an overview of their advantages and disadvantages. In many cases, there are gains from using several instruments at the same time, since many are complementary to each other.¹ Broadly, such instruments influence affordability in at least one of three ways: reducing the bills to be paid by poor households; reducing the cost of services; and facilitating the payment of bills. Whatever the option chosen, when designing tariffs and subsidies that help to reduce the utility bills paid by poor households, care must be taken to establish simple, transparent and accurate eligibility criteria for identifying the poor and to avoid perverse distortions in the behaviour of utilities and their customers.

1. Reducing the bills faced by poor households

A popular way of reflecting social concerns in tariff structures is to define a “lifeline” subsistence consumption block that is provided below its economic cost (Maddock and Castaño, 1991; Garbacz and Thompson, 1997). In some cases, the lifeline is available to all customers, while in others it is targeted only at specific customer groups. The revenue shortfall from lifeline consumption can be covered by the State or by a cross-subsidy from those consuming higher volumes of the service. Lifeline tariffs are based on the assumption that poor consumers tend to be small

consumers. This is not necessarily true, however, if one takes into account the prevalence of large families, shared dwellings, and the practice of secondary retailing of services between neighbours.

The available empirical evidence indicates that the existing lifeline tariffs may not be very effective at reaching the poor. The electricity tariff in Honduras, for example, provides subsidized power to all domestic consumers using less than 300 kWh per month, at an annual cost of US\$17 million to the government. However, analysis shows that about 80% of this subsidy goes to non-poor households. The reason is that many poor people remain unconnected to the network, and those that are connected consume well below 300 kWh per month (Wodon, Ajwad and Siaens, 2002). A similar policy exists in Guatemala, where the annual cost of US\$50 million is financed via cross-subsidies from commercial and industrial customers. Given that only 40% of poor families in Guatemala have access to electricity, about 90% of the value of the subsidy goes to benefit the non-poor (Foster and Araujo, 2002).

An alternative to lifeline tariffs is to use identifying characteristics (means-testing) to target discounts on the poor. In some countries, place of residence is used to determine eligibility. Elsewhere, eligibility is based on socioeconomic characteristics or on the characteristics of the connection. Once again, the discounts can be financed by the State or via cross-subsidies from households that do not qualify. One option is to treat cross-subsidies as a surcharge on utility bills that goes into a trust fund for financing social tariffs. Utilities are then allowed to draw upon these resources against certified evidence that they are providing discounted service tariffs to identified low-income consumers. A drawback of means-testing versus lifeline systems is the need to incur administrative costs for screening customers for eligibility, but this cost can be reduced by using a similar targeting mechanism for many different programmes (Foster, Gómez-Lobo and Halpern, 2000; Clert and Wodon, 2001). Furthermore, Wodon, Ajwad and Siaens (2002) show that means-testing can be much more efficient in identifying the poor than lifeline tariffs, so that it should more than

¹ An interesting example of using instruments jointly is that of Electricité de France (EDF) in France (see Wodon, 2000a, 2000b and 2002c).

TABLE 3

Summary of instruments for promoting affordability

	Advantages	Disadvantages
<i>Instruments reducing bills paid by poor households</i>		
Lifeline tariffs	Entail minimal administrative costs.	Based on the questionable assumption that poor customers are small consumers. However, as a result of large families, shared dwellings, and reliance on secondary retailing (sales between neighbours) this will not necessarily be the case.
Targeted tariff discounts	May provide a more reliable way of identifying low-income households.	It is difficult to find good targeting variables, and administrative costs may be significant. May be difficult to raise subsidy or cross-subsidy funds.
Vouchers	May provide a more reliable way of identifying low income households, give added flexibility for user to select service provider, and ensure that low income customers remain commercially attractive.	May be administratively complex and open to abuse; remains difficult to identify good targeting variables and raise fiscal funds.
Tariff re-balancing	Reduces burden of fixed costs on small consumers	The overall impact on affordability may not be large, and utilities may need to cover fixed costs of billing.
<i>Instruments reducing cost of service</i>		
Lower quality of service	Allows consumers to choose their preferred balance between the cost and quality of service.	May not always be technologically possible to differentiate quality of service provided through a common network.
Consumption limiting devices	Prevent low income households from consuming beyond their means.	May lead to hardship if basic needs exceed imposed consumption ceiling. Moreover, required metering technology may be prohibitively expensive. Also runs against the private operator's commercial incentives.
<i>Instruments facilitating payment of bills</i>		
Billing frequency	Facilitates budgeting for low income households	Increases administrative costs of revenue collection, but may improve revenue collection rates.
Prepayment devices	Facilitate budgeting for low income households	May lead to 'self-disconnection'. May be costly and subject to fraud. Requires the creation of a network for selling 'smart cards' if electronic technology is used.

Source: Prepared by the authors.

compensate for the administrative costs involved. Under means-testing, some discounts may take the form of vouchers defraying the cost of utility bills while allowing users to select their service provider. While voucher schemes may be complex, the basic principle of applying the same cost-reflective tariffs to all customers (while providing vouchers) is important because it ensures that low-income customers remain commercially attractive to utilities.

Colombia provides an interesting example of geographically targeted discounts for the poor. The scheme is endorsed by the Constitution of 1991, which requires utility tariffs to be based on principles of social solidarity. This has been achieved by classifying all neighbourhoods in the country into one of six socioeconomic strata, based on the quality of housing (for example, the materials with which it is constructed) and the extent of neighborhood amenities (such as street

lighting, green areas). According to the 1994 Public Utilities Law, neighbourhoods in strata one to three may have their tariffs subsidized by a maximum of 50% for strata one, tapering down to 15% for strata three. The resulting revenue shortfall is covered from a surcharge of up to 20% to be applied to the bills of households in strata five and six, as well as commercial and industrial customers. The scheme is successful in reaching the poor (95% of them live in neighbourhoods belonging to strata one to three), but there is also high leakage (80% of residents of those three types of neighbourhoods are not poor) (Contreras and Gómez-Lobo, 2000).

2. Reducing the cost of services

Another way of keeping services affordable for poor households is to reduce the cost of providing them. This can be achieved either by providing a lower quality of service or by placing physical limits on the amount of the service that a household can consume. Poor households may prefer to accept a lower quality of service, if in return they are charged a lower tariff. Yet, in practice, most utilities tend to offer a single service level, which is determined with reference to industrialized country standards and may therefore be unaffordable for poor households. While safety standards should not be compromised, there may be other ways to differentiate the quality of service provided to different customer groups. One example is reliability, where some customers may be willing to accept a higher frequency of service interruptions in return for a lower tariff. Of course, this kind of approach must be based on consultation with the affected communities. Another complaint made by low income households is that utility bills are unpredictable, and that it is therefore difficult to keep consumption within affordable limits. One possibility here is to install physical devices that limit the amount of the service that can be drawn through the connection. In the case of electricity, this takes the form of load limiters, which restrict the total number of appliances that can be switched on at the same time, while in the case of water, small-diameter connections can be used to limit the flow of water into a dwelling. In telephony, it is easy to cap the number of minutes of use each month. The advantage of these devices is that they keep consumption levels –and hence utility bills– below a predetermined upper limit.

3. Facilitating payment of bills

A key difference between modern utilities and traditional substitutes is the frequency of payment. Whereas households buy candles and tankered water on a daily or weekly basis, electricity and piped water are typically billed no more than once per month. Since poor households have negligible reserves of working capital, it may be difficult to pay for a whole month's consumption in one go. One solution is for utilities to bill more frequently, although this entails higher administrative costs. Alternatively, 'utility stamps' can be sold through retail outlets so that households can pay for services gradually during the course of the month. Another way of giving households payment flexibility is to use prepayment devices rather than standard billing. This reduces the commercial risk faced by utilities, since customers are not given credit for the use of the service. Prepayment systems have been successful in widening the ownership of cellular telephones. However, in some sectors prepayment meter technologies remain expensive to install.

An example of the successful use of prepayment devices comes from Bolivia, where until 1995 cellular telephony services were the monopoly of Telefónica Celular de Bolivia (Telecel). The cost of a telephone was high, and subscribers were required to pay for both incoming and outgoing calls. In 1995, however, a second cellular license was awarded to the Empresa Nacional de Telecomunicaciones (Entel), and with the advent of competition, the 'calling party pays' rule was adopted, leading to an effective reduction of about 70% in the cost of using a cellular telephone. Prepayment telephones were also introduced with payment card denominations as low as US\$ 5. As a result, the number of cellular subscribers in Bolivia has grown by a factor of ten between 1996 and 1999, and prepaid telephones have accounted for 86% of the growth in mobile telephony since 1998. Evidence suggests that many prepaid telephone subscribers are artisans and micro-entrepreneurs who use the telephone mainly for receiving calls from clients, keeping their own expenditures under control by purchasing low value phone cards. A wide variety of systems for facilitating the payment of bills have also been implemented in many OECD countries (Wodon, 1999 and 2000a).

V

Defining pro-poor infrastructure reform strategies

In the preceding sections we identified ways in which infrastructure sector reform may prejudice the poor, and we presented instruments to attenuate such impacts. In order to apply these concepts to a particular country or sector, it is necessary to have a good empirical understanding of the social dimensions of infrastructure services. Much of the needed information may already be available from existing sources, such as census data, household surveys or utility databases. However, significant efforts are often required to pull it all together. In some cases, it may be necessary to contemplate new survey work to collect information on important policy variables, which can then be used to answer three key questions: i) should the primary policy focus be on improving access or affordability?; ii) which policy instruments are likely to be the most effective in reaching these goals?; and iii) which infrastructure services should be given the highest social priority?

Both access and affordability are important, and there is no point in providing poor households with access to a service that they cannot afford. Nevertheless, resources are constrained and it is often necessary to focus attention on one objective or the other. In general, improving affordability is more likely to benefit the better-off, rather than increasing access for those who are not yet connected, partly because the second group is poorer. There may, however, be a threshold beyond which providing additional access may be less poverty-reducing than providing subsidies to those who already have access (Wodon and Ajwad, 2002). There is also evidence that households with network access are able to satisfy their basic needs much more cost-effectively than those without. For example, in Guatemala households with electricity pay less than US\$ 0.10 per kilowatt-hour to light up their homes, while those without rely on candles that cost the equivalent of US\$ 5 per kilowatt-hour (Foster and Tre, 2000; Foster, Tre and Wodon, 2000). Similarly, in Port-au-Prince, Haiti, households with piped water connections pay US\$ 1.00 per cubic meter, while those without pay US\$ 10 per cubic meter to obtain water from private vendors.

Simple diagnostic tools can be used to determine whether access charges are affordable to the poor. For example, the connection charge can be divided by the

monthly income of a typical poor household, and if no direct information on monthly income is available, the minimum wage or poverty line can be used instead. While there are no hard and fast rules, the resulting ratio gives an idea of how unaffordable connection charges may be. For example, if the connection charge represents six months of family income, it is clearly beyond the economic reach of the poor. It is also important to find out whether the utility offers the possibility of payment in installments, and if so, what proportion of monthly income such installments represent for the poor. For example, if each installment absorbs 25% of monthly income, then the service remains unaffordable in spite of the opportunity to pay by installments. One can also assess the extent to which poor households connect to utility services when infrastructure networks are available in their communities. Recent evidence from Guatemala and Honduras shows that up to a third of households without access to electricity and piped water live next to public mains and distribution lines, but nonetheless they are not connected (Foster and Araujo, 2002; Estache, Foster and Wodon, 2002). While there are a number of potential explanations for this phenomenon, it clearly suggests that the connection may not be affordable.

Similarly, simple diagnostic tools exist for assessing the affordability of using a service. For example, the amount that connected poor households pay for the service as a percentage of their total household budget can be computed. If expenditure data are available, it is possible to infer the physical amount of the service that families are consuming, and compare this to a subsistence benchmark, to see whether the poor are consuming 'enough'. It is also possible to compare the expenditures of low income connected households on utility services with the amount paid for substitute services by similar low income households that do not enjoy network access. In Guatemala, poor households with access to electricity spend as much on lighting and powering appliances as poor households without electricity do for comparable purposes, but the former derive much more benefit from their electricity connections than the latter do from substitute sources. Even when household survey data are not available, the utility tariff structure itself can be used to calculate

the monthly bill for a reference level of subsistence consumption and compare this with the typical monthly income of a poor household. Where the necessary resources are available, another possibility is to conduct a household survey designed to measure the stated willingness to pay for the service.

Once priorities have been identified, the next step is to select instruments for promoting access, affordability, or both. While some instruments have no budgetary implications, others do, in which cases costs must be estimated, taking into account administrative costs, say, for screening eligible households. Since an important part of the cost is due to resources that 'leak away' to households that were not intended to be beneficiaries, it is important to make a realistic evaluation of the likely targeting performance of the subsidy or policy (Contreras and Gómez-Lobo, 2000). It is also difficult to design a subsidy programme that does not introduce some kind of perverse incentive. For example, subsidies may reduce commercial incentives for utilities to serve poor customers, by reducing the revenue that they capture from doing so. Subsidies can also distort the behaviour of consumers, by generating potentially wasteful consumption, efforts to qualify for the subsidy by fraudulent means, attempts to sell or pass on subsidy benefits to non-eligible consumers, or reduced interest in improving income and living conditions in order to avoid losing eligibility (poverty trap mechanisms). Subsidies linked to location or the characteristics of dwellings may also be capitalized in the rental value of the property, thereby reducing the benefits for poor tenants. Finally, while social policies tend to be designed on a sector-by-sector basis, overall budget constraints mean that governments also need to take into account priorities within infrastructure sectors, as well as between infrastructure and other sectors.

A number of analytical tools have been developed in recent years to aid decisions on which types of subsidies to provide. By using Consumption

Dominance curves, it is possible to compare the poverty-reducing impact of subsidies to different sectors (Makdissi and Wodon, 2002).² Results for Latin American countries suggest that subsidies for water and urban transport have more impact on poverty than subsidies for electricity and telephony. By decomposing measures of inequality across different components of expenditure, it is possible to identify how subsidies are likely to affect inequality (see for example Wodon and Yitzhaki, 2002). In Mexico, this methodology suggested among others that subsidies for water reduced inequality, subsidies for electricity were neutral in this respect, and subsidies for telecommunications increased inequality. Finally, the impact of subsidies and access on inequality measures can be compared, taking into account the value of access for households which are connected to the network, by using hedonic regressions, for example (Siaens and Wodon, 2002).

Table 4 summarizes the main questions that must be answered in order to define a strategy for pro-poor infrastructure reform and identifies the information that needs to be collected to provide well-founded empirical answers to those questions. Figure 1 provides a simple decision tree for determining priorities between access and affordability issues.

² Consumption Dominance or CD curves are used to test whether the reduction in poverty induced by a marginal tax reform, a price reform, or a subsidy reform for two commodities is robust over a large set of poverty measures and poverty lines. The method is similar in spirit to checking for non-intersecting concentration curves, but it enables the analyst to choose the so-called order of stochastic dominance of interest, rather than being limited to the second order of dominance. Moreover, the method extends previous results for the impact of tax, price, or subsidy reforms on poverty measures of the Foster-Greer-Thorbecke (FGT) type to a larger class of poverty measures, and to cases where there is a differential in the efficiency cost of raising public funds through various commodities (or, more generally, differences in the behavioral impact of tax, price and subsidy reforms). For details, see Makdissi and Wodon (2002).

TABLE 4

Summary of strategic questions and information needs

Questions	Information needs
What is the level of service coverage among poor households?	Conventional coverage statistics, broken down by income or consumption decile, and preferably also by urban and rural areas. Percentage of households connected to utility services which are poor. Unit price of utility service. Equivalent unit price of substitute for utility service.
Can the poor afford the initial costs associated with connecting to the network?	Connection charge divided by typical monthly household income of the poor (e.g., two minimum wages, or the family poverty line). Minimum monthly installment required by utility to cover connection charge divided by typical monthly household income of the poor. Percentage of households living in communities served by utilities that are actually connected to the network, broken down by income or consumption decile.
Can the poor afford to use infrastructure services once they have them?	Monthly utility bill for a subsistence consumption level, divided by typical monthly income of the poor. Actual monthly expenditure on utility services by connected households as a share of household budget, broken down by income or consumption decile. Actual monthly expenditure on substitutes for utility services by unconnected households as a share of household budget, broken down by income or consumption decile. Declared willingness to pay for utility service, broken down by income or consumption decile.
What would be the cost of using the instrument?	Estimated total resource cost of implementing the instrument. Estimated administrative cost of using the instrument.
Does the instrument perform well in targeting terms?	Estimated percentage of beneficiaries that are poor. Estimated percentage of resources that leak away to unintended beneficiaries.
Would the instrument introduce perverse incentives?	Anticipated behavioral impact on the utility. Anticipated behavioral impact on intended beneficiaries and the rest of the population.
What should be the prioritization between services?	Consumption Dominance Curves. Gini Index Decomposition.

Source: Prepared by the authors.

VI

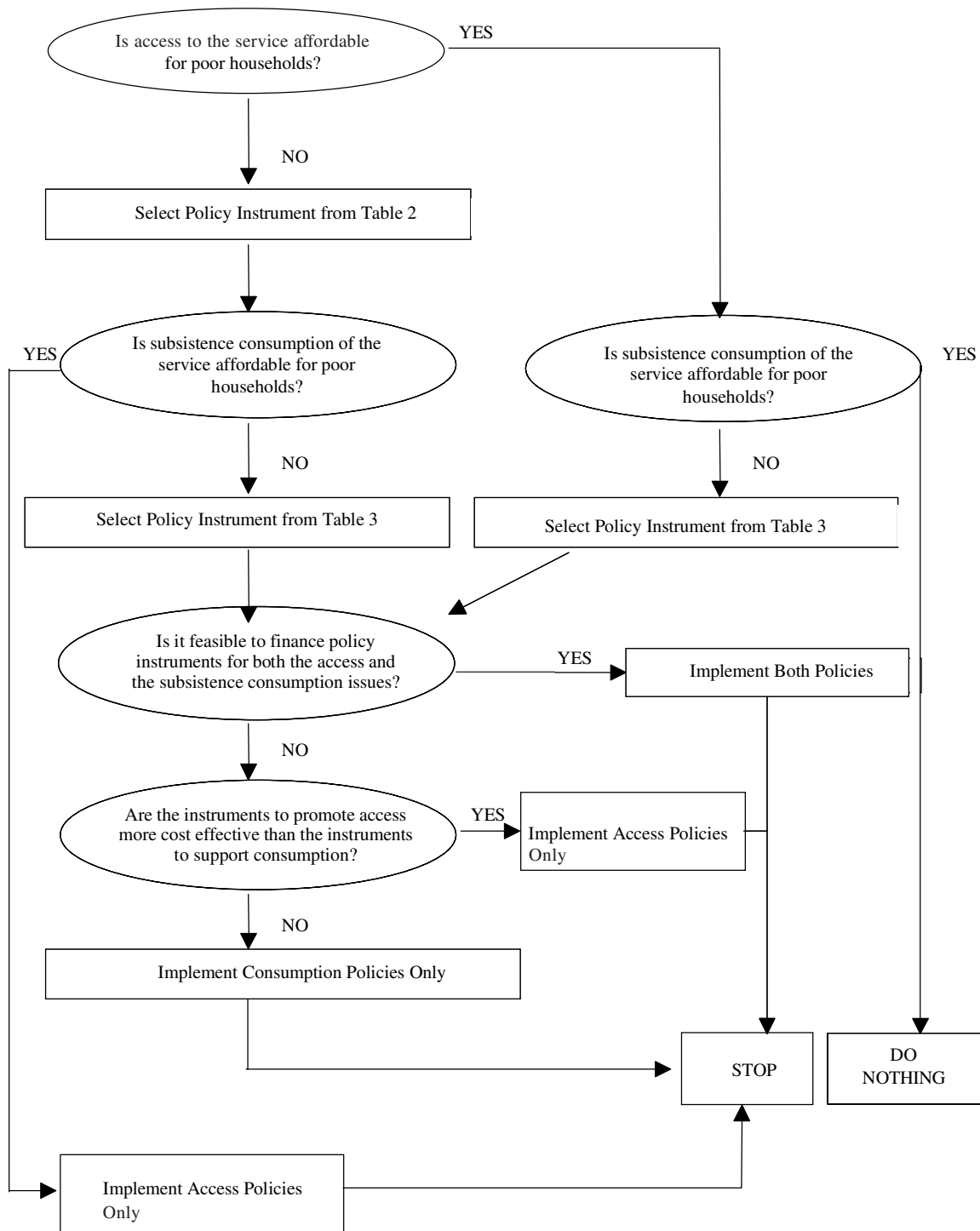
Final comments

One of the difficulties of implementing pro-poor reforms is the need to take a coordinated approach across three different areas of public policy: privatization policy, social policy and regulatory policy. These three areas should be viewed as complementary, although the timing and institutional responsibility may differ in each case (Estache, Gómez-Lobo and Leipziger, 2000). Privatization policy and social policy actions have to be considered early on in the reform process. The regulatory framework should help to ensure that the original strategic priorities are followed through in implementation, and should incorporate the flexibility needed to adjust over time.

Privatization transactions are often spearheaded by the Ministry of Finance, which tends to view the process in narrow transactional terms, with the focus on maximizing the fiscal revenues from the asset sale. This is unfortunate because there are trade-offs between the sale value of assets and the economic and social impacts of the reform. For example, revenue considerations point towards keeping service tariffs high, minimizing rollout obligations, postponing the introduction of competition, and overlooking many of the details of regulation. But experience shows that this type of strategy is precisely that which is likely to be most damaging to the poor, and to the infrastructure sector

FIGURE 1

Flowchart for establishing priorities between access and affordability issues



more generally. It is critical that at the outset of any privatization process there should be an attempt to form a balanced view between the macroeconomic and microeconomic impacts of the privatization. This points towards having a broader representation of interests on the transaction team, including the ministries responsible for infrastructure and social policy, and not only the Ministry of Finance. It also suggests that there is potentially a need to realign the incentives of those acting as advisers in the transactions, since they are often paid success-based fees that reflect the sale value of the infrastructure assets.

There are also linkages between social policy with regard to utilities and a country's wider strategy for poverty reduction and social protection that need to be understood. According to economic principles, social policy concerns are most efficiently addressed by channeling income transfers through the welfare system, rather than by subsidizing tariffs for particular goods and services (such as utilities). However, in many developing countries the welfare system is not well developed. Moreover, the administrative complexity and governance issues surrounding welfare payments may make utility services look like a practical second-best approach to the achievement of social policy objectives. Nevertheless, while it is politically attractive to use utility pricing as a means of income redistribution, the evidence suggests that such redistribution can be regressive. If utility policy must form part of a country's social protection system, it is essential that the corresponding measures be much better designed than they have been in the past, and that they be coherent with the wider welfare framework.

The function of the regulator is to act as an arbiter between the competing interests of the operator, the State and civil society. After the initial privatization transaction is over, the decisions of the regulator have the greatest impact on the tariffs faced by low-income customers, the flexibility of service standards, the degree of competition in the market, and the speed with which networks are expanded into under-served areas. Since conflicts arise between social and financial concerns, governments must provide statutory clarification of the extent to which the regulator is responsible for meeting social objectives, and must specify which policy instruments are at his disposal. Recent evidence shows that effective regulation is

important for ensuring that poor consumers get their fair share of the gains generated by the privatization process (Chisari and Estache, 1999). In Argentina, the gains from privatization increased when effective regulation was taken into account, and the benefits of effective regulation were found to be highest for the lowest income quintiles, simply because regulation acts as a mechanism for transferring rents from owners of capital to consumers of services produced with that capital.

This paper has discussed many ways in which infrastructure reform may impinge on the welfare of poor households, and it has suggested instruments for improving the impact of reform on the poor. While status quo arrangements in utility industries (e.g., public provision and poorly targeted subsidies) are not beneficial to poor households, many among the poor would benefit from the service expansion which may be made possible through privatization and which would allow them to avoid the high costs of alternative services. Moreover, there is evidence that poor households are willing or able to pay for reliable service. The way markets are restructured, the way competition is introduced and maintained, and the way regulatory commitments are implemented will determine whether reform is beneficial to the poor. Generally, the weaker the regulatory structure, the less likely it is that the concerns of the poor will be taken into account in public policy decisions.

At a broader level, what is really needed is political commitment. Infrastructure reform and privatization are not substitutes for responsible, redistributive welfare policies. But welfare reforms are complex and tend to be implemented only very slowly. Policies that lead to real welfare gains are needed in order to establish the credibility of reforms that are in the interest of all in the long run, and thus promote support for them. This is why, in the short run, policymakers will have to address many of the issues discussed in this paper. Whether infrastructure reformers can hope to succeed depends on the design of the reforms and the strategy for implementing them, but they also depend on the political will to put the poor at the centre of infrastructure reform and to counter the interest groups that may have a particularly strong incentive to maintain the status quo.

(Original: English)

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Medical care equity

for older persons in Chile:

the role of the insurance

sector

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Governments play a central role in the organization and financing of health services, and their actions in promoting equitable health care contribute to their legitimacy. Chile's system of health insurance and health care has raised concerns about equity in the financing of this care. This research extends the analysis of equity to the question of access to care, with special emphasis on the heaviest users of medical care: i.e., those aged 65 and over. Data from the 1998 Chilean national CASEN survey show that there were substantial inequities both between and within public and private insurance in this respect. The persistence of inequities within public health insurance indicates that even when financial equity and efficiency are improved, additional attention must be given to barriers to obtaining medical care if inequities in access are to be reduced.

I

Introduction

State involvement in health care plays important material as well as symbolic roles in a society (Esping-Andersen, 1994). Governments promote and regulate medical services to keep people well and treat the sick—an activity that absorbs a significant portion of GDP in most nations and also carries out an important symbolic function in offering a visible benefit to the population in general. In this sense, government involvement in the medical care system plays a legitimation function in the society. To achieve this legitimation function, the State must provide a system that is not only effective but that also appears equitable. Since the elderly are the highest users of health services, and are also often one of the most “legitimate” groups in a society for the receipt of public benefits, the equity of public policy in health care for the aged provides a valuable insight into the legitimacy of the system as a whole. Health care for the elderly is gaining increased governmental attention in Latin America, since a number of countries (Cuba, Uruguay, Argentina and Chile) are in an advanced stage of the demographic transition in which over 10% of the population is aged 60 and over, and both birth and death rates are low (Villa and Rivadeneira, 2000). This situation is accompanied by an epidemiological transition where the primary burden of illness has shifted from acute to chronic diseases that are concentrated among the older population (PAHO, 1998). With 29% of urban households and 37% of rural households in Chile containing older persons (ECLAC, 2001), a substantial portion of the population is directly affected by the health care received by older persons.

Chile was one of the first countries in Latin America to undertake “structural adjustment policies” in the 1970s and 1980s. Following neoliberal principles, the then military government adopted new policies designed to reduce the State’s role in the economy and society. While the privatization and individual capitation of both the public pension and health insurance systems were adopted as solutions to fragmentation and underfunding, the State continues to play a significant role in subsidizing and regulating both systems (Morley, Machado and Pettinato, 1999; Arenas de Mesa, 2000). In the health arena, most middle-class (and hence wealthier) formal sector workers moved from the State-supported Sermena insurance scheme to private

insurance companies (Isapres - Instituciones de Salud Previsional). Other wage workers remained with a new State-supported and subsidized insurance system (Fonasa - Fondo Nacional de Salud), and the military retained its own insurance system. Organizationally, medical care provision was separate from insurance in both the public and private sectors, resulting in a pluralistic system in these two respects (Borzutsky, 1999). The public sector has worked during the 1990s to further separate its roles as a regulator, provider and purchaser of medical care, with moderate but uneven success (Sojo, 1999).

Health insurance in Chile is “purchased” with a mandatory flat 7% assessment of each worker’s salary (with no employer contribution). This “premium” can be applied to insurance in the public system (Fonasa), in one of the many companies in the private system (Isapres), or in the military system¹ in the case of armed forces personnel. Both public and private insurance focuses on acute care services (hospitals, doctors’ fees, and lab and x-ray costs), with a variety of copayments and fee schedules (effectively, payment caps and benefit ceilings). Insurance companies (including the State) have agreements with some private providers who accept fixed fee schedules as full payment. The charges of other private providers can exceed the maximum payments of insurers, often substantially. State-owned hospitals and clinics always accept public insurance payment schedules, and also accept patients with private insurance.

Public insurance in Chile is a four-tier system based on the level of income of beneficiaries. Those with no income (the indigent) are in Fonasa A, which requires no copayments and is limited to the use of public clinics and hospitals. Those with incomes near the minimum wage can receive Fonasa B for their 7% contribution, which also has no copayments for the use of public sector health facilities, but along with FONASA C and D has access to a “free choice” option that pays for care

¹ Military personnel contribute 6% of their salary while the State pays the remaining 1%; until 1998 armed forces retirees were limited to the military insurance system, but now they can opt to contribute to Fonasa or an Isapre instead.

from the private sector (with a 50% or higher copayment using a pre-established fee schedule). Persons with higher incomes are placed in Fonasa C or Fonasa D, which require 10% and 20% copayments respectively when using the public system, based on fee schedules that are typically lower than those used by private practitioners (World Bank, 1995). Fonasa A and B are subsidized by the State, since they cost more than their premiums bring in, while those enrolled in Fonasa C and D redistribute some resources, since their aggregate costs of care are less than their premiums (Bitrán and others, 1996). The Armed Forces insurance system also has a “free choice” option with limits similar to those of the Fonasa free choice system.

In the private insurance market, individuals can pay extra premiums, beyond the required 7%, to improve the coverage (particularly in terms of payment caps per service) and choices in their insurance. In the year 2000, 50% of all families with private coverage paid extra to improve their coverage (Superintendencia de ISAPRES,

2001). Private insurance companies are allowed to adjust their premiums and benefits for risk, on the basis of sex, age, and number of dependents. For example, a common plan costs a 65 year old single man six times what it costs a 35 year old single man. Each private insurance company may therefore have hundreds of possible plans to accommodate different incomes, with each plan varying widely with regard to copayments and services covered (Larrañaga, 1997). Because premiums rise substantially with age, in 1998 ISAPRES covered about 24% of persons under age 65, but only 7% of persons aged 65 and over (Ministry of Planning and Cooperation, 1999). While almost all ambulatory care for the privately insured population is provided by the private sector, privately insured persons also make use of public sector hospitals at times. The use of public sector hospitals has represented an indirect public subsidy of the private sector, since the public sector has not had adequate information systems for billing the private insurance companies when appropriate.

II

The role of equity in medical care

The Chilean State made “equity”, along with “growth”, a central pillar of its public policy when democracy was restored in 1990 (Muñoz Porras, 1998). National economic growth did continue for most of the 1990s, and poverty rates declined, but economic inequality also increased as measured by the percentage of total urban income earned by the wealthiest 10% of urban households and the rising Gini index of income inequality (ECLAC, 2001). Equity in the publicly visible sectors of social and health services was a goal of the center-left government, as a way to maintain broad popular support, even though it was obliged by the 1980 Constitution to act within the political and economic structure developed by the military regime. The stated goals of the Ministry of Health in the 1990s were equity, decentralization and patient satisfaction/participation (Ministry of Health, 1999).

Equity in medical care is also a priority issue in other Latin American nations (Alleyne, 2002) and throughout the world (WHO, 2000; Hurst and Jee-Hughes, 2000), and it involves a number of different dimensions, including the distribution of the outcomes, the process, and financing. Unlike a focus on efficiency,

which tries to maximize the results obtained per unit of financial input, equity examines the extent to which each of those dimensions is distributed across the population (Hurst, 2001). In Chile there is particular concern about equity between different socioeconomic groups and between different geographic regions of the country (sometimes expressed as rural-urban differences, but more often as differences between the 13 administrative regions into which the country is divided from north to south).

Outcome indicators which are considered important in Chile include mortality (especially infant mortality) and life expectancy. Infant mortality in Chile continues to vary by region and mother’s education (Muñoz Porras, 1998; Hollstien and others, 1998), even though it has fallen dramatically over the past 40 years and Chile is tied for first place internationally in the level of equity in child survival (WHO, 2000; Hurst and Jee-Hughes, 2000). Total mortality rates, however, continue to show inequalities, since they are associated with the income levels of communities (Arteaga and others, 2002). Life expectancy has risen during the past 40 years, even among those who are already aged 60,

although the remaining life expectancy at that age varies between 21.1 and 23.1 years across the administrative regions (Morales and Villalón, 1999).

The process indicators describe the manner in which the outcomes are being produced, including the quality of care and access to services. Gender and income inequalities are high as regards the use of medical and dental care, suggesting that there are gender and income barriers to access (PAHO, 2000; Arteaga and others, 2002). The degree of satisfaction with the health care system is also closely associated with income (Rodríguez and Tokman, 2000). The World Health Organization (WHO) terms this element of equity “responsiveness”, and its survey of key informants places Chile 45th in overall achievement but 103rd in equity of responsiveness (WHO, 2000; Hurst and Jee-Hughes, 2000). The structure of the dual public-private health care and insurance systems is an important cause of income-related inequality in the services received (Sojo, 1996).

Financing is often measured by the contributions by or spending on each beneficiary. Equitable contributions are those which involve a non-regressive proportion of a person’s discretionary income, while equitable spending involves a correlation between medical needs and the resources used. In Chile, spending on medical care is inequitable because the public sector spends about 93,000 pesos per capita per year compared to the 143,000 pesos per capita spent by the private sector although the population served by the latter is healthier and younger (Titelman, 1999). This is only a minimal estimate of the spending inequity, since these data do not include the substantial

copayments in the private sector, meaning that the actual spending gap is substantially higher. There is also widespread concern over the risk selection of private insurance, which forces older and higher-risk persons to rely to a disproportionate extent on the publicly subsidized FONASA system (Bitrán and Almarza, 2000; Sojo, 1999; Sapelli and Torche, 1998). In contrast to Chile’s world leadership in the equity of infant survival, it comes 168th (out of 191) in the WHO’s measure of fairness of financial contribution (WHO, 2000; Hurst and Jee-Hughes, 2000).

The financing of medical care in Chile during the 1990s shows the lowest levels of equity among the three key dimensions of health systems performance – outcomes, process, and financing. Policy initiatives (such as the Universal Explicitly Guaranteed Access Plan (Plan AUGE) during the early 2000’s have focused on improving access to expensive services for all and on the reduction of long waiting lists in the public sector, by using a more equitable financing system.

The following analysis seeks to improve our understanding of the factors that influence the equity of the health care system that the reforms build upon, by examining the situation of those most dependent on medical care: i.e., persons aged 65 and over. It goes beyond the existing literature on equity in Chilean health insurance, which usually makes a dichotomy between the public and private sectors and provides bivariate analyses (see for example Larrañaga, 1999; Lenz and others (eds.), 1999; Muñoz Porrás, 1998), since it shows the variations within the health care sector as a whole and provides a multivariate analysis of access to health services.

III

Methods

This study uses the 1998 CASEN (National Socioeconomic Profile Survey) that was conducted by the Chilean Ministry of Planning and Cooperation (MIDEPLAN) during November and December of that year. It is a nationally representative survey of 48,103 households and 188,348 individuals, including 14,910 persons aged 65 and over. The Economic Commission for Latin American and the Caribbean (ECLAC), a United Nations regional research centre, adjusted the reported income to account for missing data and underreporting

of income (ECLAC, 1999). All analyses were conducted using normalized weights to adjust for the disproportionate sample sizes in rural regions.

Indicators of health care access in the survey include whether the respondent was ill or injured in the past three months, if so, whether they received medical attention, and if they received attention, did they experience any delay in obtaining care (a lot, a little, none). A series of questions was asked on the medical care received, including how many times

respondents had a well-visit (“Control Preventivo de Salud”), saw an ambulatory care doctor, and saw a specialist in the past three months. All of these variables were dichotomized into yes/no responses. Respondents who used medical services and/or prescription medications when ill were asked how they paid for them. Responses were divided into two classes: those who had no out of pocket costs, versus those who did. Finally, women were asked if they had ever had a pap smear. The question on health insurance coverage included a category for those who knew they were in the State-supported insurance system but were not sure which sub-category they belonged to. To include these persons in the regression analysis, we imputed them to a specific insurance type, using a hot-deck imputation procedure with stratified groups of rural vs. urban, married vs. other, 70+ vs. 65-69, any high school education vs. other, and per capita family income quartiles. These cases accounted for 3% of those with State-supported insurance. The other insurance types included the armed forces insurance system, Isapres, private arrangements (including non-members of Isapres, members of workers’ mutual insurance schemes, and uninsured), and “others”.

The demographic characteristics used to stratify the user population included age, gender, income, education, and rural location. With respect to age, a distinction was made between those aged 65-74 and those aged 75 and over. Income was adjusted by ECLAC for missing values and underreporting (ECLAC, 1999)

IV

Findings

Among persons aged 65 and over, the State-supported insurance scheme (Fonasa) is by far the most common (table 1). A quarter of the elderly population receive insurance through Fonasa A (the system for indigents), meaning that they do not receive even a minimum pension or earnings. This insurance is also the most restricted in its coverage. Over one-third are in Fonasa B, indicating that their pensions or earnings are at or near the minimum. Fonasa A and B together cover 62% of all persons aged 65 and over in Chile. The two State-supported plans that enroll elders with more resources, Fonasa C and Fonasa D, together cover 15% of the elderly. Another 3% knew they had public health insurance coverage but were not sure at which level.

and was presented as household income per capita. In the regressions, household income per capita was dichotomized between the lowest quintile of those in the insurance plans analysed and the remaining four quintiles (the per capita household income of the bottom quintile was 45,000 pesos per month; in comparison, the minimum State old age pension was 23,000 pesos per month in 1998). Education was reported in years of schooling, and in the regressions it was dichotomized between less than high school (0-8 years) and any level of high school education (compulsory education does not extend to the high school level in Chile). Rural areas were considered to be those outside of formal communities.

After assessing the frequency distributions of the socioeconomic variables and access to health care, logistic regression equations were estimated for each of the access variables, using the socioeconomic variables (education, income, gender, age and residence in urban or rural areas) as controls. The analysis was limited to those covered by the general State-supported insurance system (FONASA), the armed forces insurance scheme, and private insurance (Isapres). These insurance types were entered as categorical variables, taking private insurance as the reference group. Since a single logistic regression equation only documents the statistical significance of differences between the various insurance types and the reference group, multiple equations were estimated in which the reference group was changed so that each insurance type could be evaluated against all of the others.

Altogether, in 1998, the general State-supported insurance covered 80.4% of the elderly population. The Armed Forces scheme covered less than 6% and private insurance (Isapres) less than 7%. About 6% were covered by a variety of other “private” arrangements, including special programmes that cover work-related disability and those not currently enrolled in any plan.

Both the mean and median family incomes per person vary by type of plan (table 1). The different levels of Fonasa, which are linked to income, reflect these differences. The median per capita household income of those in the highest income plan (Fonasa D) is double that of the persons enrolled in the lowest income plan that requires the payment of contributions (Fonasa B).

TABLE 1

**Chile: Characteristics of persons aged 65 and over,
according to insurance type, 1998^a**

	Entire country ^b	Fonasa A (indigents)	Fonasa B	Fonasa C	Fonasa D	Fonasa ^c (exact plan not known)	Armed Forces	Isapres (private)	Private arrangements
sample n =	14 910 ^d	4817	5787	738	935	414	520	562	927
Plan penetration (%)	100	25.0	37.2	6.0	9.1	3.1	5.7	6.7	5.9
Mean income ^e	160,223	68,368	107,886	155,048	246,436	213,157	252,555	520,149	222,459
Median income ^{ef}	74,784	51,844	74,916	96,185	142,118	104,612	154,155	252,340	98,194
Mean age	73.2∇.1	73.7∇.1	73.5∇.1	72.8∇.3	71.8∇.2	74.5∇.4	73.6∇.3	71.0∇.3	72.4∇.2
Persons aged 75 and over (%)	35.5	39	37.2	35.4	27.7	45.9	39.9	21.8	30.3
Females (%)	57.3	57.4	59.9	53.4	51.1	56.9	62.2	48	57.2
Less than full primary schooling (%)	47.8	74.3	55.1	33.8	18.6	35.2	14.4	8.5	32.9
Some high school education (%)	29.2	9.0	19.7	37.2	56.6	38.8	51.9	74.5	43.9
Mean years of education	7.1∇.01	3.4∇.04	5.0∇.05	7.1∇.15	9.3∇.1	7.0∇.22	8.5∇.16	11.6∇.20	7.5∇.15
Rural residents (%)	17.7%	36	17	5.4	4.8	5.9	1.8	2.7	17.1

Source: Prepared by the author on the basis of research results.

^a FONASA: National Health Fund. Isapres: Private health insurance companies. Armed Forces: Health system of the Chilean Armed Forces.

^b Includes "other" and "don't know" insurance types, which are not shown separately and constitute 1.3% of respondents.

^c Corresponds to persons who are FONASA members but do not know at which level.

^d Represents 1,085,000 residents of Chile aged 65 and over.

^e Mean income is total family income per person per month in Chilean pesos, adjusted for underreporting by ECLAC.

^f For total country, 75th percentile = 124,821 pesos, 90th percentile = 238,856 pesos.

The income of those covered by the Armed Forces plan is similar to that of the members of Fonasa D, while those enrolled in Isapres have a median income about 1.75 times that of those in Fonasa D. The median per capita household income of persons with private insurance is just above the 90th percentile for all the elderly in Chile. Those with private insurance are also the youngest, are least likely to be female, and have the highest education. In other words, private insurance is most commonly held by older persons whose demographic characteristics are associated with the lowest medical needs and highest resources. Those with private insurance or Armed Forces coverage are the least likely to live in rural areas. This is consistent with the findings of other research involving all ages, which report that the public system as a whole has a population with higher needs than the private system (Ministry of Planning and Coordination, 2001).

There were likewise large differences in the indicators on access to care by older persons according to their insurance status (table 2). Persons with private insurance were among the least likely to report being

sick or having an accident in the previous three months, while Fonasa A and B (which are the lowest income groups) were the most likely to report illnesses. Among those reporting an illness, those with private insurance were the most likely to report obtaining medical attention, while those with Fonasa A and private arrangements were the least likely, with about one-quarter of those reporting illnesses or accidents not having received medical attention. Among those receiving medical attention, those with insurance through Isapres and those with Armed Forces coverage were the most likely to report that they received care promptly and without delay, while Fonasa A registered the fewest persons reporting prompt care. Almost all the privately insured obtained ambulatory physician care from private practitioners, along with almost half of those in Fonasa D. The least likely to see a private practitioner were those in Fonasa A, who almost exclusively used public providers, and those with military coverage, most of whom used military health care providers. Only 5% of the elderly population reported using emergency care services, but the pattern

TABLE 2

Chile: Indicators of health care access of persons aged 65 and over, according to insurance type, 1998^a
(Percentages)

	Entire country ^b	Fonasa A (indigents)	Fonasa B	Fonasa C	Fonasa D	Fonasa (exact plan not known) ^c	Armed Forces	Isapres (private)	Private arrangements
Illness/accident in past 3 months	36.7	39.7	40.3	34.7	35.6	27.5	33	28.7	27
If so, received medical attention ^d	82.8	77.4	83.3	85.5	93	79.8	87.9	92.3	75.4
Satisfied with promptness of medical attention	86.8	82.7	86.6	84.2	90.3	93.9	89.8	95.0	88.6
Ambulatory care by private provider ^d	24.8	7.2	27.7	36.8	48.6	52.3	17.9	91.7	61.3
Emergency care by public sector provider ^e	82.2	88.9	86.3	85.3	89.7	69.2	89.2	32.5	50.0
Had a well-visit ^d	21.4	25.3	25	19.1	15.2	19.7	17.9	13.1	9.4
Ever had a Pap smear (women)	55.8	41.7	55.1	64.0	66.4	54.7	72.1	80.8	58.4
Had a specialist visit ^d	10.6	7.9	10.7	13.0	15.9	5.6	13.7	14.7	7.2
Had no out of pocket expenses for illness care ^f	58.4	89.5	65.9	39.1	25.6	34.8	5.5	6.1	15.6
Had no out of pocket expenses for prescriptions ^f	40.8	67.7	42.4	21.2	18.3	41.5	7.6	4.3	10.4

Source: Prepared by the author on the basis of research results.

^a FONASA: National Health Fund. Isapres: Private health insurance companies. Armed Forces: Health system of the Chilean Armed Forces.

^b Includes "other" and "don't know" insurance types, which are not shown separately and constitute 1.3% of respondents.

^c Corresponds to persons who are FONASA members but do not know at which level.

^d During last three months.

^e Includes National Health Service System (SNS), Emergency Primary Attention Service (SAPU) and the Armed Forces system.

^f In connection with ambulatory attention received.

of medical attention was different for that given in other ambulatory services. Almost 90% of emergency care users with any type of Fonasa or Armed Forces coverage used public (or Armed Forces) providers, and about one-third of those with Isapre coverage also used public providers.

The only area where Fonasa A members have better access to care is in the proportion who report a well-visit ("control preventivo") in the period in question, although the absolute level of such visits (25%) is low for a population in this age group. The trend is the opposite for women reporting having had a pap smear, where the 80% figure for those with private insurance is almost double the rate for those with Fonasa A. Consultations with specialists are most commonly reported among those with Fonasa D, private insurance,

and Armed Forces coverage, while they are least likely among those with Fonasa A or private arrangements. Within Fonasa, there is a steady increase, from those with the lowest incomes (Fonasa A) to the highest (Fonasa D), in most indicators of access to care.

Among those who visited a doctor on account of an illness or accident, about 90% of those with Fonasa A reported no out of pocket costs, in comparison with about 5% of those with Armed Forces or private insurance (table 2). Since Fonasa A and Fonasa B charge no copayments for visits to public clinics, those reporting that they had to pay were primarily those who sought private care (7% of Fonasa A and 28% of Fonasa B medical visits for illness/injury were to private providers). When medicines were prescribed, two-thirds of those with Fonasa A received the medication at no

cost, compared to about 5% of those with private insurance (Isapres) and 8% with military insurance (table 2).

While it might appear that income should have no influence on access to health care by those with free Fonasa A (indigent) coverage, there is nonetheless a significant improvement in access figures for Fonasa A beneficiaries with per capita household incomes above the national median, compared to those below it. For example, older persons in Fonasa A with per capita household incomes above the median were more likely than those below the median to obtain medical care when sick (81.7% versus 75.9%, $p < .05$) and were less likely to report delays when they sought medical care (9.7% versus 20.0%, $p = .000$). As might be expected, older persons with Isapre private insurance, who face potentially high copayments, also exhibited an income effect, even though they had notably higher incomes than those in Fonasa A. Elderly persons in Isapres with per capita household incomes in the top 10% nationally were more likely than other elderly Isapre members (who were mostly in the eighth and ninth income deciles) to obtain medical care when sick (95.5% versus 85.5%, $p < .05$) and were less likely to report delays in receiving medical care (2.1% versus 8.6%, $p = .000$). A similar income effect exists for older persons with Armed Forces insurance. This variation by income *within* each type of insurance suggests that at least part of the access differences *between* insurance types may be the result of the different income profiles of each insurance type.

The differences between types of insurance in table 3 are adjusted for some of the differences in socioeconomic situation (SES) and show that plans continue to display significant differences in the access to care that they provide. The table shows that, compared to older persons with Isapre (private) health insurance, those with Armed Forces insurance have a statistically similar likelihood of having been sick or having had an accident in the past three months, while those with Fonasa C or D have a 27% greater chance (odds ratio (OR) = 1.27) of being ill, after SES adjustment. Fonasa A and B both have similar odds, with a 46% and 47% greater likelihood of reporting an illness compared to those with Isapre insurance. Although table 3 only presents odds ratios compared to those with Isapres insurance, it also shows the statistical comparisons between each type of insurance. For example, those with Armed Forces insurance are statistically similar (=) in their risk of illness to those with Isapre and Fonasa C/D, but are less likely to report

an illness (<) than those in Fonasa A or B. When the odds ratio is less than 1.0 it means that the group is less likely to report the outcome in question. For example, among those who reported an illness/accident in the past three months, those with Fonasa A had 0.44 times the odds (i.e., less than half the odds, or 56% less) of reporting that they had sought medical care, compared with those in Isapres. This is statistically less than Fonasa B, Fonasa C/D, and the Isapres, but not less than for members of the Armed Forces system.² Similarly, those seeking care are least likely to report that they obtained prompt medical attention if they are in Fonasa A, with increasing promptness for Fonasa B, and then for Fonasa C/D, the Armed Forces, and Isapres together. When an additional variable was added for using private versus public outpatient services (not shown), the differences between insurance schemes as regards prompt care attenuated to the point of not being statistically significant, whereas the variable for private health care arrangements was significant (OR=2.1, $p = .000$). This suggests that the location where care was received was more important than the type of insurance covering that care.

After applying the statistical controls, those with Armed Forces coverage have overall access indicators that are closest to those with Isapres and Fonasa C/D, while Fonasa A and B are often more similar to each other than to Fonasa C/D and usually have the worst access indicators. In this matrix, those with Fonasa C/D are always different from Fonasa A, while the wealthier Fonasa C/D members have indicators similar to those of Isapre members in two areas (i.e., consulting a doctor on account of illness/injury and consulting a specialist for the same reason). While differences persist in access to care between those with different types of insurance even after applying controls for SES differences, it is impossible to fully control for SES because Fonasa A is, by definition, a social welfare insurance that contains people who cannot afford any other type of insurance.

While table 3 only presents the adjusted odds ratios by insurance type, it is also useful for describing the pattern of other significant independent variables, in order to highlight factors other than type of medical insurance which influence equity of health care access

² Fonasa A is different from Fonasa C/D but not the Armed Forces primarily because the smaller sample size of those with Armed Forces insurance requires larger differences to be statistically significant.

TABLE 3

Chile: Odds Ratios (OR) for access to health services through publicly supported schemes,^a compared to access by elderly persons with Isapre health insurance, controlling for differences in gender, age, education, income, and rural residence^b

	Fonasa A (sample n=1 999) ^c	Fonasa B (sample n=2 407)	Fonasa C/D (sample n=630)	Armed Forces (sample n=177)
Sickness/accident in past 3 months	OR=1.46	OR=1.47	OR=1.27	OR=1.12
Statistical differences in above, across plans	= Fonasa B > Fonasa C/D > FFAA > Isapres	= Fonasa A > Fonasa C/D > FFAA > Isapres	< Fonasa A < Fonasa B = FFAA > Isapres	< Fonasa A < Fonasa B = Fonasa C/D = Isapres
Among those who were sick and saw a medical provider	0.44	0.54	0.78	0.65
Statistical differences in above, across plans	< Fonasa B < Fonasa C/D = FFAA < Isapres	> Fonasa A < Fonasa C/D = FFAA < Isapres	> Fonasa A > Fonasa B = FFAA = Isapres	= Fonasa A = Fonasa B = Fonasa C/D = Isapres
Persons who were sick, saw a doctor, and were satisfied with the promptness of the medical attention	0.26	0.38	0.42	0.48
	< Fonasa B < Fonasa C/D < FFAA < Isapres	> Fonasa A = Fonasa C/D = FFAA < Isapres	> Fonasa A = Fonasa C/D = FFAA < Isapres	> Fonasa A = Fonasa B = Fonasa C/D < Isapres
Persons who reported having visited a specialist	0.76	0.86	1.05	0.94
	= Fonasa B < Fonasa C/D = FFAA < Isapres	= Fonasa A < Fonasa C/D = Fonasa B = Isapres	> Fonasa A > Fonasa B = FFAA = Isapres	= Fonasa A = Fonasa B = Fonasa C/D = Isapres
Persons who reported having undergone a preventive care examination	1.72	1.7	1.24	1.23
	= Fonasa B > Fonasa C/D > FFAA > Isapres	= Fonasa A > Fonasa C/D > FFAA > Isapres	< Fonasa A < Fonasa B = FFAA > Isapres	< Fonasa A < Fonasa B = FFAA = Isapres
Persons who had ever had a Pap smear (women)	0.3	0.41	0.5	0.72
	< Fonasa B < Fonasa C/D < FFAA < Isapres	> Fonasa A = Fonasa C/D < FFAA < Isapres	> Fonasa A = Fonasa B < FFAA < Isapres	> Fonasa A > Fonasa B > Fonasa C/D < Isapres

Source: Prepared by the author on the basis of the research results.

^a Fonasa: National Health Fund; Isapres: private health insurance companies; FFAA: health system of the Chilean Armed Forces. Fonasa has four levels (A, B, C and D); persons who reported that they belonged to Fonasa but did not know at what level (n = 414) were assigned to one of the levels using a hot deck imputation procedure.

^b Logistic regression equation with Isapres as the reference group (n = 146), controlling for gender, age (65-69, 70-74, 75+), education (0-8 vs. 9+ years), low income (<45,000 pesos/month per capita household income vs. higher incomes), and rural residence.

^c The values of n are for those reporting an illness

for older persons. In the logistic regressions underlying the tables, older persons in rural areas were more likely to report an illness but were less likely to report a medical care visit when sick. Rural residents were also less likely to report specialist visits or pap smears, but more likely to report timely care, net of other variables. Older women were more likely to report an illness and

were also more likely to report specialist and preventive visits. The oldest of the elderly category were more likely to report an illness than the younger elderly, and they were also more likely to report prompt medical attention and specialist visits, but less likely to have ever had a pap smear (in the case of women). Elderly people with any high school education were more likely

to seek medical care when sick, to see a specialist, or to have had a pap smear (in the case of women), but less likely to report preventive visits. Regardless of

insurance type, income is associated with greater likelihood of seeing a specialist, or having had a pap smear in the case of women.

V

Conclusions

Improving equity in health care has become an important goal of the democratic Chilean State, as well as of many other countries around the world. Such equity involves an equitable distribution of the financing of health services, the processes of care (including access and quality), and the outcomes of care (WHO, 2000). Most of the public discussions on equity in the Chilean health care arena have focused on the differences between public and private health insurance. This article shows that there is a wide variation of access to care both between and within the different types of health insurance for the group that has the highest need for and use of medical care – the elderly. Because most elderly have limited resources, they are particularly vulnerable to inequities in medical services.

The cost of private health insurance for older persons is beyond the means of all but the wealthiest, because private health insurance premiums are risk adjusted by age. The study shows that the 7% of persons aged 65 and over with private health insurance are wealthier, have more education, and are younger than those with other types of insurance. Not surprisingly, they are also less likely to report an illness, and more likely to have better access to care than other groups of persons over 65. Other studies have noted that in the general population many of those with private insurance make use of public hospitals, so that the public sector ends up subsidizing private insurance (Ministry of Planning and Cooperation, 1999; Titelman, 1999) and improving the level of access for the members of Isapres. The present study shows that a similar pattern exists in the case of emergency medical attention, where one-third of the privately insured elderly who need emergency care rely on public services. This suggests that older persons with private insurance have access to both public and private sector providers as needed. Even within this high-income group, however, those with the highest incomes (i.e., the top decile nationally) had better access than other elderly persons with

private insurance (Isapres). This can be explained by the frequently high copayments required by private insurance schemes and the fact that, among private providers, the most expensive hospitals and clinics may provide the promptest and most specialized care.

The concentration of older persons in the public system makes the situation as regards equity within that system particularly important for that population group. The main State-supported health insurance system, Fonasa, has different types of insurance that are based on different levels of premiums, which in turn are based on earnings. This means that the four Fonasa groups have different socioeconomic characteristics. The two most common insurance types among the older population are Fonasa A, which is for indigent persons, and Fonasa B, which is for those with the lowest pensions and income. Neither Fonasa A or B require copayments in the public system, and their beneficiaries report similar levels of illness/injury, use of medical care when sick, specialist use, and preventive care use, even after controlling for differences in age, gender, rural residence, education, and low per capita household income. In general, the members of Fonasa C and D (combined for the multivariate analysis) are wealthier than those of Fonasa A or B, but not as wealthy as those with private insurance (Isapres). Even after controlling for SES characteristics, Fonasa C/D beneficiaries have better access than those of Fonasa A and B, notwithstanding the copayments required. Delays in obtaining an appointment, which have been a chronic problem in the public sector for years, were experienced most by Fonasa A, whereas Fonasa B, C and D (and Armed Forces) registered better indicators in this respect. The improved performance of Fonasa B versus Fonasa A with regard to delays in appointments for older persons may be due, in part, to the more frequent use of private providers by Fonasa B members, despite their low incomes. This use of private providers may serve as a safety valve when the public system becomes overcrowded. Other contributory factors behind the

differences in access between Fonasa A and B could be insufficient medical resources in the poorest communities, where Fonasa A beneficiaries are most likely to live, or administrative problems in those communities that lead to delays in the provision of health care.

After the financially privileged private insurance sector, the Armed Forces plan (which has its own medical care delivery system) appears to provide the next best access overall for older persons, followed by the Fonasa plans (B, C, and D) which give the option of making use of private suppliers, and the situation of elderly persons with higher incomes. The elderly persons with the highest need and fewest resources are found in Fonasa A, which exhibits the worst profile in terms of access to care. In view of the fact that they are not required to make copayments in the public system, however, their access problems would be much worse if they had to use private health insurance. The poorest elderly persons – those in Fonasa A – also apparently face a number of barriers to obtaining needed medical care that are not measured here. Among these non-insurance related barriers are transportation costs to clinics; organizational barriers such as the frequently mentioned queues and waiting times at public clinics, and/or the insufficient supply of medical resources in the poorest communities (Wagstaff, 2001).³ Quality of care problems may also discourage some persons from seeking care. Public providers of medical care were rated as “excellent” by 67% of respondents of all ages, compared with 84% who gave private health care providers that rating. It is important to distinguish between the insurance provider and the medical care provider, however, since the public sector Fonasa insurance scheme was rated excellent by 72% of respondents while the private sector Isapre insurance system was given that rating by only 50% (*El Mercurio*, 2000). The public health care provision system is trying to deal with some service problems, including the long waiting lists and insufficient infrastructure (Gutiérrez, 2000), while the Isapre insurance system is trying to improve its insurance image by adding coverage for selected high-cost (“catastrophic”) illnesses whose cost previously exceeded coverage limits by large amounts.

³ For example, one government official reported that it was difficult for older persons with pneumonia to obtain a public hospital bed during the winter when total hospital demand was at a peak. After a program was started that paid public hospitals extra for each admission of older persons suffering from pneumonia, however, there was a marked improvement in access.

The only area where low-income elderly persons in Fonasa A and B have better outcomes than others is in their access to preventive care: a service which is covered by all insurance types but is free in public clinics. The overall rates are low, however –13% for those with private insurance and 25% for those with Fonasa A – which suggests that most elderly persons consider seeking medical care only for curative purposes and not for prevention. The high reliance of Fonasa A recipients on public clinics may result in their being called more often for preventive visits when they make use of the clinic on account of illness.

It is important to note that only a limited number of indicators on access to care were available for this analysis. Most of the indicators concern the receipt of different types of medical services, and there were no data that allowed for an adjustment to take account of different levels of medical need. Since low-income persons typically have higher medical needs than wealthier persons, it is likely that adjustments for medical need would increase the levels of inequalities in service use. Identifying effective ways of reducing these inequalities (by means other than income redistribution) would require additional data about the factors that influence the receipt of medical care, including the relative availability of services, how easy it is to reach and pay for those services, and how different groups evaluate the quality and responsiveness of their care.

Because of Chile’s favourable long-term macroeconomic growth, it is often looked on as a model for structural adjustment policies. However, the legitimacy of democratic governments must be built on social as well as economic results. In Chile, health care has been an important sector for demonstrating the government’s goal of growth with equity. The present analysis focused on the population aged 65 and over because these persons make most use of health services and are thus most seriously affected by any inequities in the medical care system. The cross-sectional data used cannot show if the equity of access to medical care for the elderly improved during the 1990s, but they do document inequities that still remained in 1998, both between public and private insurance, as well as within each type of insurance. Much of the attention in discussions of health care reform has been on the benefits and financing mechanisms of public and private insurance. This study shows that while equity in benefits and financing may be a necessary component of overall health system equity, it is not in itself sufficient, since access varies

within the different types of insurance. This is particularly significant in the case of the older population, since a quarter of these persons are in Fonasa A, which exhibits the lowest levels of access of all insurance types.

In the current public health care system, those with moderate financial resources are allowed to pay extra to access the private health system, regardless of whether or not they have private insurance. But private health service providers are located primarily in higher income areas, meaning that low income elderly persons would have little access to this resource even if it were available and free to all with public insurance. Thus, the most effective and feasible way to improve access to medical care for older persons (an element of equity at the process

level) would be to continue to improve the operations of public sector providers. This may involve increasing the payments made by Isapres to public providers when Isapre members make use of public emergency medical services and public hospitals, or increasing the allocation of public funds. It will also mean continuing to improve the organization and administration of public sector medical services (Sojo, 1999). It is critical that equity of access for the elderly is considered, along with equity of financing, when policies are debated concerning health care reform in Chile, as well as in any other country that is modifying its system of financing and/or providing health care services.

(Original: English)

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Decentralization *and participation* in Latin America: *an economic perspective*

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If political decentralization is to generate efficiency, then local spending must be linked to the relevant fiscal effort, and local decision-making processes relating to the provision of public goods should be at least as democratic as those at the centralized level. Rarely are these basic conditions met in Latin America. This is attributed mainly to the fact that decentralization processes have been geared essentially towards the fulfilment of social objectives. Today, however, the autonomy of subnational spheres must be increased in order to strengthen economic competitiveness. This article considers ways of achieving this new objective not only without disregarding other aims and indeed creating synergies with them, for example stimulating citizen participation, reducing social and territorial inequities, and enhancing the efficiency of the State apparatus –including the fiscal sphere– in order to achieve these strategic objectives.

I

Introduction

Although the predominant trend in Latin America up to the debt crisis was for both political and economic decisions to be taken centrally by the national government, starting in the 1980s –as a result of democratization and the structural adjustments demanded by the crisis– a historic trend emerged whereby the provision of public goods has been partly transferred to democratic subnational processes (political decentralization), while production processes of publicly provided goods have been transferred to the field of economic competition (economic decentralization).¹

Political decentralization was expected to contribute decisively to constructive participation, to the efficiency of public management and to greater territorial and social equity. However, more than ten years since the earliest processes in the region were initiated, advances in local participation are uneven, while no conclusive results have been observed in terms of efficiency, and gross domestic income continues to be concentrated in just a few regions. Admittedly, social service coverage has been expanded, but in many cases inter-regional differences have become more pronounced. The transfer systems adopted are not conducive to fiscal efficiency (Finot, 1997) and the excessive debt levels of subnational governments are considered to have generated macroeconomic disequilibria (ECLAC, 1998). Thus, whereas decentralization at first aroused great expectations, its effectiveness has been called into question, but this can jeopardize advances in the democratization process, whose viability is contingent on political decentralization. Hence it is crucial to determine why the objectives of decentralization are not being fully

achieved in order to pinpoint some of the main issues to be addressed and to put these processes back on track.

ILPES has undertaken this task in compliance with a mandate from its member governments. While conscious of the essentially political nature of decentralization processes, it made an economic analysis² of the processes launched in the region in the 1980s in order to provide elements for reflection from this point of view, and some of the results of this analysis were presented at the tenth Meeting of Ministers and Heads of Planning (ILPES, 1998). On that occasion, a distinction was made between the functions the subnational governments fulfil as heads of autonomous regions and those they fulfil as agents of the central governments, which would imply a change in the current system of transfers. This article, prepared on the basis of those advances and other studies carried out by the author (see in particular Finot, 1997 and 2001), develops the conceptual framework (fiscal federalism³) underlying these proposals, focuses on the problems it reveals, and moves forward in the identification of the modifications demanded by the decentralization processes, not only for achieving the objectives already outlined in financially sustainable conditions but also in the light of a new objective: that of boosting the competitiveness of the economies of the region.

1. Conditions of efficiency

a) *Two types of allocation*

It is generally agreed that of the three fundamental economic functions of the State (stabilization,

□ This article was prepared in its original version in the heat of a presentation followed by a series of stimulating discussions in which all the ILPES professionals participated. The author thanks his colleagues for the interest, questioning and support provided on that occasion; he is also indebted to the anonymous critic who read the study in an earlier version as a prerequisite for its being published and whose observations and suggestions were very valuable for improving it.

¹ See the justification for this differentiation in the conceptual framework developed as the first point of this paper.

² Based mainly on information generated by a regional ECLAC/GTZ project on fiscal decentralization executed between 1994 and 1997 and coordinated by Gabriel Aghon.

³ This is the term given in the literature to the economic theory of decentralization, whose first elements can be found in Ostrom, Tiebout and Warren (1961). In a recent article, Oates (1999), who coined the term “fiscal federalism” (Oates, 1977), bemoans the fact that he did not name this branch “decentralization theory”. The term “federalism” has helped to circumscribe these valuable analyses to the cases of federal countries, when they are in fact specially useful when applied to the analysis of decentralization to levels that are closer to the individual citizen.

distribution and allocation), the one to be decentralized is allocation. The function of allocation refers mainly to decisions relating to the provision of public goods: what goods, how many of each of them and with what portion of revenue –present or future– they should be provided publicly. However, these decisions, which are adopted mainly through the adoption of budgets, also include decisions as to what should be bought and what produced directly, and with respect to the latter, what combination of factors and inputs will be used to produce it: i.e., how it would be produced. Political decisions on allocation refer therefore to two types of allocation: one on **provision**, where it is decided what is to be provided and with what resources, and another on **production**, in which it is decided how to produce the goods that are to be provided.

b) *Allocation and efficiency*

By definition, the provision of public goods⁴ represents a cooperative solution⁵ and is done through democratic processes which, in order to serve as efficient mechanisms for revealing preferences, must link expenditure with the contributions to finance it (Musgrave and Musgrave, 1989). Like any cooperative solution, a public appropriation does not correspond to any individual preference but, in the best-case scenario, to the sum of citizens' preferences (Samuelson, 1954); it is justified when, through it, the community as a whole is better off than if there had been no such solution. The demand for public goods varies with the sphere of consumption of each of them: from those cases in which they transcend national boundaries –as in the case of goods generated by integration processes or even global public goods, such as international tribunals for judging war crimes– to those provided for use mainly by small rural or urban communities. Thus, following the rationale of the decentralization theorem (Oates, 1972), the provision of public goods will be all the more efficient if it is adapted to the territorially differentiated demand for such goods⁶. This differentiation is expressed effectively when citizens decide on the portion of their

income that they are prepared to use to finance different solutions corresponding to different spheres.

In order to bring the provision of public goods more in line with the various public preferences, once it has been determined that they will be provided exclusively by the national level (national choices) it would then be appropriate for the State apparatus to be brought as close as possible to the citizen, for various decision-making levels to be defined with respect to provision, and for such provision to be distributed among those levels by exclusion, as a bottom-up process. Moreover, an effort should be made to stimulate the development of cooperative solutions among territorial communities of the same level before resorting to centralized solutions at a higher level. This criterion for economic efficiency coincides with the political principle of subsidiarity, which reflects the tremendous potential of political decentralization for deepening democratization.

As regards the question of how to produce the goods to be provided, while in the case of private provision on a competitive basis producers must seek the combination of factors and inputs that implies a lower cost for them, the provision of public goods is basically monopolistic; moreover, the costs deriving from inefficiencies do not usually have automatic economic consequences for those who decide and execute the provision, thus eliminating the economic incentives for such combinations to be efficient. On the other hand, in the absence of efficient control of expenditure by those who defray it – which in turn has its own cost – individual interests can operate instead in the opposite way: the risks of inefficiency in public allocation become evident especially in cases of political corruption, mainly in the acquisition of inappropriate and/or overvalued equipment and infrastructure and in the practice of patronage.⁷

Hence, many decisions on the provision of public goods, like those relating to their production and, among the latter, those that relate to direct production, imply risks in terms of efficiency. "Allocative inefficiency" is the term used to refer to the sum of the differences between what citizens would wish to obtain in exchange for the portion of their income that they pay out for the provision of public goods and what they actually receive; and "productive inefficiency" is used to refer to the difference, in terms of cost/benefit ratio, between what would be produced with allocations of factors deriving from economic competition and what is effectively produced through combinations of factors

⁴ Public goods: in principle, rules, services and economic goods provided by State bodies, from whose consumption no citizen can be excluded.

⁵ A public or collective choice as opposed to a private or individual one. For an analysis of this approach, see Mueller (1984).

⁶ Basically because consumers can "vote with their feet" (to use Tiebout's expression (Tiebout, 1956)) in search of the region or locality that best corresponds to their choice of public goods, which introduces competition among territories (including countries).

⁷ According to Kurer's analysis (Kurer, 1993).

and inputs based on decisions through political and administrative procedures. Technical inefficiency, when it increases costs, heightens allocative inefficiency.

c) *Decentralization as a solution*

From the economic point of view, decentralization is basically a reform of public management aimed at reducing inefficiencies in allocative processes. It may assume two fundamental forms: i) political decentralization, which would imply transferring the provision of some public goods to local⁸ democratic processes, and ii) economic decentralization, which would consist in transferring or opening up decisions on combination of factors and inputs to economic competition.⁹

Political decentralization would reduce allocative inefficiency by harmonizing the provision of public goods with geographically differentiated preferences, by reducing the complexity of what is decided through political and administrative processes, and by facilitating transparency, representation and citizen participation; economic decentralization, for its part, would mitigate technical inefficiency by introducing market mechanisms in productive processes, but would also help to increase allocative efficiency, if it cuts costs and reduces the number of matters that must be dealt with by political and administrative decisions. Political decentralization is directly linked to greater democratic governance¹⁰ and economic decentralization to a form of regulation which ensures that the quasi-markets thus constituted operate in a socially beneficial manner.¹¹

⁸ In this study, the term “local” is used as the antonym for “central”.

⁹ The evolution of the concept of decentralization of the region has been already examined (Finot, 2001). The concept of economic decentralization which is defined here was based on Von Haldenwang’s (1990) concept, which includes both privatization and “deregulation”, understood as the opening up of production to non-State agencies whether they be profit- or non-profit-making. However, the main point of economic decentralization is deregulation and not the transfer of ownership, which is referred to as privatization. The main forms of economic decentralization are: the purchase of inputs (including outsourcing), concession (transfer of the production of services while maintaining ownership of the assets), and agreements for the provision of final goods. The last case would include private non-profit-making organizations devoted to scientific activities and to the production of health services which Bresser-Pereira (1997) describes as the “non-State public sector”, particularly when they are financed totally or partially with public funding.

¹⁰ Democratic governance: the capacity of a society to govern itself (Espíndola, 1998).

¹¹ Quasi-markets: demand is defined in political terms, while production is generated through economic competition. In other

The foregoing suggests that for political decentralization contributes to efficiency, it is necessary to transfer decision-making power not only in respect of local spending but also in respect of citizens’ financial contributions to that spending. The generation of public income can be viewed as the contributions that citizens make at the different levels of territorial organizations of the State to which they belong, and these levels in turn deal with different spheres of demand.¹² In order to facilitate the decisions on these contributions, each level should have its own tax bases and be able to modify the relevant rates so that the citizens and their representatives at each level can vote for alternative solutions with different costs.

Whether for political or economic decentralization, the basic criterion for transferring allocation decisions is that the decentralized processes should be more efficient than centralized processes. One –but not the only– prerequisite in the case of political decentralization is that demand should be differentiated at the territorial level, as already mentioned, and in the second case, private production on a competitive basis should be possible; but a *sine qua non* condition in order for decentralization (whether political or economic) to enhance efficiency is that it should increase participation in allocation mechanisms: citizen participation when provision is decentralized; economic participation when production is decentralized.¹³

On the other hand, the main point in economic decentralization processes is, supposedly, not the ownership of the productive establishments, but the fact that they are subject to economic competition. Thus, while it is often a good idea to privatize, in other cases such an action can destroy valuable institutional and social capital. But what would be a more important step for encouraging efficiency would be to open up to economic competition productive activities that are not

respects, improving economic competition is part of the development of democratic governance.

¹² Thus, it would not be appropriate to state, as is sometimes done, that a given region or locality generates the sum total of taxes that its citizens pay, since they contribute to different spheres of cooperative solutions.

¹³ For some authors (Palma, 1985), the concept of participation should only refer to cases where participants can effectively influence decisions, and for this reason they rule out participation in the market. This assertion, which is effective insofar as it refers to provision, would not be effective with respect to production, since in this case a citizen could exert as much or more influence by choosing between alternative producers than through a political decision.

exclusive to public administrations, but under proper regulation.

d) *Importance of citizen participation*

Political decentralization has been defined above as the transfer of the provision of some public goods –demand for which is differentiated regionally or locally (local goods)– to democratic processes which are responsible for this demand. To ensure efficiency, the relevant subnational communities must be able to choose freely which local goods they wish to be provided by themselves, in what quantities and with what percentage of their income. The subject of political decentralization should thus be the subnational communities, while their respective government apparatus would just be instruments for adopting and executing their decisions.

From the economic point of view, increasing democratic participation implies improving the process of revealing preferences under cooperative solutions. Hence, political decentralization can only increase allocative efficiency in the provision of public goods to the extent that it tends to give all citizens equal opportunities to participate and full representation of their interests with respect to decisions that directly affect their current and future income. It is evident, however, that if democratic participation is to be a viable instrument for revealing choices and is to generate incentives for social control of expenditure –and thus contribute to efficiency– it must be related to the complete allocation process, that is, both the expenditure and the contributions that citizens will make to defray its cost.

Direct and indirect citizen participation (Cunill, 1991) can be political, if it refers to territorial State organizations made up of elected bodies and to political parties, or social, if it is directed towards social organizations (associations), as indicated in Palma (1985). But the latter are not only representation media in their dealings with State organizations but also, and at times primarily, ways of managing cooperative solutions which, through work and voluntary contributions, frequently not only provide collective goods¹⁴ but also make significant contributions to the

¹⁴ Collective goods: cooperative solutions generated by social organizations, from which non-members are excluded. The goods generated by a social organization can be public goods to the extent that they benefit all the inhabitants of a region or locality and, in this regard, are termed “public goods” in studies prior to those generated by social organizations, but as Bresser-Pereira (1997) observes, if non-members of the organization that generates them can be excluded, then the goods are not public but rather, in his own words, “bienes corporativos” (corporate goods).

provision of public goods¹⁵ or generate significant positive externalities for the public interest.¹⁶ State management, effected fundamentally through territorial organizations of different levels (national, intermediate, municipal, submunicipal) should be subsidiary to this capacity. If we refer just to “decentralizing the State” this may misleadingly imply that, in order to achieve the desired objectives, it is sufficient to decentralize the State apparatus, whereas, under the principle of subsidiarity, decentralization of public management should make even public management subsidiary to the capacities of the social organizations. However, it should be borne in mind that all of the latter are organized around particular interests, as pointed out by Cunill (1991) and Bresser Pereira (1997), and an irreplaceable function of the State territorial organizations is to ensure that the interest of the collectivity takes precedence over that of the individual, especially with respect to the allocation of public resources.¹⁷

Citizen participation in the process of the provision of public and collective goods is not only a fundamental social¹⁸ and political objective but also a prerequisite for reducing inefficiencies. Whether citizens participate, however, depends on their perceiving that the benefit of participating is higher than the cost; if they are given the opportunity to participate in decisions that affect their current and future income, this can be a strong incentive for them to do so. In order to achieve this condition, political decentralization must be more than the mere transfer of power from one center to others; indeed, it must be based on a reform aimed at encouraging citizen involvement in (public and collective) cooperative solutions, with the limit on such involvement being the point at which efficiency gains are equal to the economic cost of participation.

Furthermore, political decentralization must be accompanied by systems of territorial redistribution aimed not only at reducing initial disparities but also at paring down those that decentralization itself causes

¹⁵ For example, improvements to roads and other public facilities.

¹⁶ For example, forestation, sports, cultural activities, public security.

¹⁷ State support for these organizations should be regulated on the basis of the contribution they make to the provision of public goods, the public externalities they generate and their respective decision-making processes. On this last aspect, State support to an organization should be predicated on its functioning in a democratic manner and should be directly proportional to the scope and degree of participation that it can rally.

¹⁸ Especially in terms of mental health.

by stimulating efficiency. The problem is to find mechanisms whereby equity can be ensured without reducing the incentives for efficiency. The latter can be achieved by ensuring that transfers from the central system are subsidiary to local initiatives and contributions, but this could be counterproductive in terms of equity. A proposal for reconciling these two objectives will be presented later.

e) *Operational decentralization*

Political decentralization refers to the provision of local goods; however, there are some goods in respect of which decisions relating to nature, volume and resources are adopted nationally but which could be more conveniently implemented locally and, in many cases, not through deconcentrated administrations but rather through subnational government offices.¹⁹ In such cases, subnational governments—and their offices—no longer act as instruments for local decision-making but rather for national decision-making, and the decentralization to which these processes give rise is no longer political but only operational.²⁰ Whereas, in the first case, the decisions and financing correspond essentially to the local community and therefore subnational governments must be accountable for their management primarily to the community that has elected them, in the second, the decisions are taken on behalf of the higher level—which should also be responsible for the financing—and in this case the subnational government must be accountable primarily to the “principal” community, which is that of the higher level, represented by its respective government.²¹

2. Decentralization in Latin America

a) *The processes*

As mentioned before in the introduction to this study, in Latin America the processes of decentralization, whether political or economic, appear historically as a counter-trend to a prior tendency to centralize political and economic decisions under

national Governments. As a consequence of the debt crisis—which could also be described as a “crisis of centralism”—the tendency now is to transfer public good supply functions to subnational governments and the production of publicly-provided goods and services to economic competition. The main functions decentralized to subnational governments have been the provision of education and health and basic infrastructure and services, while in terms of economic decentralization, the tendency is to decentralize the production of transport infrastructure and services, basic services and more recently, insurance and health services.

Reviews of the main decentralization processes in the region (Finot, 1999 and 2001), carried out mainly on the basis of information and analyses generated by various ECLAC projects, show that there are still no significant signs that they have given rise to a generalized trend towards citizen participation, or have generated major and persistent improvements in terms of public efficiency and reduction of corruption. With respect to equity, while decentralization has helped to expand the coverage of social services, in many cases it has given rise also to appreciable differences between regions or localities in terms of infrastructure and equipment for the provision of social services and even in the quality of such services. Neither political decentralization nor the systems of territorial redistribution that accompany it have succeeded in reducing historical trends towards territorial concentration of income. On the other hand, there are signs that such systems contribute to budget disequilibria. In conclusion, it can be stated that in Latin America, decentralization has not yet achieved the expected objectives, at least not in any sustainable way.

b) *Why has decentralization not achieved the expected objectives?*

The main reason why the results obtained have fallen short of expectations in terms of participation and efficiency—which according to the conceptual framework developed in the previous section would be precisely the objectives of decentralization—lies in the fact that the basic systems for territorial transfers prevailing in the region are generally not geared towards supporting processes for the provision of public goods where decentralized decisions are adopted autonomously on the basis of local contributions. Political decentralization, understood as the capacity of local communities to provide by themselves public goods on the basis of their own initiatives or

¹⁹ In this case, subnational governments would act as agents of the central level, with all the advantages and disadvantages that have been analysed by Heymann (1988).

²⁰ Consequently, in order for there to be political decentralization, it is not enough simply to elect local governments. Political decentralization exists only insofar as the provision of local goods is decided by an autonomous agent.

²¹ This does not imply that in the second instance they must not be accountable to the citizens of their local community, since citizens in general are the final beneficiaries of all public goods.

contributions, is still scarce in the region. Such conditions only exist in a few relatively rich areas – insofar as they do not require transfers – and, in the case of basic infrastructure in Mexico, where there are freely available transfers which increase in proportion to the increase of local tax collection.²²

A more frequent form of political decentralization would be a “political decentralization of spending”²³ which is based on freely available transfers which are not tied to local contributions. This arrangement is predominant in Brazil (where the fundamental focus of decentralization is currently towards the municipalities) and in Argentina (where the process is geared essentially towards the provincial governments); it occurs to a lesser extent in the other countries through basic compensation systems. However, as expenditure is not linked to the local contribution, the economic efficiency mechanisms which are typical of decentralization do not come into play. When participation does occur, it refers only to expenditure.

The other cases of decentralization, aimed fundamentally either at intermediary levels or at the municipal level, are characterized by a mixture of political decentralization of spending and operational decentralization, with the second of these two tending to be dominant. This occurs because in most regions or localities, basic transfers are more or less tied to use and, in the case of others, which are complementary to basic ones –coming from Development Funds– a “local” contribution (which generally comes from basic transfers) is usually demanded but the decisions are taken centrally.²⁴ Under this arrangement social participation, when practised, is usually confined to identifying needs.

Lastly, none of the current systems of financing is designed to promote autonomous processes where citizens participate in decisions on the basis not only of expenditure but also of their respective contributions. On the other hand, centralized political and administrative mechanisms still predominate:

subnationally, under the two first modalities of decentralization identified (political decentralization and political decentralization of spending) and nationally, under the third (a combination of political decentralization of spending and operational decentralization), which usually generates opportunities for corruption. This was also the case in the example already referred to of Mexico, since political decentralization in that country occurs principally only at the intermediate level and in governments of large cities and only occurs at low levels in the administrative organs closest to the citizen. This general situation explains why decentralization in the region has still not yielded convincing and sustainable results in terms of participation and efficiency.

Furthermore, the reason why decentralized expenditure may have contributed in some countries to budget disequilibria is that the transfer systems through which most of this expenditure is covered are not subsidiary to local initiatives and contributions. This is probably due mainly to the great weight of social spending among the areas of responsibility transferred: How can transfers that are destined mainly to reducing poverty be tied to the generation of public funds at the local level?

c) *A fundamental explanation*

The basic explanation for this whole situation may be that in decentralizing, no distinction has been made between local goods, whose provision is appropriately organized at the subnational level, and national goods, where decentralization, if any, should be primarily operational. Indeed, while the demand for infrastructure and basic services is clearly distinguishable territorially, the right to accede to specific levels of health and education services can only be differentiated qualitatively, since all citizens have an equal right to a minimum guaranteed by the State, irrespective of their place of residence. While full political decentralization to the levels closest to the citizen could be achieved in the case of provision of infrastructure and basic services, only operational decentralization could be arranged for the provision of health care and education, since in this case the decisions as to the nature and quantity of goods and the source of funding fall primarily within the competence of the national authorities. However, both types of goods have been treated basically in the same way, since their decentralized provision is financed with similar transfer systems. These systems do not help to introduce economic incentives for participation in the supply processes and therefore efficiency and reduction

²² For a more detailed analysis on autonomous spending and transfer systems, see Finot (2001).

²³ Referred to by Medici (1995) as “dependent decentralization”.

²⁴ Mainly through social investment funds, but something similar occurs with the multiple technical assistance and training programmes of various public entities. The set of projects finally approved obviously do not coincide with local priorities. When local expenditure is perceived in this way, it proves well nigh impossible for subnational communities to execute their own development strategies.

of corruption, nor do they succeed in reducing the inequalities that decentralization itself creates.

Clearly, all the above has occurred in the specific historical context that prevailed in each country, but decentralization is also an instrument of reform with respect to development strategies, for which further evaluations and readjustments must be made in the light of the objectives that societies set for themselves. In the following section, a few guidelines drawn from the foregoing analysis are set out and may be useful in this connection.

3. Elements for redirecting decentralization processes

a) *A new objective*

Historically, decentralization has been part of a process of adjustment of public management to a new paradigm which is still being constructed. In addition to the foregoing objectives of improving living conditions for the people, achieving greater territorial and social equity and fostering constructive citizen participation, all this in conjunction with greater efficiency in public management, we must now promote adjustment to a global economy in which conditions of competitiveness are required not only at the macroeconomic and microeconomic levels but also at the mesoeconomic level, since also subnational territories compete now. Decentralization is becoming more necessary than ever for achieving this new fundamental objective together with the foregoing ones. However, it must also contribute effectively to financial sustainability. This could be achieved if the processes are reoriented through the above-mentioned differentiation between the provision of a social basket –which would include education and health– and the provision of infrastructure and basic services.

b) *What should we decentralize?*

On the one hand, decisions on the composition, levels and financing of a basket of goods and services to which all should have equal opportunities of access, irrespective of their place of residence, should be (re)centralized fundamentally at the national level. The structure and size of this basket would depend directly on each country's financing capacity.²⁵ In contrast, it

²⁵ The fact that financing is decided at the central level does not mean that subnational communities that have higher resources –including those from their respective fiscal revenues– may not contribute to a central fund which has this purpose. On the other

would be appropriate to devolve part of the content and above all the operation of these central decisions to subnational governments (mainly to the municipal level) and to entrust the production of services to competing establishments.²⁶

On the other hand, political decentralization would indeed be highly appropriate and would generate conditions of full autonomy²⁷ for subnational communities of different levels in the case of the provision of basic infrastructure and services, since, in this case, demand is clearly differentiated owing to physical factors and productive structure. In this case it would be appropriate to deepen the political decentralization to reach levels very close to the citizen, so that such provision can be adapted precisely to these differentiated demands. Together with this deeper decentralization, local communities of different levels must be encouraged to develop their own territorial development strategies –local economic development and improvement of the habitat– in an autonomous, participatory way in coordination with other levels and forming associations with each other on the basis of different demands. In order for this to occur, the distribution of tasks for provision should also be based on the principle of subsidiarity and the planning process should be carried out with respect for the autonomy of each level from the bottom up, establishing intergovernmental coordination mechanisms and explicitly encouraging territorial associativeness.

Specifically, the functions in which political decentralization should be deepened to levels that

hand, in areas where important differences exist in personal income, the impact of available resources could be increased if it is decided to subsidize consumption rather than supply, after a cost-benefit analysis.

²⁶ An interesting case of economic decentralization is the Colombian experience with the health system (for a full description of this system, its foundation and an assessment, see Jaramillo (1999)). In a more recent assessment, the same author recommends reducing the intervention of the intermediate level to control functions. On the other hand, there is consensus in the region that it is appropriate to decentralize education production processes to the establishment level. Furthermore, Chile and Bolivia show interesting results in opening up State production of education to competition: in the first case with subsidized education and in the second with the important participation of the “Escuelas de Cristo”, in both cases with State financing. Lastly, Chile is also an example of successful administration at the municipal level of subsidies granted by the central Government.

²⁷ Clearly, autonomy does not mean sovereignty: such provision must be carried out with strict observance of the policies of the higher level, which, however, must leave room for the decentralized provision to adjust to the different local characteristics.

correspond better to the relevant areas of demand in order to promote local development would be: land management; the organization and control of the provision of public utilities; the provision of urban, transport and water resource use infrastructure; education and health contents, and support for small and medium-sized enterprises.

To ensure the achievement of participation and efficiency objectives, the approval of local expenditure should be based on effective citizen participation in defining the amount of contributions –both current and future– which the community in question will provide in order to carry out this expenditure. Facilitating such participation would require: i) that the different levels have their own tax bases, that they can modify the tax rates (at least within certain limits) and, at the same time, that a ceiling be set for borrowing; ii) modifications in the systems of representation,²⁸ decision-making, information and accountability in State organizations, and iii) measures to ensure that a policy for social organizations linked to territorial development can be incorporated fully into the generation and management of cooperative solutions, fulfilling functions both of providing collective goods and of participation and representation for the provision of public goods.

c) *Modifications in transfer systems*

In relation to the foregoing differentiation, current transfer systems should be replaced by two different redistributive systems, both of them subsidiary: one social, aimed at ensuring for all inhabitants of the same country equal access to the above-mentioned social basket, and the other territorial, aimed at supporting participatory autonomous decisions at each subnational level and at reducing territorial inequalities. Municipal governments would operate the system of social redistribution as agents of the respective central governments, and subnational governments in general, as heads of autonomous entities, would be responsible for land management and for concerted action in the area of territorial economic development and the improvement of living conditions in their respective spheres, on the basis of the local initiatives and

²⁸ For example, in the State territorial organizations, the closer the level to the citizens the greater preponderance the electoral system must give to territorial representation in relation to proportional representation and must ensure that the representatives of each territory have the obligation to be informed and report to those they represent, through the organizations of the latter and the communication media.

contributions, but also relying on the resources accruing to their areas from the system of territorial redistribution. Moreover, in terms of the provision of basic services, an important portion of demand would be guaranteed by the social redistribution system (subsidies for consumption of drinking water, electricity, waste disposal, etc.).

However, while decentralization of decisions regarding citizen contributions would be appropriate for ensuring efficiency, in order to ensure equity the territorial redistribution system must tend to compensate not only for initial territorial differences but also for those that decentralization itself encourages and, as far as possible, this should be done without eroding the efficiency mechanisms associated with decentralization. If the system of territorial redistribution is to ensure efficiency and equity and, at the same time, contribute to financial sustainability, then territorial transfers should be freely available but should be tied to the local contribution of each community (Finot, 1997) and subject to the condition that decisions both on expenditure and on current and future local contributions (debt) must be adopted on a participatory basis. The concept of “relative local contribution” means that the contributions of each community must be measured not in absolute terms but in relation to their respective territorial income and/or resource endowment.²⁹

Moreover, citizens’ contributions in labour, materials and cash made through social organizations in order to aid in the provision of public goods and the generation of positive public externalities should be considered as paid taxes –or “quasi-taxes” as we suggested on a previous occasion– and therefore as local contributions. Explicit recognition of these contributions would represent moreover a fundamental advance in terms of building citizenship and could contribute in a decisive way to reducing the stigma currently attached to receiving subsidies from the State: instead, such subsidies would be seen as payment to citizens who often contribute a significant part of their income to the provision of public goods.³⁰

²⁹ For example, if only income criteria were adopted, it could be determined that while transfers were directly proportional to the poverty levels in each locality, but those intended for infrastructure and basic services should be tied to the relative local contribution, although the locality would have discretion over their use.

³⁰ Thus, various workshops conducted by the author in rural towns in Chuquisaca (Bolivia) showed that, on average, each small rural landowner’s contribution to the construction of public works in proportion to his income was 17 times higher than that of urban dwellers, including the territorial taxes paid by the latter.

d) *Differentiating between provision and production*

Lastly, it would be appropriate to distinguish clearly between the provision and production functions and to pursue the current trend towards economic decentralization in all sectors but to accompany it with a constant effort at regulation of emerging quasi-markets, in whose application local governments should play an important part.

e) *Possible results and viability*

Deepening decentralization along the lines described would not only make it possible to stimulate and facilitate citizen participation but would also achieve a synergetic relationship between development of citizenship, fiscal efficiency and equity. Moreover, orienting political decentralization toward territorial development could contribute both to generating significant advances in global efficiency and competitiveness and to increasing social cohesion and enhancing citizens' living conditions. This could be done on the basis of cooperative efforts, with solidary support through effective redistributive systems.

Decentralization, as described here, implies far-reaching institutional change which some consider unfeasible in the region (Véliz, 1980). However, in Latin America and the Caribbean, self-governing

practices co-exist and have developed alongside the centralist culture on which Véliz bases his conclusions, and such practices detract from the validity of those conclusions.³¹ The essential point is not the absence of alternative cultures to the centralist culture but the fact that decentralization and particularly political decentralization, which is a democracy-building process, affects the current distribution of power and generates tensions between democratizing tendencies and old and new centralist interests. Major advances in decentralization have almost always been responses to political crises and/or the result of the determination of political visionaries who have had broad popular support. But at present, in a global economy marked by competition among subnational territories –in the broad sense now given to the concept of territory– political decentralization is also an indispensable condition for strengthening competitiveness. This would place it once again in a prominent position on the regional political agenda. Intellectuals can make a decisive contribution by developing viable strategies for deepening the processes, which can then be used in appropriate political conjunctures.

(Original: Spanish)

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³¹ As shown, for example, not only by the operation of multiple grass-roots organizations across the region but also by the federalist culture that has been a feature of the Brazilian landscape since its independence from the Empire, a culture whose development has led to its current decentralization in favour of the municipalities and which is now moving towards a "non-State public" sector.

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Behaviour of Brazilian *export firms: implications* for the Free Trade Area *of the Americas*

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The analysis of integration processes between two economies has traditionally focused on identifying the intensity of trade creation and diversion, estimated through a simulation of the impact of the reduction or elimination of trade barriers.

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At the same time, the literature on multinational corporations has stressed the growing weight of intra-firm transactions in total foreign trade. This paper attempts to compare these two theoretical approaches by analysing the geographical orientation of the leading Brazilian export firms and, on that basis, inferring the potential impact on estimates of the effects of the Free Trade Area of the Americas (FTAA). The hypothesis is that, by taking into account the significance of subsidiary firms in the country's foreign trade and the geographical concentration of these firms' external commercial transactions, the results derived from the creation of FTAA may differ from those obtained through simulations based on the reduction or elimination of trade barriers.

I

Introduction

Since the publication of Viner's study (1950), the analysis of the effects of integration processes between two economies has traditionally focused on identifying the impact of the reduction or elimination of trade barriers on the participating countries' trade balance and production structure.

The two basic concepts proposed by Viner –trade creation (emergence of new activities in the trade between the participating countries) and trade diversion (reduction of imports of products offered by third countries)– are still the main topic of most analyses. Thus, an integration process could be said to be beneficial from an economic standpoint if the former effect exceeded the latter within an acceptable time frame.

Ex ante appraisals of the consequences of an integration exercise have therefore tended to identify these two effects primarily on the basis of a simulation of the results derived from the reduction or elimination of trade barriers between the participating countries.

This type of approach is based on certain assumptions, one of them being that international trade takes place among different firms in different countries. Each article is produced by a production unit in a given country. The profits obtained are added to the national income of the home country of each firm, and thus each country supports its most competitive units as against the most competitive units in the other countries (Markusen and Venables, 1995).

The literature on multinational firms, however, points out some aspects of the relations between the parent company and its subsidiaries which shed some new light with respect to the correctness and validity of this assumption. This has given rise to a whole new

branch of international trade theory dealing with intra-firm transactions. Nonetheless, the relationship of these transactions to studies on the integration process has been insufficiently explored.

This paper attempts to integrate these two theoretical approaches, first by analysing the geographical orientation of the leading Brazilian export firms and then by deducing the potential effects of the creation of a free trade area in the hemisphere. It is held that, since capital-exporting firms are subject to a trade interaction with their parent company, an argument can be made for re-evaluating the results of exercises aimed at estimating the amount of trade creation and diversion that would be associated with the Free Trade Area of the Americas (FTAA).

The basic purpose of the paper is to verify whether foreign-owned firms that trade with the rest of the world tend to concentrate more of their exports and imports on the country of origin of their capital than on other countries. If this hypothesis can be confirmed, there is reason to assume that estimates of trade creation and diversion made on the basis of the sectoral distribution of trade barriers should be judged in terms of the role played by the economic agents acting in each sector. The concern behind this analysis is based on the negotiation process aimed at establishing FTAA; nonetheless, since this case deals with the leading Brazilian export firms, the analysis is also useful for making a general assessment of simulation exercises used to estimate trade creation and diversion.

The methodology of the analysis is based on the calculation of probabilistic econometric models to verify the determining factors in the exports of leading Brazilian firms in the period 1995-2000. The econometric model estimates the probability that a given firm will export to the country of origin of its capital or to a given trade bloc.

The paper is divided into five sections. Section II, following this Introduction, establishes the reasoning behind the argument; section III describes how the primary data were compiled and section IV examines the results. Lastly, section V presents some conclusions.

□ The views expressed here are the sole responsibility of the authors and do not necessarily represent the positions of the institutions mentioned in this article. The authors wish to express their gratitude to the Secretariat of Foreign Trade (SECEX), for the access provided to its database on export firms, and to Rogério Bouer Miranda, Leandro Magalhaes and Paulo Roberto da Silva Jr. for their assistance in data processing.

II

Theoretical basis

For some time now, the theoretical explanation of international trade flows as being based on the availability of production factors in the various countries has proved to be insufficient. Since the mid-1950s, the recognition that most international trade in goods consists of trade in industrial products and is carried out between developed countries has given rise to alternative attempts to explain the trade in this type of product. Formulations based on a “product cycle” (Vernon, 1966) and the technological gap between countries (Posner, 1961) are two of the most telling examples.

Recently, a theoretical approach combining industrial organization with trade theory –the so-called “new trade theory”– represented a methodological advance (Helpman and Krugman, 1985; Krugman, 1986). This approach offered the possibility of explaining the results associated, for example, with multinational corporations and trade relations between the parent company and its subsidiaries, by taking into account elements such as economies of scale and product differentiation.

By incorporating these elements –economies of scale, imperfect competition and product differentiation– the analysis reveals, for example, that there is a form of specialization in the trade in goods that does not depend on the relative supply of production factors, and that complementary production processes may emerge among factories located in different countries, leading to an intensification of intra-firm transactions rather than the results that would be expected based on traditional theory. The basic argument assumes that, for certain types of products, international vertical integration of the production process may be a precondition for achieving production efficiency.

This type of situation requires an identification of the attributes that make intra-firm transactions more profitable than those with other firms. The arguments are frequently related to the need for highly trained workers in the production process, or to the assumption that the sale of products to external consumers requires something more than industrial processing, since it also involves technical support services.

Similar results can be seen, for example, from an analysis of the effects of barriers to the international

flow of skilled labour, or the existence of differences in legislation concerning patents, licences and other operational aspects of major firms.¹

The key factor is that the existence of such barriers or constraints in the production or marketing process raises a firm’s costs. The firm must therefore exert control, in another country nearer to consumers, over activities that are divorced from the production process as such. It must face this type of service cost in both the country of origin and the other country if it wants to operate in both markets. Accordingly, a large firm finds it cheaper and more efficient to manage these steps internally, especially in the case of activities specific to it.² More internal transactions will therefore result, even among units located in different countries.

Note that this type of procedure is not universal, since it applies only (or with greater intensity) to some types of products. In general, these are products or services that involve a greater demand for highly skilled workers. For example, a recent study by the Organization for Economic Cooperation and Development (OECD) indicates that the percentage of intra-firm transactions (more than 50% of the firm’s total international transactions) tends to be high in the pharmaceutical, computer, semiconductor and motor vehicle industries. The same study shows percentages of less than 10% for the iron and steel and wearing apparel industries³ (OECD, 1996).

The conclusion –and this confirms the above reasoning– is that firms making intensive use of scientific know-how and mass production depend to a greater extent on high-technology and quality inputs, a well-trained workforce and the availability of highly specialized parts and components. Firms place a considerable strategic value on acquiring these inputs, so they prefer to maintain direct control over their availability, through direct investment and intra-firm transactions.

¹ Examples of models of this type are given in Markusen and Maskus (1999) and Baldwin (1989).

² For instance, in the case of firms having a monopoly on the patent for the commodity or its components and on the final product (pharmaceuticals, computer technology products).

³ These findings are similar to those of Bonturi and Fukasaku (1993). A like phenomenon was found in the trade relations between Japanese firms and their subsidiaries in Takeuchi (1990).

III

Methodology

1. Data

In practice, data are systematically available on intra-firm transactions only in the United States –thanks to the publication, by the Department of Commerce, of trade statistics for United States firms with their subsidiaries– and in Japan. Intra-firm transactions are estimated in the range of 30% to 40% of total United States external trade.

In Brazil, only the Foreign Capital Census, conducted by the Central Bank in 1995, could provide any estimate of the volume of these types of transactions (around 20%), although it does not disaggregate the data by sector.⁴

A recent study conducted by the Federal Internal Revenue Secretariat (2002), based on a sampling of the six largest export firms and seven largest import firms in the country, partly confirms the sectoral concentration of intra-firm transactions: among exporters, the percentages are higher in the manufacture and assembly of motor vehicles and in wholesale commerce, and among importers, in the manufacture of chemicals and machinery and equipment.

In Brazil's case, the lack of detailed data by sector or firm made it quite difficult to do research on intra-firm trade. An alternative methodology was used by Baumann (1995), and the same approach is taken here. Owing to the lack of specific data, we shall assume that there is a close link between the ownership of a firm's capital and its marketing channels in the country of origin of the capital. Thus, for a firm whose capital is preponderantly from country A, trade transactions with that country will essentially be with the parent company and with the marketing channels which this parent company uses in A, and transactions with third countries, if any, will be very limited. This is not the same concept as intra-firm trade, of course, but it is the best empirical approximation on the basis of the available data.

⁴ The Central Bank's second Foreign Capital Census, in 2000, gave a figure of US\$ 21 billion for these transactions, representing 38% of total exports. For imports, the figure rose from US\$ 8.5 billion to US\$ 18.2 billion in the same period, representing 17% and 33%, respectively, of the value of imports in 1995 and 2000.

Special tabulations were provided by the Secretariat of Foreign Trade (SECEX), with data on the 1,000 largest export firms in Brazil for the period 1995 to 2000. Each firm was identified by its listing in the National Register of Legal Persons (CNPJ), so that firms in the same group under a different listing are considered separately.

Since the important factor in the analysis was the ownership of the firms' capital, the owners were identified on the basis of the data provided on company web sites and in specialized publications⁵ concerning the country of origin of each firm's capital.

The available information shows the ownership of capital, the values of exports in 2000 disaggregated by product and country of destination, exports and market of destination by firms and products in 1995, and imports (by country of origin of imports of each product) for the 1,000 largest exporters in 2000.⁶ These firms represented nearly 84% of total Brazilian exports in that period.

The data were assembled on the basis of this information. The values of exports in 1995 were obtained for 459 firms, and the values of imports in 2000 for 192 firms. The sector of activity of each firm was defined using the Table of Codes and Descriptions of the National Classification of Economic Activities (CNAE). This made it possible to define the area of activity of 768 of the 1,000 firms.

Data on the firms' net worth (1995-2000) and net earnings (for the same years) were taken from the annual edition of *Mil maiores empresas brasileiras*, published by the *Gazeta Mercantil*. For net earnings in 1995, information was obtained on 356 firms, and for the year 2000, on 435 firms. With respect to net worth, information was obtained on 318 firms for 1995 and 404 for 2000.

The biggest problem in identifying the values of net earnings and worth is that the above-mentioned

⁵ Including *Guia Interinvest* and *Mil maiores empresas brasileiras*, published by the *Gazeta Mercantil*. The basic criterion was to classify as foreign those firms whose foreign-controlled capital represented at least 25% of their capital or the majority of their voting capital.

⁶ Exports and imports in value terms.

publication combines several firms with different listings in the National Register of Legal Persons (CNPJ) into a single holding company, whereas the SECEX data are disaggregated by production units. The solution in these cases was to divide up the totals of net earnings and worth among the different companies in the same group.

2. Statistics

Table 1 summarizes the basic data for each variable.

Figures 1 and 2 show the distribution of exports and imports of the 1,000 largest exporters, by country of origin of the controlling capital.

Although the majority of exports in the sample were from national firms, companies whose capital comes from the United States, Germany and Italy represent a significant part of this group. Similarly, a strong concentration of import value can be seen: 54% of the value was accounted for by national firms and a further 24% by United States and German companies.

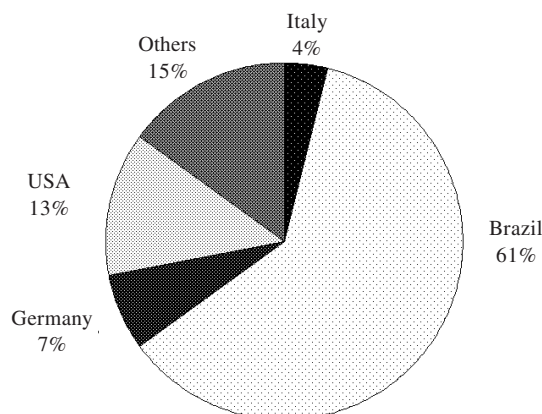
Table 2 shows the number of firms by country of origin of their controlling capital. Among foreign

companies, there is a notable concentration, in the group formed by the largest exporters, of firms whose capital originates in the United States, Germany and France (two thirds of the 228 foreign firms).⁷

Taking exports by sector, a reasonable concentration exists: the four main economic activities

FIGURE 1

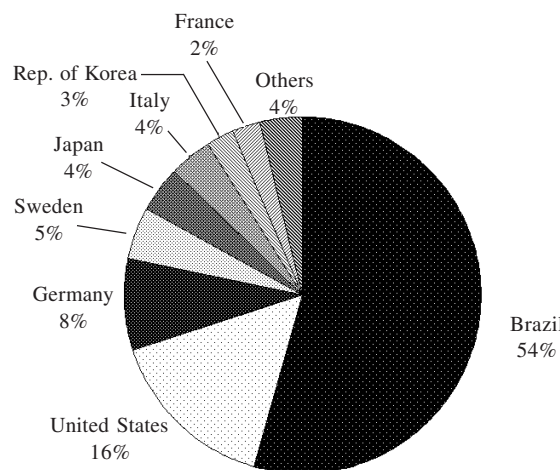
Brazil: the 1,000 largest export firms in 2000. Distribution of exports by country of origin of capital



Source: Prepared by the authors, on the basis of primary data from SECEX.

FIGURE 2

Brazil: the 1,000 largest export firms in 2000. Distribution of imports by country of origin of capital



Source: Prepared by the authors, on the basis of primary data from SECEX.

TABLE 1

Brazil: Total data by variable

Variable	Number of data
Exports in 2000	1 000
Exports in 1995	459
Imports in 2000	291
Net earnings in 2000	435
Net earnings in 1995	356
Net worth in 2000	318
Net equity in 1995	404
Economic sectors	768
Firms with all data	55

Source: Prepared by the authors, on the basis of primary data from the Secretariat of Foreign Trade (SECEX).

TABLE 2

Number of firms by country

Country	Number of firms
Brazil	660
United States	82
Germany	43
France	22
Japan	19
Switzerland	18
Italy	15
Bermuda	15
United Kingdom	12
Canada	2

Source: Prepared by the authors, on the basis of primary data from SECEX.

⁷ It was not possible to obtain more data on firms controlled by registered capital of Bermudan origin.

–food and beverages, metallurgy, motor vehicles and metallic minerals– represent over half of sales abroad, and the 12 main sectors account for more than 90% of the total exported in the sample (figure 3). As for imports, two thirds of the sample represented firms operating in the sectors of motor vehicles and parts, chemicals and petrochemicals, domestic appliances and metallurgy (figure 4).

3. Description of models

Our objective is to describe an econometric model to: (i) measure the effects on a firm's exports of various factors, including the origin of its capital, the size of the firm and the geographical concentration of its exports and imports; and (ii) determine the likelihood that a firm will export primarily to the countries of origin of its capital, and the probability that a firm will import from its parent company's home country.

First, we shall deal with the factors determining the total exports of the firms in our sample. The estimated model was described by the following equation:

$$Export_i = \beta_0 + \beta_1 X_i + \gamma Z_i + e_i$$

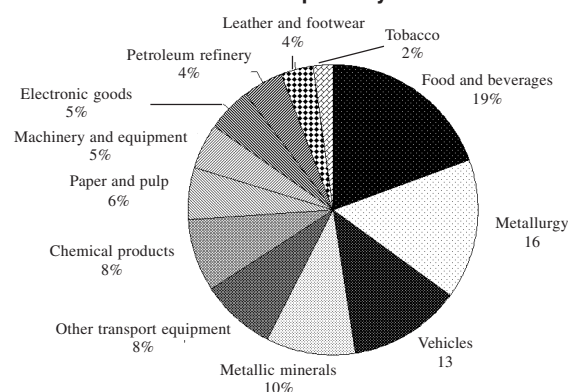
where *Export* is an export operation entered in the data bank, *X* is a binary variable indicating whether the exports are channelled to a given trade bloc (FTAA, MERCOSUR or NAFTA, for example), and *Z* is a vector containing other important variables for determining total exports such as:

- i) Growth rate of exports by firm from 1995 to 2000;
- ii) The firm's foreign participation rate, defined as the sum of its imports and exports divided by its income in 2000;
- iii) Ratio of the firm's imports to its net income in 2000;
- iv) Growth rate of net income by firm from 1995 to 2000; and
- v) Use of dummy variables (for the United States, Canada, Western European countries, Asian countries and other Latin American countries) to identify potential differences in firms' behaviour depending on the country of origin of their capital.

Variable *X* was built on an algorithm identifying the optimal cut-off line for each bloc to which exports are sent (FTAA, MERCOSUR, NAFTA). Thus, the cut-off lines of the dummy variables *destsur*, *destalca* and *desttlc* were chosen by applying a SAS routine, which

FIGURE 3

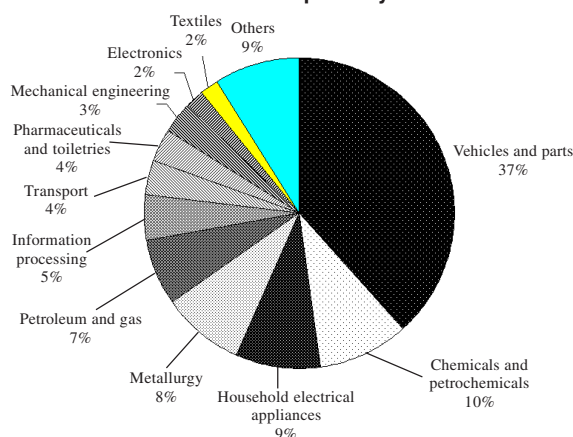
Brazil: the 1,000 largest export firms in 2000. Distribution of exports by economic sector



Source: Prepared by the authors, on the basis of primary data from SECEX.

FIGURE 4

Brazil: the 1,000 largest export firms in 2000. Distribution of imports by economic sector



Source: Prepared by the authors, on the basis of primary data from SECEX.

selected the optimal values for each of the variables through a sequential search, by which the complete equation was estimated (that is, with all the variables of the model and the three dummy variables) and the coefficients of determination of each regression were obtained. In practice, the programme varied each of the cut-off lines from 1% to 100% by 1% intervals, and combined all the possibilities of cut-off lines. On this basis, the regressions were calculated (a total of one million) with the variables produced by all the combinations, selecting from among them the regression with the highest R^2 .

The coefficients β_0 , β_1 and γ represent the sensitivity of exports to each factor, in order to calculate the relative weight of the marketing channels.

The final description of the above equation [1] takes the following form:

$$\begin{aligned} expinc = & \beta_0 + \beta_1 comext + \beta_2 impsal + \beta_3 \\ & salinc + \beta_4 destsur + \beta_5 destalca + \beta_6 desttlc + \beta_7 \end{aligned}$$

where:

- expinc* → growth rate of exports by firm from 1995 to 2000
- comext* → rate of firm's foreign participation (firm's imports in 2000, plus firm's exports in 2000 divided by firm's income the same year)
- impsal* → ratio of firm's imports in 2000 to its net earnings that year
- salinc* → growth rate of firm's net income from 1995 to 2000
- destsur* → dummy variable representing whether more than 25% of the firm's exports in 2000 were channelled to countries of the Southern Common Market (MERCOSUR)⁸
- destalca* → dummy variable representing whether more than 48% of the firm's exports in 2000 were channelled to countries of the Free Trade Area of the Americas (FTAA)
- desttlc* → dummy variable representing whether more than 54% of the firm's exports in 2000 were channelled to countries of the North American Free Trade Agreement (NAFTA).

4. Analysis of effect of geographical concentration

After verifying the determining factors in the growth rates of exports, we explored the significance of the relationship to the country of origin of the capital in estimating the potential effects on the growth of Brazil's exports and imports if it joins FTAA.

The analysis was made by applying a probabilistic (Probit) model, which considers the possibility of exporting to a given region or country as a function of explanatory variables. For this exercise we selected the following variables: (i) origin of the firm's capital; (ii) relative weight of exports to the country providing the firm's capital in its total exports; (iii) relative weight of imports from the country providing the firm's capital in its total imports; (iv) value of the firm's total exports

and imports; (v) use of dummy variables (for the United States, Canada, Western European countries, Asian countries and other Latin American countries) to identify the potential differences in firms' behaviour depending on the countries of origin of their capital; (vi) weight of exports to FTAA, MERCOSUR and other groups of countries in proportion to the firm's total exports; and (vii) weight of imports from FTAA, MERCOSUR and other groups of countries in proportion to the firm's total exports.

The estimated equation presents the following general form:

$$Pr(Destination = 1 | X) = CDF(\beta_0 + X_i + \gamma Z_i + e_i)$$

where the variable *Destination* has the value 1 if the firm exports more than a certain percentage of its total exports to a given country or region, and 0 otherwise, while *CDF* is the cumulative distribution function. The groups of countries/regions used to define the dependent variable *Destination* were those of direct commercial interest to Brazil, such as MERCOSUR, FTAA, the United States and Canada, and NAFTA as a whole.

The Probit model describes the behaviour of a dummy variable in terms of a linear regression on non-random explanatory variables contained in vector line X'_i :

$$Y_i = X'_i \beta + \mu_i$$

The term $X'_i \beta$ represents the characteristics of firm t which encourage this firm to export to a given country or region. A mechanical interpretation would be that $X'_i \beta$ represents the probability that firm t will export to the region in question.

Since Y_i may only have the values 0 or 1, the residuals μ_i may only have the values $-X'_i \beta$ or $1 - X'_i \beta$. This being the case, the residuals are not continuous and therefore are not distributed normally. Thus the probability that $\mu = 1 - X'_i \beta$ is equal to the probability that $Y=1$, which is equivalent to $X'_i \beta$.

It is therefore necessary to use a generalized least squares (GLS) procedure, which consists of estimating the values of β via ordinary least squares (OLS) and then applying its estimated values to weight the observations and obtain efficient estimates.

In the specific case of a Probit model, we used a normal CDF, that is, if a variable Z has a normal distribution with a mean μ and variance σ^2 , its probability density function (PDF) will be given by:

⁸ Cut-off levels for regional blocs were determined by using the same procedure as described above.

$$f(Z) = \frac{1}{\sqrt{2\pi\sigma}} e^{-\frac{(Z-\mu_z)^2}{2\sigma^2}}$$

and its CDF by:

$$F(Z) = \int_{-\infty}^{z_0} \frac{1}{\sqrt{2\pi\sigma}} e^{-\frac{(Z-\mu_z)^2}{2\sigma^2}}$$

To establish the cut-off line relative to the amount exported to a given destination, which would characterize the presence of the attribute “exporter” (or value 1 for the variable *Destination*), we used an algorithm constructed in the following manner. For each firm, we calculated the percentage of exports channelled

to a given geographical/economic region (for instance, FTAA, MERCOSUR, country of origin of the capital or another country). Associated with it, a new dichotomous variable was generated which had the value 1 if that percentage exceeded $x\%$, and the value 0 otherwise. A routine was then developed which varied this minimal value from 1% to 99%, with 1% increments. For each new value of the cut-off line x , values were obtained for the dichotomous variable which served as an endogenous variable in the Probit model. For each batch, the probability index was calculated, and it functioned as a parameter for adjusting the model to the data. At the end of this process, the cut-off with the highest probability index was chosen.

IV

Empirical analysis

The estimated results for equation [1] appear in table 3 and suggest that firms which had a high level of participation in foreign trade and which registered some growth in sales from 1995 to 2000 also increased their exports. This growth seems to have occurred primarily in firms with export channels to the MERCOSUR, NAFTA and FTAA countries, as suggested by the positive coefficients of the variables which indicate the preferential destination of exports from those firms (*destsur*, *destalca* and *desttlc*).

The estimated model seems statistically sound, with a coefficient of determination adjusted for the number of degrees of freedom of nearly 37%, a Durbin-Watson statistic of 1.895 (which suggests there is no evidence of anomalies in the residues and functional form), and all the explanatory variables having coefficients which differ statistically from 0.

The sample used for this estimate contained only 43 firms of a total of 182 included in the data bank.⁹ This smaller number of firms was due mainly to the lack of data on some firms' imports from 1995 to 2000. Since we were working with growth rates, lack of information on any of the variables for a firm in only

one of these years entailed the exclusion of that firm from the sample. Thus, the results must be interpreted with all due caution, since they are based on a small sample.

The coefficient of the variable *comext* indicates that an increment of one percentage point in a given firm's share in foreign trade leads to an increase of nearly 2.14 percentage points in its exports. That result is corroborated by the coefficient of the variable *salinc*, which represents the increase observed in sales from 1995 to 2000. Its positive coefficient denotes that an increment of one percentage point in sales results in an increase of about 0.38 percentage points in the firm's total exports.

It is worth noting, in table 3, that if the ratio of a firm's imports to its net earnings increases, the growth rate of its exports drops, as is reflected in the negative coefficient of the variable *impsal*. In other words, for an increment of one percentage point in the ratio of imports to net earnings, there is a reduction in the growth rate of exports of nearly 1.70 percentage points. The negative coefficient for *impsal*, however, does not necessarily imply the non-existence of a virtuous circle between imports and exports; this may simply be due to the fact that firms which already have high levels of foreign trade also face greater difficulty in expanding their share of that trade. In order to confirm the existence of this virtuous circle, it would be necessary to have data on imports in 1995.

⁹ The sample of 182 firms corresponds to firms which had all the data with respect to the export variables by country of destination, net earnings and net worth between 1995 and 2000. The number drops to 43 because 139 of them were domestically controlled and therefore excluded from the sample.

TABLE 3
Brazil: determinants of growth rate of exports, 1995-2000^a

Explanatory variables	Estimated coefficients
Constant	-4.5524 (1.424)
<i>Comext</i> ^b	2.1353 (0.503)
<i>Impsal</i> ^c	-1.6904 (0.397)
<i>Salinc</i> ^d	0.3834 (0.148)
<i>Destsur</i> ^e	0.7629 (0.495)
<i>Destalca</i> ^f	0.2447 (0.549)
<i>Desttlc</i> ^g	1.1451 (0.484)
N	43
R ²	0.4599
R ² adjusted	0.3699
Durbin-Watson statistic	1.8950

Source: Prepared by the authors, on the basis of primary data from SECEX.

^a The number in brackets are the standard errors of each coefficient.

^b Foreign participation rate.

^c Ratio of imports to net earnings.

^d Growth rate of net income.

^e Dummy variable representing whether more than 25% of exports went to MERCOSUR countries.

^f Dummy variable representing whether more than 48% of exports went to FTAA countries.

^g Dummy variable representing whether more than 54% of exports went to NAFTA countries.

As for the relationship between the ownership of capital and the destination of exports, our estimates reveal some interesting results. For example, firms which export preferentially to MERCOSUR, NAFTA or FTAA would tend to benefit from the greater volume of trade generated between 1995 and 2000, in comparison to those which showed a preference for other markets.

This affirmation is confirmed by the positive and statistically significant coefficients of the dummy variables *destsur*, *destalca* and *desttlc*, which represent the impact of the destination of a given firm's exports on the rate of increase in its total exports. In fact, it may be said that firms which sent more than 25% of their total exports to MERCOSUR in 2000 showed a rate of increase in sales abroad about 0.76 percentage points higher than that registered by firms which exported less than this amount to MERCOSUR.

Similarly, firms which traded more than 45% of their exports with FTAA countries recorded a rate of export growth nearly 0.25 percentage points higher than that of firms which exported less than this amount to the same destination.

Lastly, the estimates indicate that firms exporting more than 54% to the NAFTA countries gained an advantage in terms of an increase in their foreign trade of 1.15 percentage points compared to the rest, which reflects the great vitality of the NAFTA market in the period in question.

1. The case of United States and Canadian firms

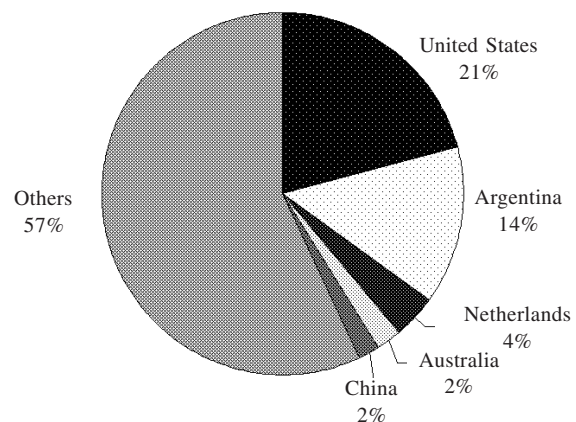
The United States and Canadian firms in the sample exported a total of US\$ 6.3 billion in 2000 in comparison to US\$ 2.9 billion in 1995, representing a growth of 114.2% for these firms' exports in the period, much higher than the 20.7% for total exports in the sample (from US\$ 38.3 billion to US\$ 46.3 billion).

It is interesting to note that, in these firms' total exports, the share of those exported to the United States and Canada decreased. In 1995, they exported 27.6% to the United States and Canada, whereas by 2000 this proportion had dropped to 20.7%.

Figure 5 shows the other main countries of destination of exports of firms financed by United States and Canadian capital, while figure 6 presents the sectoral share of these exports. Figure 7 illustrates the geographical distribution of the countries of origin of the imports in the sample.

FIGURE 5

Brazil: Leading Canadian and United States export firms in 2000: destination of exports in percentages by country



Source: Prepared by the authors, on the basis of primary data from SECEX.

As seen in figure 5, a reasonable geographical dispersion of exports from these firms occurred in 2000; the group of “other countries” absorbed 57% of the export value. The impact of MERCOSUR is worth noting, since Argentina was the market of destination for 14% of exports.

In sectoral terms, as illustrated in figure 6, 40% of these firms’ total exports corresponded to the motor vehicles and parts, metallurgy and machinery and equipment sectors.

Looking at the geographical origin of imports (see figure 7), we continue to see the group of “other countries” as the primary source, accounting for 56% (similar to the share of exports), but the relative weight of the United States is double that of exports. This result shows the importance of analysing the potential impact of FTAA: subsidiaries of United States and Canadian companies operating in Brazil present a reasonably diversified geographical structure for their exports, but they depend on the United States for nearly 40% of their imports.

In terms of sectors, two thirds of the imports by these subsidiaries represent firms in the motor vehicles and parts, chemicals and petrochemicals, domestic appliances and metallurgy sectors.¹⁰

Imports by these firms in 2000 account for a total of US\$ 3.6 billion, of which 38.3% come from their countries of origin. It is noteworthy that although the proportion of imports was larger than that of exports in 2000 (37.5% compared to 20.7%), these firms’ trade with their countries of origin produced a surplus of US\$ 2.8 billion.

On the basis of the data on exports and imports by United States and Canadian firms operating in Brazil, we estimated a Probit model, described by the following equation:

$$P(\text{desth} > .20) = \phi(\text{comext}, \text{expsal}, \text{expinc})$$

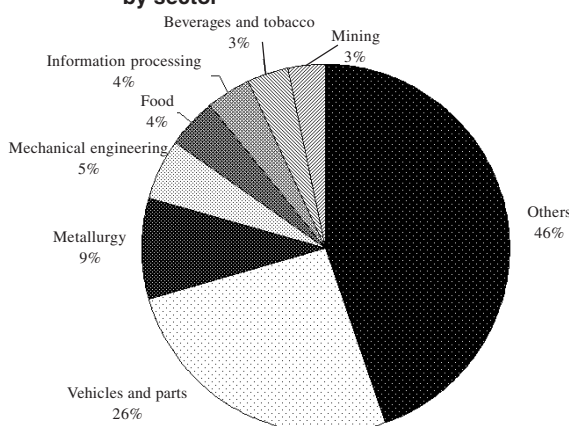
where *desth* is the probability of channelling more than 20% of exports to the United States or Canada,¹¹ *comext* is the ratio of foreign trade (exports plus imports) to the firms’ net income, *expsal* is the rate of growth of the firm’s net earnings from 1995 to 2000 and *expinc*

¹⁰ Note that there is a certain similarity with sectors in which the above-mentioned OECD study observed the existence of more intense intra-firm transactions.

¹¹ The cut-off line of 20% was defined on the basis of the algorithm described in the previous section.

FIGURE 6

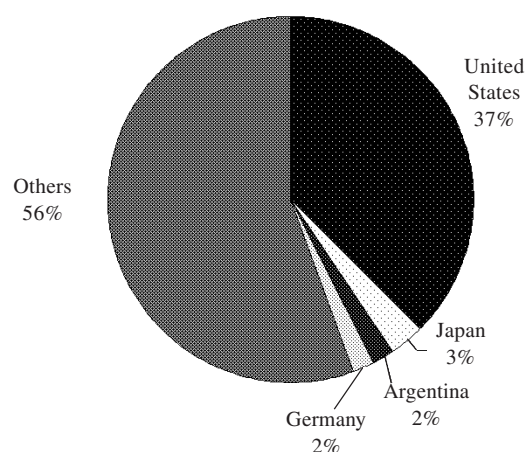
Brazil: Leading Canadian and United States export firms in 2000: exports in percentages by sector



Source: Prepared by the authors, on the basis of primary data from SECEX.

FIGURE 7

Brazil: Leading Canadian and United States importers in 2000: imports by country



Source: Prepared by the authors, on the basis of primary data from SECEX.

is the rate of growth of exports from 1995 to 2000. The results are described in table 4.

Out of 56 observations, the probability coefficient was 17.18, and therefore significant at a level of 10%.

The positive values of all the variables mean that there is a greater probability that any of the firms in question will export more than 20% of its foreign sales to the United States or Canada (i) the greater the ratio

TABLE 4

Probit model for exports to the United States and Canada

Variable	Coefficient	Standard error
<i>Intercept</i> ^a	1.11714	0.585220
<i>Comext</i> ^b	0.00831	0.004718
<i>Expsal</i> ^c	0.00619	0.003114
<i>Expinc</i> ^d	0.25599	0.109750

Source: Prepared by the authors, on the basis of primary data from SECEX.

^a Intercept.

^b Foreign trade as a proportion of net income.

^c Growth rate of net earnings.

^d Growth rate of exports.

of its foreign trade to its net income, (ii) the greater the growth of its net income and (iii) the greater the share of sales to the United States and Canada in its exports.

This confirms the direct relationship between the degree of participation in the North American market and the option to continue taking part in it. In other words, it is an indication that the subsidiaries operating in Brazil tend to participate in the market of origin of their parent firms.

2. Analysis by regional blocs

Four analogous experiments were conducted, applying the same Probit model as described above to different trade blocs. In each model, the dependent variable was constructed on the basis of the proportion of each firm's exports to a given destination. If this proportion exceeded a given cut-off point, the variable had a value of 1, and otherwise 0. The cut-off lines were obtained via the algorithm described above, which seeks to maximize the probability coefficient of the estimated equations for all possible cut-offs.

Table 5 shows the destinations stipulated in each model and the cut-off line obtained.

These four models applied the same exogenous variables. The variable *expsal* represents the ratio of total exports in 2000 to the firm's net income the same year. *Expat* represents total exports in 2000 as a proportion of the firm's net worth that year; *expinc* is the growth rate of exports by firm from 1995 to 2000; *salinc* is the growth rate of net earnings by firm from 1995 to 2000; and *patinc* is the growth rate of net worth by firm from 1995 to 2000.

The estimated results are shown in table 6. The number of observations used in the various estimates

TABLE 5

Canadian and United States firms: cut-off level of volume of exports by destination

Model	Destination	Cut-off level
1	Country of origin of firm's majority capital	15%
2	FTAA ^a countries	33%
3	NAFTA ^b countries	39%
4	MERCOSUR ^c countries	25%

Source: Prepared by the authors, on the basis of primary data from SECEX.

^a Free Trade Area of the Americas.

^b North American Free Trade Agreement.

^c Southern Common Market.

TABLE 6

Probabilistic models for the destination of exports

Models → Variables ↓	Probit ^a			
	(1a)	(2a)	(3a)	(4a)
<i>Constant</i>	0.6423 (0.448)	0.3021 (0.156)	0.7280 (0.165)	0.8716 (0.175)
<i>Expsal</i> ^b	-0.0014 (0.001)	-0.0012 (0.001)	-0.0009 (.0005)	-0.0003 (0.001)
<i>Expat</i> ^c	0.0000 (0.000)	-0.0001 (0.000)	0.0002 (.0001)	-0.0002 (0.000)
<i>Expinc</i> ^d	0.0997 (0.063)	0.0303 (0.003)	-0.0219 (0.010)	0.0249 (0.003)
<i>Salinc</i> ^e	0.1998 (0.140)	0.0019 (0.000)	0.0009 (.0005)	0.0023 (0.000)
<i>Patinc</i> ^f	0.0213 (0.160)	-0.0228 (0.027)	-.00007 (.0001)	-0.0626 (0.044)
N	43	182	182	182
L.R. Chi ²	59.16	199.79	201.96	149.95

Source: Prepared by the authors, on the basis of primary data from SECEX.

^a The numbers in brackets are standard errors of each coefficient.

^b Growth rate of net earnings, 1995-2000.

^c Proportion of total exports to net worth in 2000.

^d Growth rate of exports by firm, 1995-2000.

^e Growth rate of net income by firm, 1995-2000.

^f Growth rate of net worth by firm, 1995-2000.

differed depending on the characteristics of the models applied and the data bank.

Models (2 a), (3 a) and (4 a) were based on 182 observations, or all those available which contained the following variables: firm's exports by country of destination in 1995 and 2000, firm's net income in 1995 and 2000 and firm's net worth in the same years.

Model (1 a) used only 43 observations, since 139 of the 182 observations used in models (2 a), (3 a) and

(4 a) had to be excluded because they represented Brazilian firms, and it made no sense to take into account their exports to their country of origin. Moreover, as all the models used different variables or rates of variation between 1995 and 2000, it was impossible to make an isolated estimate for 1995.

Table 6 reveals the same pattern in all the models. In general, a positive correlation was observed in all cases between the volume exported, the growth of net earnings and the growth of exports. It can also be seen that the ratio of total exports to net earnings and that of total exports to net worth are negatively correlated with the probability of exporting to the country of origin of the capital or to a regional trade bloc.

(1 a) Dependent variable **destination 1** has a value of 1 if the ratio of each firm's exports to the country of origin of its capital exceeds 15% of the total; otherwise it has a value of 0.

(2 a) Dependent variable **destination 2** has a value of 1 if the ratio of each firm's exports to the FTAA countries exceeds 33% of the total; otherwise it has a value of 0.

(3 a) Dependent variable **destination 3** has a value of 1 if the ratio of each firm's exports to the MERCOSUR countries exceeds 25% of the total; otherwise it has a value of 0.

(4 a) Dependent variable **destination 4** has a value of 1 if the ratio of each firm's exports to the NAFTA countries exceeds 39% of the total; otherwise it has a value of 0.

Although the estimated coefficients had a low absolute value, the positive coefficients associated with the variables *expinc* and *salinc* suggest that firms which increased their sales and exports between 1995 and 2000 channelled their trade towards the countries of origin of their capital, and to the FTAA, MERCOSUR and NAFTA, in proportions greater than those of reference.

On the basis of the constant firms in our sample, we tried to estimate similar equations for firms with parent companies in Europe and Asia. Although the econometric findings are not solid, a crude analysis of these firms' export and import data suggests that the behaviour of Canadian and United States firms is not

TABLE 7

Brazil: destination of exports and imports by origin of capital, 1995 and 2000

Country	Percentage of exports to country of origin	Percentage of exports to continent of origin	Number of firms
Germany	14.40	16.02	43
France	4.60	26.70	23
Italy	16.31	22.65	16
United Kingdom	1.63	24.12	13
<i>Total Europe</i>		<i>21.15</i>	<i>95</i>
Japan	19.59	19.59	22
Republic of Korea	38.72	38.72	5
<i>Total East Asia</i>		<i>24.27</i>	<i>27</i>
United States	20.66	23.73	82

Country	Percentage of imports from country of origin	Percentage of imports from continent of origin	Number of firms
Germany	38.7	44.5	27
France	12.8	34.4	10
Italy	23.7	34.9	8
United Kingdom	6.1	27.8	7
Netherlands	13.7	34.0	5
Switzerland	24.2	26.2	3
Sweden	10.7	29.9	3
<i>Total Europe</i>		<i>36.0</i>	<i>63</i>
Japan	58.1	59.4	18
Republic of Korea	52.9	61.5	2
<i>Total Asia</i>	<i>43.0</i>	<i>52.2</i>	<i>20</i>
United States		55.4	50

Source: Prepared by the authors, on the basis of primary data from SECEX.

abnormal. Table 7, for example, shows that the country of origin of capital is still the preferred destination of the foreign trade of European and Asian firms operating in Brazil.

This supports our hypothesis that an analysis of economic agents may reveal certain sectoral trade consequences which differ from those derived from estimates of trade creation and diversion based on the structure of import barriers.

V

Conclusions

The findings of this study indicate that export firms under foreign control maintain strong links with their parent companies. Firms registering an increase in their sales and exports between 1995 and 2000 channelled their activities preferentially to the countries of origin of their capital and to the FTAA, NAFTA and MERCOSUR countries.

In addition, we found that the greater the weight of foreign trade in relation to net earnings, the greater the probability that the firm will send a growing proportion of its exports to the country of origin of its capital. The same effect was noted when we investigated the impact of the growth of net earnings and total exports on exports to the country of origin of the capital.

It can thus be held, for example, that for firms whose capital primarily originates in the United States or Canada, the more their total sales and exports grow and the higher the ratio of their exports to their net earnings, the greater proportion they tend to export to the United States or Canada, depending on the case.

An analysis of the geographical origin of imports by United States and Canadian firms reveals that the relative weight of imports from the United States is double that of exports, and that these imports are primarily by firms in the sectors of motor vehicles and parts, chemicals and petrochemicals and household appliances, for which there is confirmation (in the literature on industrialized countries) concerning the incidence of intra-firm trade.

Such confirmation enhances the importance of analysing the potential impact of FTAA; subsidiaries of United States and Canadian firms operating in Brazil have a reasonably diversified structure for their exports, but they depend on the United States for almost 40% of their imports, since their sales in that market are subject to the marketing structure of their parent companies.

We believe that this set of findings supports the main argument of this paper, namely, that certain intra-firm transactions –which the literature indicates are more highly concentrated in the sectors requiring skilled

labour– could influence the estimates of the effects associated with trade preference agreements, by generating a different sectoral distribution of these effects than that obtained by estimating the amount of trade creation and diversion derived from the structure of import barriers.

As an illustration, Carvalho and Parente (1999) estimated the effects of FTAA on Brazilian exports and imports, on the basis of a partial equilibrium model which simulates the effects of the elimination of import tariffs. Their findings indicate an increase of 6.5% in Brazil's total exports and 20.6% in its total imports.

In comparison with the findings obtained in the present study, Carvalho and Parente estimated that, in the case of exports, the impact on chemicals, machinery, electrical equipment and transport equipment would be less significant than the mean, and this was also true of imports in the chemical industry. The indicators presented in our paper suggest, instead, that if the intra-firm effects –which are more intense precisely in segments of these industries– had been taken into account, it is very probable that the findings would have been different from those obtained on the sole basis of an analysis of the structure of trade barriers.

In a more general sense, this set of findings, though still preliminary, seems to confirm the result of research carried out in other countries, including the United States. Lipsey (1995), for example, notes the existence of trade networks between multinational corporations whose purpose is to improve their share of the export market, given that United States transnationals tend to export a greater share of their products to countries where their parent companies have a greater concentration of capital, and a lesser proportion to those in which they have no affiliates.

We stress that the findings presented here are merely illustrative of the importance of incorporating economic agents into studies of the impact of regional integration processes, and they are intended to encourage further studies of this matter.

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NAFTA and the loss *of U.S. market share* by Brazil, 1992-2001

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This article quantifies Brazil's loss of U.S. market share to Mexico between 1992 and 2001 as a result of the entry into force of the North American Free Trade Agreement (NAFTA).

An expanded version of the constant market share model was used to calculate gains and losses in the competitiveness of Brazilian exports to the United States, by product and by competitor, for subperiods between 1992 and 2001. The model showed Mexico to be the country to which Brazil lost the most market share in the United States between 1992 and 1996. Exchange rate variations and preferential tariff treatment for Mexico on the U.S. market were equally important in Brazil's loss of export competitiveness to Mexico.

I

Introduction

Brazil's share in world exports of manufactured goods declined sharply between the mid-1980s and the end of the 1990s, dropping from 1.29% for the five-year period 1981-1985 to 1.08% in 1986-1990, then to 0.96% in 1991-1995, and ultimately to 0.91% in 1996-2000. A year after the major currency devaluation of 1999, Brazil's market share began to show signs of recovery, with manufactured exports from that country expected to account for 0.97% of world exports in 2001.¹

During the 1990s, Brazil's share in United States imports of manufactured goods also fell sharply, decreasing steadily from 1.41% in 1992 to 1.13% in 1996, where it hovered for the following two years. In 1999, the year of the major currency devaluation, the country's share in U.S. imports was down to 1.11%, from where it recovered slightly to 1.12% in 2000 and then to 1.27% in 2001, although this was still below the level posted in 1994.

In geographic terms, the United States was the market in which Brazil lost the most market share during the first half of the 1990s.² A closer look at the losses and gains of Brazilian manufactured exports between 1992 and 1996 reveals that the biggest losses, in value terms, were on the U.S. import market, with Mexico emerging as the main party responsible for those losses.³ Brazil also lost a considerable share of the Mexican import market, mainly to U.S. exporters. Brazilian losses to Mexico and the United States on the European Union and Asian markets, however, were negligible and in some cases even negative.⁴

□ The authors wish to express their gratitude for the comments and suggestions made by one of the referees of *CEPAL Review*, while emphasizing that any errors or omissions are their exclusive responsibility.

¹ See World Trade Organization (WTO), *Merchandise exporting countries*, www.wto.org.

² See Chami Batista and Azevedo (1998).

³ See Chami Batista (2001).

⁴ In fact, Brazil increased its market share at the expense of Mexico and the United States in Japan, and at the expense of the United States in the markets of South America (excluding Mercosur), while it was virtually level with Mexico in the European Union market and with the United States in the markets of the Asian tigers (China, Hong Kong, Indonesia, Malaysia, South Korea and Singapore). See Chami Batista (2001).

The foregoing analysis suggests that NAFTA may have played a significant role in the loss of U.S. market share by Brazilian exports between 1992 and 1996, especially vis-à-vis Mexico. Inasmuch as the period coincides with a strong appreciation of the Brazilian currency in real terms against both the dollar and the Mexican peso, however, it is not clear how much of Brazil's loss of U.S. market share was a consequence of NAFTA and how much was due to deterioration in Brazil's price- and cost-based competitiveness indicators.

This study seeks to assess the role of NAFTA and the exchange rate in the performance of Brazilian exports to the United States as compared with Mexico's export performance to that same country. The constant market share model will be applied to calculate U.S. market share gains or losses by product and country for subperiods between 1992 and 2001. To quantify Brazil's losses and gains vis-à-vis Mexico, a methodology is presented and subsequently applied that expands the above model by distributing the gains (losses) of a given country among its competitors (competitiveness effect).⁵ This approach also serves to identify the key commodities involved in Brazil's losses to Mexico between 1992 and 1996. A detailed analysis of trends in the margins of preference for Mexico and the export prices of selected products between 1992 and 2001 helps to establish the role of NAFTA and the exchange rate (as well as other determinants of export prices) in Brazil's market share losses to Mexico between 1992 and 1996.

The remainder of the paper is organized as follows. Section II briefly discusses the role of relative price indicators as a means of measuring the export competitiveness of a particular country or market. Section III presents the methodology used herein to obtain a country-based distribution of the variations in market share of a given country's exports in a specific market or country. Section IV analyses the performance of Brazilian exports in the U.S. market. Section V examines in greater depth the Brazilian losses to Mexico in the U.S. market, in terms of the exchange rate performance of these two countries vis-à-vis the U.S.

⁵ See Chami Batista (1999).

dollar, export prices, and tariff barriers to the main products exported by Brazil and Mexico to the U.S.

market between 1992 and 2001. Section VI summarizes the main findings.

II

Competitiveness indicators: aggregation versus precision

In simplified terms, the demand for a country's exports can be expressed as a function of world income and relative price, with the latter indicating export competitiveness and the former indicating the level of world demand for imports.

$$[1] \quad E^j = P_e^j * x^j = P_e^j * x^j(Y, P_r^j)$$

where:

E^j is the value of exports from country j ;

P^j represents the mean export price of country j ;

x^j is the volume of exports from country j ;

Y is world income;

P_r^j is the real effective exchange rate of country j .

The real effective exchange rate may be calculated by adjusting the nominal exchange rate for relative costs or prices expressed in local currency.⁶ The calculations can therefore be based on indicators of relative unit labour costs and of relative export prices. Accordingly, this rate can be interpreted as an indicator of the competitiveness of country j .

Of course, a number of other factors, such as product quality and the value of after-sales service, should technically be included in the calculation of this indicator. For practical reasons, however, competitiveness indicators are generally confined to easy-to-measure factors, i.e., those linked to price or cost differentials. Furthermore, different prices⁷ or costs⁸ and weightings thereof⁹ can be used, depending on the purpose of the indicator to be constructed.

For instance, an indicator of the competitiveness of domestic against imported goods could be the relationship between a domestic price index and a basket of price indices of the imported goods' countries of origin, weighted for the share of each such country in the importing country's total imports. Similarly, the competitiveness of an exported commodity vis-à-vis an "international" commodity can be measured by the relation between the price indices of manufactured goods¹⁰ –as a proxy for export prices– and a basket of price indices of manufactured goods of the recipient countries, weighted for the share of each such country in the total exports of the exporting country. The competitiveness of a domestic good can generally be gauged by the relationship between the manufactured goods price index and a basket of manufactured goods price indices of the countries that export to and import from the country in question, weighted for the share of each such country in the trade of the focus country.

However, even once the purpose of the indicator has been defined (e.g., to measure the competitiveness of manufactured exports from a given country), various problems remain. For instance, variations in a country's export prices or unit labour costs may reflect changes in commodity composition rather than their competitiveness. Also, some of the indices used to build these indicators (e.g., unit labour cost) are estimates

⁶ On the selection and limitations of indicators, see Durand and Giorno (1987).

⁷ E.g., consumer price indices, export price indices and manufactured goods price indices.

⁸ E.g., wages, relative cost of labour, or wholesale prices.

⁹ E.g., export or trade weightings.

¹⁰ "...it would in principle be necessary to carry out studies covering all categories of tradeable goods and services, with as detailed a breakdown as possible. In practice, such studies are normally confined to aggregate measures of manufacturing output, because there are difficulties in extending the analysis to other groups of products. In particular, many services are traded, but statistics on service prices are often unreliable. As for transactions in food products, energy and raw materials, they often take place on world markets or on highly regulated markets where price differentials are often more indicative of the importance of regulatory frameworks than of price competitiveness." (Durand, Simon and Webb, 1992, p. 6).

for the national economy as a whole, and as such they do not take account of productivity differences that may exist between the export sectors and sectors that serve the domestic market.¹¹

A further significant limitation of such price indices is that they do not reflect the impact of countries with which the focus country has little or no bilateral trade, but which compete with it in other markets. Double-weighted competitiveness indicators attempt to remedy this shortcoming by allowing for the weight of each competing country in each market as well as for the weight of each market.¹²

Consequently, given the level of aggregation of the goods being analysed and the inability to distinguish between direct competition with the domestic output

of importer countries and competition with third countries in those importer markets, it is important to acknowledge that any competitiveness indicator selected will necessarily have limitations.

Likewise, analysing the demand for exports from country j by using world income as a proxy for import demand poses two serious problems: it fails to take into account the economic buoyancy of each country that imports from country j and it assumes that the income elasticity of world imports is constant.

The constant market share (CMS)¹³ model accounts explicitly for the impact of world demand, product composition, differences in demand in each country, and competitiveness vis-à-vis exports from a particular country. The model can be expressed as follows:

$$[2] \quad \underbrace{\sum_i (X_i^t - X_i^{t-1})}_{\text{export variation}} - r \underbrace{\sum_i X_i^{t-1}}_{\substack{\text{world demand} \\ \text{for} \\ \text{exports} \\ \text{effect}}} \equiv \underbrace{\sum_i (r_i - r) X_i^{t-1}}_{\text{commodity effect}} + \underbrace{\sum_i \sum_j (r_{ij} - r_i) X_{ij}^{t-1}}_{\text{market effect}} + \underbrace{\sum_i \sum_j (X_{ij}^t - X_{ij}^{t-1} - r_{ij} X_{ij}^{t-1})}_{\text{competitiveness effect}}$$

where:

r is the growth rate of world exports between the periods t and $t-1$;

r_i is the growth rate of world exports of product i between the periods t and $t-1$;

r_{ij} is the growth rate of world exports of product i to market j between the periods t and $t-1$;

X_i is the value of the focus country's exports of product i ;

X_{ij} is the value of the focus country's exports of product i to market j .

The model breaks down into three basic effects the difference between the increase in value of a country's exports over a given period and the increase that would be required in order for that country to maintain its share of world exports (i.e., the world demand for exports effect). A positive difference means that the country has increased its share in world exports, while a negative difference indicates a reduction in that share. The first effect (measured by the first term on the right-hand side of the equation above) –identified as the *commodity effect*, i.e., the composition of exported merchandise– calculates to what extent market share gains (losses) can be attributed to the concentration of exports in goods for which world

demand is growing more rapidly (or slowly) in relative terms. The second effect (measured by the second term on the right-hand side of the equation) –identified as the *market effect*– calculates to what extent market share gains (or losses) can be ascribed to the concentration of exports in markets (countries or destinations) where demand is growing relatively more rapidly (or more slowly). The third effect (measured by the third term on the right-hand side of the equation) –identified as the *competitiveness effect*– is calculated as the residual and estimates to what extent factors other than the commodity and market effects can explain market share gains or losses.¹⁴

The world demand effect can be isolated by incorporating it into the dependent variable of equation [1], redefining it as representing the share of exports from country j to the rest of the world.¹⁵

¹³ For the application of this model to Brazilian exports, see Bonelli (1992), Chami Batista and Azevedo (1998), and Martins and Moreira (1998).

¹⁴ According to Bonelli (1992), the competitiveness effect reflects not only relative prices but also such other aspects of demand as: (i) differential rates of improvement in product quality; (ii) differences in the efficiency of export marketing and financing; and (iii) differences in the ability to meet demand rapidly. On the supply side, the single most important factor is probably the productivity differential between domestic and foreign producers, for each sector.

¹⁵ Note that world income in equation [1] should be interpreted as a proxy for world imports. Assuming that the income elasticity of

¹¹ See Kaldor, 1978, p. 106.

¹² See Chami Batista and Didier (2000).

$$[3] \quad mks_j = \frac{E_j}{M} = \frac{P_j * x_j}{P_m * m} = \left(\frac{P_j}{P_m} \right) * \frac{x_j}{m} (P_r) = mks_j(P_r)$$

where:

mks_j is the market share of exports from country j in world imports;

E_j is the value of exports from country j ;

M is the value of world imports;

P_j is the mean price of exports from country j ;

P_m is the mean price of world imports;

x_j is the volume of exports from country j ;

m is the volume of world imports;

P_r is the real effective exchange rate of country j .

As can be seen, the mean prices of exports from country j (P_j) and of world imports (P_m) have a direct and positive effect¹⁶ on market share (mks_j) as well as an indirect effect,¹⁷ deriving from the impact of the real effective exchange rate on the relationship between the volume exported by country j and the volume of world imports.

It should be noted, however, that variations in the ratio P_j/P_m differ from the variations in the competitiveness indicator, owing to the weighting system used.

In order to reflect differences in the buoyancy of each country that imports from country j (i.e., the market effect), it is necessary to analyse the demand for country j 's exports in disaggregated fashion, that is to say, in each recipient country separately:¹⁸

$$[4] \quad mks_j^c = \frac{E_j^c}{M_c} = \frac{P_j^c * x_j^c}{P_c * m_c} = \left(\frac{P_j^c}{P_c} \right) * \frac{x_j^c}{m_c} (P_{r,c}^j) = mks_j^c(P_{r,c}^j)$$

where:

mks_j^c is the market share of country j 's exports in the imports of country c ;

E_j^c is the value of exports from country j to country c ;

M_c is the value of country c 's imports;

P_j^c is the mean price of country j 's exports to country c ;

P_c is the mean price of country c 's imports;

imports is constant, we can write that $\frac{\Delta M}{M} = \eta \frac{\Delta Y}{Y}$, where: $\frac{\Delta M}{M}$ is the growth rate of world imports; η is the income elasticity of world imports; and $\frac{\Delta Y}{Y}$ is the growth rate of world income.

¹⁶ An increase in P_j relative to P_m increases the market share.

¹⁷ A relative increase in P_j increases P_r and reduces market share, inasmuch as it decreases the volume exported by country j (x_j) relative to the volume of world imports (m).

¹⁸ Exports from country j to country c continue to be viewed exclusively in terms of demand, i.e., supply is considered to be perfectly elastic.

x_j^c is the volume of country j 's exports to country c ;
 m_c is the volume of country c 's imports;
 $P_{r,c}^j$ is the price of country j 's exports compared with the export prices of the other countries competing in the market of country c .

Thus, it can be seen that the market share of country j in the imports of country c is a function of country j 's prices relative to the prices of its competitors in country c . In other words, the relative price indicator (competitiveness) now considers only the prices of the other exporter countries, since domestic producers do not participate in the import market of their own country. The Organization for Economic Co-operation and Development (OECD)¹⁹ refers to this indicator as the "strict competitiveness indicator". By considering each market in isolation, the analysis reflects the weight of each country in competition on third markets.

However, this competitiveness indicator ($P_{r,c}^j$) still overlooks the differences in composition and buoyancy of the baskets of products imported by each market receiving exports from country j . The following formula takes these differences into account:

$$[5] \quad mks_j^{c,i} = \frac{E_j^{c,i}}{M_c^i} = \frac{P_j^{c,i} * x_j^{c,i}}{P_c^i * m_c^i} = \left(\frac{P_j^{c,i}}{P_c^i} \right) * \frac{x_j^{c,i}}{m_c^i} (P_{r,c,i}^j) = mks_j^{c,i} (P_{r,c,i}^j)$$

where:

$mks_j^{c,i}$ is the market share of country j 's exports of commodity i in the imports of country c ;

$E_j^{c,i}$ is the value of country j 's exports of commodity i to country c ;

M_c^i is the value of country c 's imports of commodity i ;

$P_j^{c,i}$ is the price of country j 's exports of commodity i to country c ;

P_c^i is the mean price of country c 's imports of commodity i ;

$x_j^{c,i}$ is the volume of country j 's exports of commodity i to country c ;

m_c^i is the volume of country c 's imports of commodity i ;

$P_{r,c,i}^j$ is the relative price of country j 's exports of commodity i to country c compared with the export prices of commodity i from the other countries competing in country c .

¹⁹ See Durand, Simon and Webb, 1992, p. 10.

The market share of exports of a given commodity²⁰ from country of origin j to a given country of destination (or the variation in that share) is basically a function of the export price of the commodity from country j to the recipient country²¹ relative to the export prices of the same commodity for the other countries competing in the recipient country.

It should be noted that the difference between $\frac{P_j^{c,i}}{P_c^i}$ and P_{ni}^i is that P_c^i includes the export price from

country j to country c , ($P_j^{c,i}$) while the denominator of ($P_{r,c,i}^i$) does not; the latter consists exclusively of the export prices of country j 's competitors in country c .²²

Accordingly, most of the problems and imprecision of competitiveness indicators are essentially a matter of aggregation. Since a country's competitiveness only exists in terms of specific products and markets,²³ attempts to measure it across all products and in all destination markets by means of a single indicator will necessarily entail a high degree of imprecision.

III

Methodology for allocating market-share variations by competing country

This section elaborates upon a methodology²⁴ for identifying and quantifying what portion of losses (gains) in the value of exports from country p to a particular country or region can be attributed to the gains (losses) of a country g .

The total value of imports of a country c can be defined as:

$$[6] \quad M^t = \sum_{j=1}^k M_j^t = \sum_{i=1}^n M_i^t = \sum_{j=1}^k \sum_{i=1}^n M_{j,i}^t$$

where the import profile of country c is made up of n products originating in k countries; and

M^t is the total value of country c 's imports in period t ;

M_j^t is the value of country c 's imports from country j in period t ;

M_i^t is the value of country c 's imports of commodity i in period t ; and

$M_{j,i}^t$ is the value of country c 's imports of commodity i from country j in period t .

Country j 's market share (mks) in country c 's imports of commodity i in period t may thus be defined as the ratio of the value of country c 's imports of commodity i from country j to country c 's total imports of commodity i , i.e.:

²⁰ Differences in quality are linked essentially to the level of disaggregation of the analysis or, ultimately, to the definition of the product. If, for instance, the product is homogeneous, the market shares of the most competitive countries would be limited only by supply.

$$[7] \quad mks_{j,i}^t = \left(\frac{M_{j,i}^t}{M_i^t} \right)$$

Likewise, country j 's market share in the total imports of country c may be expressed as:

$$[8] \quad mks_j^t = \frac{\sum_{i=1}^n M_{j,i}^t}{\sum_{i=1}^n M_i^t} = \frac{M_j^t}{M^t}$$

We can say, then, that country j loses market share in commodity i when $mks_{j,i}^{t-1} > mks_{j,i}^t$ and it gains market share when $mks_{j,i}^{t-1} < mks_{j,i}^t$, between the periods t and $t-1$.

For commodity i , it is also true that:

$$[9] \quad \sum_{j=1}^k (mks_{j,i}^t) = 1$$

$$\sum_{j=1}^k (mks_{j,i}^t - mks_{j,i}^{t-1}) = 0$$

²¹ This price is set in the country of destination and includes – aside from exchange rate considerations– freight, insurance, point-of-origin subsidies, different margins of preference granted to each country, and anti-dumping or countervailing duties.

²² For further details, see Didier (2000).

²³ For a microeconomic approach to export competitiveness, see Porter (1990).

²⁴ To the best of our knowledge, this methodology was first presented in Chami Batista (1999) and applied in Azevedo (1999) and Didier (2000). See also Baumann and Franco (2001).

That is to say, the sum of the market shares of k countries that export commodity i to market c in period t is equal to unity, since it represents 100% of the total value of imports of that commodity. Consequently, the sum of the variations in the market shares of k countries that export commodity i to market c between periods t and $t-1$ will be equal to zero. In other words, the sum of the gains is equal to the sum of the losses of each country's market share.

The value of country j 's lost market share for commodity i in a given market is defined thus:

$$[10] \quad P_{j,i} = (mks_{j,i}^{t-1} - mks_{j,i}^t) * M_i^t$$

so that $mks_{j,i}^{t-1} > mks_{j,i}^t$

In other words, country j 's lost market share in commodity i is equal in value to the difference between the value of the imports originating in country j in the last year t that would be necessary to maintain that country's market share in commodity i between periods t and $t-1$ and the effective value of those imports.

Similarly, the gain in country j 's market share of commodity i in a given market in the final year would be:

$$[11] \quad G_{j,i} = (mks_{j,i}^t - mks_{j,i}^{t-1}) * M_i^t$$

so that $mks_{j,i}^{t-1} < mks_{j,i}^t$

Note that $\sum_{j=1}^k (P_{j,i} + G_{j,i}) = 0$, which means that the sum of the losses of the countries that lost market share in imports of commodity i by country c is equal to the sum of the gains of the countries that gained market share in those imports over the same period.

If p is a country that loses market share in commodity i over the period from t to $t-1$ and g is a country that gains market share in commodity i over the same period, then the lost market share of country p in commodity i that can be attributed to the gain of market share by country g in the same commodity equals:

$$[12] \quad P_{p,g,i} = P_{p,i} * \left[\frac{G_{g,i}}{\sum_{g=1}^{K_i} G_{g,i}} \right]$$

where the first term on the right-hand side corresponds to the value of the market share lost by country p and the second term reflects the share of country g (numerator) in the total gains of all countries that gained market share over the period in country c 's imports of commodity i (denominator).²⁵

Considering all (h) commodities i for which $mks_{j,i}^{t-1} > mks_{j,i}^t$ (losing country) and $mks_{i,i}^{t-1} < mks_{i,i}^t$ (gaining countries), the value of the gross total losses of country p that could be attributed to country g is defined as:

$$[13] \quad P_{p,g} = \sum_{i=1}^h \left\{ P_{p,i} * \left[\frac{G_{g,i}}{\sum_{g=1}^{K_i} G_{g,i}} \right] \right\}^{26}$$

Conversely, $P_{g,p}$ would be the value of the gross total losses of country g that could be attributed to country p , and $(P_{p,g} - P_{g,p})$ would be the value of net losses of country p attributable to country g . The value of the net losses²⁷ would thus be an *ex post* indicator of a country's competitiveness vis-à-vis its competitors in a given market.

This indicator, it should be noted, makes it possible not only to rank competitors of a given country in a given market, but also to quantify the competitive advantages and disadvantages of that country with regard to its competitors.

It can further be seen that the value of the net losses (gains) depends on the level of disaggregation of the imports (M_i) of the country c under consideration.²⁸ Ideally, the more detailed the level of disaggregation of import data, the better the estimates will be of net losses or gains per country.

²⁵ Where K_i is the number of countries that gained market share over the period in country c 's imports of commodity i .

²⁶ Note that the number of countries K_i varies according to commodity i .

²⁷ Note that this value can be positive (actual losses) or negative. In the latter case, the absolute value can be considered as being the value of the net gain.

²⁸ In other words, different levels of disaggregation will produce different values for net losses or gains.

IV

Brazil's export losses and gains, by competitor country

The performance of Brazilian exports to the United States during the period 1992-2001 was analysed, using the traditional methodology of the constant market share model.²⁹ Inasmuch as the increased margins of preference granted by the United States to Mexico under NAFTA were implemented mainly between 1992 and 1996, the performance of Brazilian exports was examined for that same subperiod. An analysis of Brazil's export performance in 2000 and 2001 is also included, to assess the impact of the sharp devaluation of the Brazilian currency as from 1999.

Between 1992 and 2001, Brazil had market gains in the United States totalling US\$ 1.15 billion, equivalent to 16% of Brazil's exports to the United States in 1992,³⁰ as may be seen in table 1. This was the so-called *competitiveness effect* of Brazilian exports for the period.³¹ However, it should be noted that Brazilian aircraft exports alone were responsible for an increase of US\$ 1.31 billion in Brazil's market share in the United States between 1992 and 2001. In other words, the overall competitiveness effect of all the other items was slightly negative for the period.³²

In terms of subperiods, the market gains by product occurred mainly between 1996 and 2001, for a total of

TABLE 1

Brazil: Net gains (losses) by major competitor countries (Millions of dollars)

Country	1992-2001	1996-2001	2000-2001
Mexico	-502.2	0.3	145.5
China	-877.9	-606.1	-95.7
Japan	941.9	532.4	191.6
United Kingdom	747.2	923.1	72.1
Others	839.8	2 897.3	1 173.5
<i>Total</i>	<i>1 148.4</i>	<i>3 747.0</i>	<i>1 487.0</i>

Source: Based on data from the U.S. International Trade Commission (ITC).

US\$ 3.75 billion. Between 1992 and 1996, however, Brazil sustained losses totalling US\$ 2.6 billion due to the competitiveness effect.³³

When we examine Brazil's performance between 2000 and 2001, it can be seen that the competitiveness effect during the period of just one year was equivalent to US\$ 1.49 billion and represented nearly 40% of the effect observed between 1996 and 2001; indeed, the figure rises to 61% if Brazilian aircraft exports are excluded. Consequently, from 1992 to 2000 the competitiveness effect was still negative—in the amount of US\$ 340 million³⁴—and would have meant a negative

²⁹ As was seen in section I, the model only compares data from the base and final years. The analysis was originally conducted with eight-digit data covering the period from 1992 to 1996. See Azevedo (1999) and Chami Batista and Azevedo (2000).

³⁰ Calculations are based on total U.S. import values (FOB) from Brazil, by product, at six digits of the United States International Trade Commission classification, which covers a total of 5,117 products. The nine products coming under chapters 98 and 99 were excluded from the database so that aircraft returned by Brazil to the United States would not distort the data on Brazilian exports. The 1992 product classification was harmonized with those of 1996, 2000, and 2001, using a conversion table of the World Trade Organization.

³¹ However, Brazil's exports to the United States were sluggish and yielded a net negative effect of US\$ 2.7 billion. As a result, Brazil lost U.S. market share equivalent to US\$ 1.55 billion. Brazil's share of U.S. imports (not including chapters 98 and 99) actually shrank by 1.41% in 1992 and by 1.22% in 2001.

³² The competitiveness effect of all products other than Brazilian aircraft was negative in the amount of US\$ 162 million.

³³ Values between 1992 and 1996 were calculated as the difference between the 1992-2001 values and those for 1996-2001, in order to maintain 2001 as the base year and thus ensure comparability of the data. The competitiveness effect between 1992 and 1996 is different if calculated directly, since the gained or lost market share of Brazil in those two years is multiplied by the value of U.S. imports in 1996, unlike the value based on 2001. The commodity effect was negative in both periods, totalling US\$ 530 million between 1992 and 1996 and US\$ 2.17 billion between 1996 and 2001. Accordingly, the net effect was negative in the amount of US\$ 3.13 billion between 1992 and 1996, but was positive in the amount of US\$ 1.57 billion between 1996 and 2001.

³⁴ Here again, calculated as the difference between the 1992-2001 and 2000-2001 effects. The net effect was US\$ 1.64 billion between 2000 and 2001, with a slightly positive commodity effect, although this had been negative in the amount of US\$ 3.2 billion between 1992 and 2000.

balance of US\$ 1.5 billion had Brazilian aircraft exports been excluded.³⁵

If we apply the methodology with a view to identifying the countries in respect of which Brazil gained or lost market share and then quantify those losses and gains by competitor country (competitiveness effect), it can be observed that Brazil lost market share to Mexico in the amount of US\$ 503 million between 1992 and 2001. As noted earlier, however, in terms of competitiveness Brazil posted net gains during this period. By country, the gains totalled US\$ 3.78 billion for the period,³⁶ with 64% of that amount coming from four developed countries: Japan, the United Kingdom, Canada and France. Net losses came to US\$ 2.63 billion, of which China accounted for one-third and Mexico 20%. Brazil also lost market

shares vis-à-vis Ireland, India, the countries of the former Soviet Union, Peru, Vietnam, and the Ivory Coast, virtually none of which are in the developed country category.³⁷

Subdividing by periods, Brazil picked up market share from Mexico between 2000 and 2001 in the amount of roughly US\$ 145 million,³⁸ compared with losses of US\$ 648 million between 1992 and 2000: US\$ 503 million between 1992 and 1996, and US\$ 145 million between 1996 and 2000. In other words, the losses incurred against Mexico were concentrated in the period between 1992 and 1996. Accordingly, even though Brazil had a significant and positive competitiveness effect between 1996 and 2000, it continued to lose market share to Mexico throughout that period.

V

Analysis of Mexico's impact on Brazilian exports to the United States

The distribution of net losses of Brazilian competitiveness by competitor country between 1992 and 1996 reveals that Mexico was the principal gainer of market share, accounting for 26% of those losses,³⁹ followed by China with 12%.⁴⁰ Figure 1, however, shows that Brazil's currency appreciated significantly against the Mexican peso during the period,⁴¹ so it is not clear how much of Brazil's loss of U.S. market share to Mexico is due to NAFTA and how much is due to deterioration of Brazil's competitiveness indicators in terms of costs and prices.

In order to assess the role of NAFTA and the exchange rate as determining factors in the loss of Brazilian competitiveness vis-à-vis Mexico between 1992 and 1996, a sample was compiled of the 20 Brazilian exports that lost the most shares to Mexico

during the period. Inasmuch as these items accounted for 76% of Brazil's gross losses to Mexico, the sample is felt to be sufficiently representative.⁴²

Three sets of data were analysed for each product: (i) Mexico's weight in the lost Brazilian share for the

³⁵ Also calculated as a difference. Brazil's gains owing to the competitiveness effect between 1996 and 1998 only amounted to US\$ 545 million, but rose to US\$ 1.71 billion between 1998 and 2000.

³⁶ Includes the net gains of Brazil against countries that reported net losses to it. It is worth noting that Brazil generally gains in some products (gross gains) and loses in others (gross losses) with each competitor country.

³⁷ Losses to the countries in question accounted for 75% of Brazil's total net losses for the period.

³⁸ As may be seen in table 1, Brazil lost a marginal share to China between 2000 and 2001. It actually lost little and to very few countries during this period, with China accounting for 44.5% of the losses, Honduras 6.4%, and Chile 5.6%.

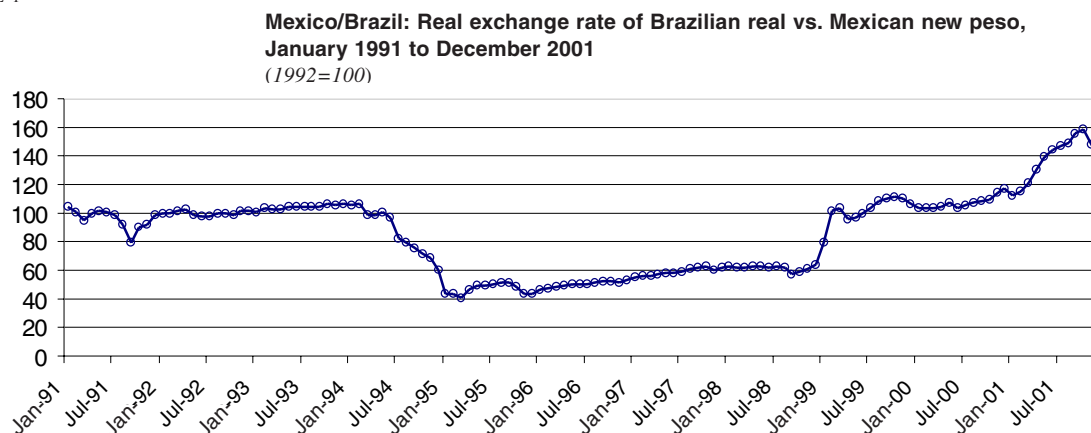
³⁹ Competitiveness effect calculated directly.

⁴⁰ Of the 226 countries analysed, Brazil lost the equivalent of US\$ 2.3 billion to 163 countries and gained US\$ 296 million from 63 countries. The percentages cited represent Mexico's and China's share in total Brazilian losses, considering only those countries to which Brazil lost market share.

⁴¹ In real terms, Brazil's currency appreciated 50% against the Mexican peso between 1992 and 1996, or 51% if we allow for a period with a one-year lag (1991-1995), which is the typical interval for exchange rate variations to generate positive trade effects.

⁴² Since the gains and losses were calculated by product, Brazil's gross losses to Mexico are the sum of the losses in products in which Brazil lost market share to Mexico, and the gross gains are the sum of the gains in products in which Brazil gained market share from Mexico during the period.

FIGURE 1



Source: Chami Batista (2001).

product; (ii) trends in U.S. import prices (CIF) for the product from Brazil and from Mexico;⁴³ and (iii) the variation in margins of preference for Mexico as compared with Brazil.⁴⁴ The analysis focused on the period 1992-2001, giving special attention to the subperiods 1992-1996 and 1996-2001.

For the products in the sample whose relative price in Brazil dropped between 1992 and 1996—despite the currency appreciation—and for which the margin of preference for Mexico increased over the same period, NAFTA must have been the determining factor in the Brazilian losses, since the price competitiveness of those products did not warrant such losses.⁴⁵

In cases where Brazil's relative price rose concurrently with the increase in the margin of preference for Mexico, the proportion of each increase was calculated by attributing to NAFTA the weight of

the variation in the margin of preference over the total increase.⁴⁶

For the products in which Brazil did not experience losses to Mexico between 1992 and 2001 as a result of the competitiveness effect with that country, that is to say, those in which Brazil more than recovered in 1996-2001 the losses incurred vis-à-vis Mexico in 1992-1996, it was considered that NAFTA had little or no impact on the losses.

Based on relative prices and the margins of preference for Brazil and Mexico, the sample can be divided into four groups: i) products that entered the United States duty-free both from Brazil and from Mexico; ii) products for which it was not possible to obtain reliable relative prices; iii) products whose relative prices rose during the period 1992-1996; and iv) products whose relative prices fell during the period 1992-1996.

The products in group iv) account for 46% of the losses in the sample. In other words, NAFTA was responsible in principle for nearly half of Brazil's lost market share in 1992-1996. As a percentage of Brazilian exports, this figure is five times greater than the static estimates of trade diversion from Brazil to Mexico in the U.S. market, as calculated by Abreu (1994) and Machado (1993).⁴⁷ However, a more in-depth analysis

⁴³ $(\text{Brazil price}_{t+1}/\text{Mexico price}_{t+1})/(\text{Brazil price}_t/\text{Mexico price}_t)$. See Buitelaar (1997) for an analysis of relative price indices of selected Brazilian and Mexican exports to the United States.

⁴⁴ $(1+TBr_{t+1})/(1+TBr_t)/(1+TMx_{t+1})/(1+TMx_t)$, where TBr is the import tariff for Brazil and TMx is the tariff for Mexico.

⁴⁵ Other causes are also possible. The drop in Brazil's relative price could have been triggered by poorer product mix, in which case Mexico would have increased its market share on the strength of a better mix. Problems or bottlenecks in Brazilian supply flows could also have contributed to lost market share, in addition to the fall in relative price. Ascribing the losses exclusively to NAFTA entails acknowledging the limitations of this methodology in evaluating such other possible causes. Aside from its tariff advantages, NAFTA is assumed to have generated externalities that favoured Mexican exports in terms of capacity to serve U.S. clients, e.g., delivery times, after-sales service, marketing, and favourable financing conditions.

⁴⁶ The weight of NAFTA is equal to $(VMPM_x)/(VMPM_x+VPRBr)$, where $VMPM_x$ is the variation in the margin of preference for Mexico and $VPRBr$ is the relative price variation for Brazil.

⁴⁷ These estimates were prepared *ex ante* and represent 0.7% of all Brazilian exports to the United States in 1992. Brazil's gross losses to Mexico during 1992-1996 were equivalent to 7.7% of Brazil's exports to the United States in 1996. In other words, 46% of those losses would be equivalent to 3.5% of Brazil's exports to the United States in 1996.

TABLE 2

Products in the sample that enter the United States duty-free

Product	Amount lost by Brazil to Mexico (US\$)		Variations in Brazil's relative price (%)	
	1992-1996	1992-2001	1992-1996	1992-2001
Shrimps	-10 095 181	0	10.04	-17.10
Coffee, not roasted, not decaffeinated	-35 850 894	0	19.46	3.06
Chemical wood pulp, coniferous	-5 277 473	0	19.10	-22.19
Gold, non-monetary	-67 143 482	-5 240 104	8.44	-8.25

Source: Based on data from the U.S. International Trade Commission (ITC).

of these products would be necessary in order to fine-tune this observation.

Table 2 presents the four products in the sample that were not subject to U.S. import duties; these items accounted for 23% of the sample losses in 1992-1996. The tariff-free status of the Brazilian goods would be a reason in itself not to ascribe the losses to NAFTA, and that hypothesis is further supported by the fact that for three of the four products, Brazil did not lose market share to Mexico in 1992-2001. In shrimp exports, Brazil gained market share in the United States between those years. In exports of coffee and chemical wood pulp, Brazil and Mexico both lost market share during the period.⁴⁸ Non-monetary gold was the only one of these exports in which Brazil lost market share to Mexico between 1992 and 2001, but this represented only 10% of Brazil's overall losses for this commodity during the period. Moreover, Brazil's relative prices showed an upward trend from 1992 to 1996, which could account for the loss of market share, dropping again between 1996 and 2001, which would explain the gains.⁴⁹ Accordingly, all the available data indicate that the loss of competitiveness in these four products was the result of variations in competitiveness indicators based on relative prices and costs, and was not associated with NAFTA.

The data on Brazilian and Mexican prices proved to be insufficient for calculating the relative prices of five products in the sample, all from the automobile industry. These items accounted for 25% of Brazil's losses in 1992-1996. The low volume or non-existence

of Brazilian or Mexican exports to the United States in some years, coupled with big variations in product composition,⁵⁰ impeded calculations and vitiated the reliability of relative prices as competitiveness indicators.

However, Brazilian exports of steering wheels, steering columns and steering boxes for motor vehicles (Harmonized System tariff category 870894) presented indications that NAFTA did play an important role in Brazil's losses in 1992-1996. Although the country recovered some of those losses in 1996-2001, a full 92% of Brazilian losses in 1992-2001 can be attributed to Mexico,⁵¹ despite the strong devaluation of the Brazilian currency in real terms vis-à-vis the Mexican peso.⁵² To a lesser degree, the same phenomenon was observed with exports of buses⁵³ and diesel and semi-diesel engines,⁵⁴ since 45% and one-third respectively of Brazil's losses in these products in 1992-2001 also were attributable to Mexico.⁵⁵ In gasoline engine exports,⁵⁶ Brazil's losses between 1992 and 2001 cannot be attributed to Mexico, since that country also lost share in this product in the same market. In this case, Canada was responsible for 63% of Brazilian

⁴⁸ Brazil lost share in coffee mainly to Vietnam, Guatemala, Costa Rica and Nicaragua.

⁴⁹ Brazil gained market share in three of the four products between 1996 and 2001, losing share only in chemical woodpulp, where Finland was responsible for 95% of the lost share.

⁵⁰ Even at the six-digit level a reasonable number of different products are included.

⁵¹ Between 1992 and 1996, Mexico accounted for 80% of Brazil's losses in this category.

⁵² The devaluation reached a level of 129% between 1995 and 2000 and 175% between 1996 and 2001.

⁵³ Motor vehicles for the transport of ten or more persons, including driver, with a compression-ignition internal combustion piston engine (diesel or semi-diesel) (HS 870210).

⁵⁴ HS 840820 (compression-ignition internal combustion piston engines, diesel or semi-diesel, for the propulsion of vehicles).

⁵⁵ Between 1992 and 1996, Mexico accounted for 98% and 25%, respectively, of Brazilian losses in these products.

⁵⁶ HS 840734 (spark-ignition reciprocating piston engines for propulsion of vehicles, over 1,000 cc cylinder capacity).

losses under this heading during the period indicated.⁵⁷ In automobile exports (HS 870323), on the other hand, Brazil increased its share in the U.S. import market, significantly offsetting in 1996-2001 the losses posted in 1992-1996. Here, the indicators suggest that NAFTA's role in losses between 1992 and 1996 was at best secondary. The exchange rate and price- and cost-based indicators were probably the determining causes of these gains and losses.⁵⁸

Only four products in the sample showed an increase in relative prices and margins of preference for Mexico during the period; they accounted for 6% of Brazil's losses to Mexico in the total sample losses. Looking at the variations in relative prices and margins of preference in 1992-1996, it can be seen that half of these losses (3% of the sample) were due to changes in the margins of preference. In parallel with the exchange rate trends, all these products posted a drop in relative prices in 1996-2001 and, except for footwear exports,⁵⁹ Brazil gained market share over those years. In the export of semi-finished products of alloy steel (other than stainless),⁶⁰ Brazil gained market share between 1992 and 2001: the gains in 1996-2001 were more than sufficient to offset the losses in 1992-1996. In this case, it could be posited that NAFTA did not play a significant role in Brazil's loss of market share to Mexico between 1992 and 1996.⁶¹ The same conclusion holds for footwear exports, since Mexico had a weight of next to zero in Brazilian losses between 1992 and 2001 in this heading.⁶² Nevertheless, there are two headings⁶³ for

which the increase in margins of preference for Mexico explains a large part of the increase in Brazil's relative prices⁶⁴ and for which Mexico's impact on Brazilian losses remained relatively constant in 1992-1996 and 1992-2001.⁶⁵ Accordingly, the estimate that half of the losses in these four products (3% of the sample) is due to NAFTA is consistent with Mexico's weight in trade in these garments.

Finally, there is the group of seven products whose prices dropped in 1992-1996 but whose margin of preference for Mexico vis-à-vis Brazil rose during the period. For two of these products,⁶⁶ the argument that NAFTA played a pivotal role in Brazilian losses in 1992-1996 is underpinned by the continuation of Brazilian losses to Mexico in 1996-2001, despite major decreases in the relative prices of Brazilian exports during the period (see table 3). Mexico's weight in the loss of Brazilian market share in these two products between 1992 and 2001 was respectively 94% and 79%. The same argument could be made, although less strongly, for the loss of Brazilian market share in cotton T-shirt exports,⁶⁷ despite the significant reductions in Brazil's relative prices in 1992-1996 and 1996-2001. The weight of Mexico in these losses was around 50% both in 1992-2001 and in 1992-1996, despite the slight recovery in Brazil's share in the U.S. market between 1996 and 2001.

Brazilian exports of orange juice (HS 200911) are a good example in this group. Brazil's relative prices fell in 1992-1996 and in 1996-2001, while the margin of preference for Mexico increased throughout the entire period from 1992 to 2001. In the first subperiod, the increase in the margin of preference for Mexico outstripped the decrease in Brazil's relative prices, so that the Brazilian price, which was below the Mexican price after allowing for import duties, became higher than the Mexican price after the application of duties in 1996. As a consequence, Brazil lost a substantial

⁵⁷ Mexico accounted for 54% of Brazil's losses in this product between 1992 and 1996, while Japan and Austria accounted for 26% and 17% respectively. Canada did not gain market share in these products between 1992 and 1996.

⁵⁸ Between 1996 and 2001, 39% and 11% respectively of Brazil's total market gains in the export of gasoline engines and automobiles to the United States could be attributed to losses by Mexico in these products.

⁵⁹ Other footwear with outer soles of rubber, plastics, leather or composition leather and uppers of leather (HS 640399).

⁶⁰ Semi-finished products of other alloy steel (HS 722490).

⁶¹ This conclusion coincides with our calculations which indicate that the increase in the margin of preference for Mexico was responsible for only 1% of the increase in relative price, including import duties.

⁶² In this case, the increase in the margin of preference for Mexico triggered only 6% of the increase in relative price, including import duties. China was the main country responsible for Brazil's market share loss in the United States for this product during the period.

⁶³ Cotton trousers, bib and brace overalls, breeches and shorts (HS 620462) and cotton sweaters, pullovers, sweatshirts, vests and similar articles (HS 611020).

⁶⁴ The increase in the margin of preference for Mexico was responsible for 89% in the case of cotton trousers (HS 620462) and 26% for cotton sweaters (HS 611020).

⁶⁵ Mexico was responsible for 54% of Brazil's cotton trousers losses in 1992-1996 and 48% in 1992-2001; for sweater losses, the percentages were 21% in 1992-1996 and 17% in 1992-2001.

⁶⁶ Ceramic sinks, washbasins, washbasin pedestals, baths, bidets, water closet bowls, flush tanks, urinals and similar sanitary fixtures other than porcelain and china (HS 691090); and woven fabrics of cotton, containing 85% or more by weight of cotton, weighing more than 200 g/m², of yarns of different colours, denim (HS 520942).

⁶⁷ Cotton T-shirts and singlets (HS 610910).

TABLE 3

Variations in relative prices of Brazil and in margin of preference for Mexico

Product	Six-digit tariff code ^a	Gains (losses) by Brazil vis-à-vis Mexico (US\$)		Variation in Brazil's relative price (%)		Variation in margin of preference for Mexico (%)	
		1992/1996	1992/2001	1992/1996	1992/2001	1992/1996	1992/2001
Orange juice	SH 200911	-43 932 374	-22 434 594	-1.57	-21.43	10.38	22.85
Woven fabrics	SH 520942 ^b	-30 921 202	-30 451 452	-14.32	-13.20	8.34	7.99
T-shirts	SH 610910	-10 958 807	-14 314 872	-20.12	-54.45	7.97	5.91
Washbasins	SH 691090	-5 531 216	-9 054 295	-36.42	-43.94	1.97	1.13
Iron and steel	SH 720711	-17 321 615	-42 809	-22.29 ^c	-53.56	0.52	-0.30
Iron and steel	SH 720712	-117 301 374	-31 041 226	-15.85	-12.42	0.16	0.22
Bars	SH 721420 ^b	-5 423 918	-2 113 210	-15.54	-26.34	0.14	0.14

Source: Prepared by the authors on the basis of data from the U.S. International Trade Commission (ITC).

^a HS 200911: frozen orange juice; HS 520942: woven fabrics of cotton, containing 85% or more by weight of cotton, weighing more than 200 g/m², of yarns of different colours, denim; HS 610910: cotton T-shirts and singlets; HS 691090: ceramic sinks, washbasins, washbasin pedestals, baths, bidets, water closet bowls, flush tanks, urinals and similar sanitary fixtures other than porcelain and china; HS 720711: semi-finished products of iron or non-alloy steel, containing by weight less than 0.25% of carbon, of rectangular (including square) cross-section, the width measuring less than twice the thickness; HS 720712: semi-finished products of iron or non-alloy steel, containing by weight less than 0.25% of carbon, of rectangular (other than square) cross-section; and HS 721420: bars and rods of iron or non-alloy steel, containing indentations, ribs, grooves or other deformations produced during the rolling process or twisted after rolling.

^b The figures for U.S. imports under this heading in 1992 were obtained by applying the WTO conversion table, owing to changes in the six-digit tariff classification between 1992 and 1996.

^c Figures for the period 1994 to 1996, inasmuch as Mexico did not export to the United States in 1992 and 1993.

share of the market between 1992 and 1996, with Mexico accounting for 76% of that loss. From 1996 to 2001, even though the drop in Brazil's relative price was greater than the increase in the margin of preference for Mexico, Brazil continued to lose market share. However, losses in this period cannot be attributed to Mexico but rather to Costa Rica and Belize.⁶⁸

The other three headings are semi-finished steel products. The increases in the margins of preference for Mexico for these products were relatively small between 1992 and 1996 (less than 1%), but even so, Brazil lost substantial market share during the period, despite a significant drop in the relative prices of Brazilian products after allowing for import duties. For the product in which Brazil experienced the greatest losses between 1992 and 1996,⁶⁹ the losses were significant between 1992 and 1996, followed by a slight recovery in the country's share of the U.S. import

market between 1996 and 2001. Mexico's weight in Brazilian losses reached a level of 50% between 1992 and 1996, decreasing during the following period; however, it remained above 40% between 1992 and 2001. Accordingly, although the increase in margins of preference for Mexico was marginal, the drop in Brazil's relative prices⁷⁰ suggests that NAFTA played a dominant role in Brazil's losses to Mexico between 1992 and 1996. For the other two products,⁷¹ Mexico played a role in Brazil's loss of market share between 1992 and 1996, but its significance was slight or none in the losses between 1992 and 2001.⁷²

⁷⁰ This drop did not occur simply between the initial and final years, but rather followed a gradual trend throughout the period 1992-2001.

⁷¹ HS 720711: semi-finished products of iron or non-alloy steel, containing by weight less than 0.25% of carbon, of rectangular (including square) cross-section, the width measuring less than twice the breadth; and HS 721420: bars and rods of iron or non-alloy steel, containing indentations, ribs, grooves or other deformations produced during the rolling process or twisted after rolling.

⁷² Mexico accounted for 80% of Brazil's lost market share in iron bars (HS 721420) between 1992 and 1996, but this percentage

⁶⁸ In the full period from 1992 to 2001, Mexico was responsible for 33% of Brazil's total losses in orange juice exports.

⁶⁹ HS 720712: semi-finished products of iron or non-alloy steel, containing by weight less than 0.25% of carbon, of rectangular [other than square] cross-section.

Thus, although Brazilian losses to Mexico between 1992 and 1996 could be attributed to NAFTA as Brazilian prices became gradually more competitive with those of Mexico, the loss of competitiveness by Mexico in

1996-2001 prompted other countries to occupy the market share lost by Brazil. These two products, however, accounted for only 3% of Brazilian losses to Mexico in the total losses of the sample.

VI

Conclusions

Disaggregated analysis of a market's imports by product and country of origin makes it possible to identify and quantify losses (gains) of market share by an exporting country vis-à-vis each of its competitors in that market, and to link those losses (gains) to competitiveness indicators based on the prices of the exporting countries.

As a result of the loss of market share by Brazilian exports in the U.S. import market between 1992 and 1996, Brazil lost export revenue in an amount potentially in excess of US\$ 2.2 billion, compared with the figure actually recorded in 1996. Brazil's losses attributable to the competitiveness effect are estimated at US\$ 2 billion for the period, equivalent to 90% of the total lost market share or 27% of the value exported in 1992. The two countries most involved in Brazil's net losses of competitiveness during the period were Mexico (26%) and China (12%).

dropped to 12.5% between 1992 and 2001. The main country responsible for Brazil's losses during the latter period was Japan, followed by Mexico, the Czech Republic and Slovakia. In Brazil's losses of semi-finished products of iron or non-alloy steel, containing by weight less than 0.25% of carbon, of rectangular (including square) cross-section, the width measuring less than twice the breadth (HS 7207211), Mexico accounted for 27% between 1992 and 1996 but did not have any impact between 1992 and 2001, since it was a net loser of market share during that period. Germany accounted for 43% of Brazilian losses between 1992 and 1996, followed by Canada with 19%.

Between 1992 and 2001, Brazil gained market share in the amount of US\$ 1.1 billion through the competitiveness effect, although this was only possible thanks to Brazil's increased share in U.S. imports of small aircraft. All the other sectors taken together posted losses from this same effect for a total of US\$ 162 million. Brazil's market gains during the period were associated with losses by Japan, the United Kingdom, Canada and France, which accounted for 64% of Brazil's net gains by country. China (33%) and Mexico (19%), on the other hand, were the main countries responsible for Brazil's net losses.

A detailed analysis of price trends in Brazil and Mexico for a representative sample of products revealed that, although the real exchange rate performance favoured Mexican exports to the United States between 1992 and 1996, accounting for nearly one half of Brazil's losses to Mexico, Brazilian prices –after allowing for import duties– were increasingly more competitive with those of Mexico. Accordingly, Brazil's losses to Mexico attributable to the NAFTA effect are estimated at US\$ 300 million, equivalent to 13% of Brazil's net losses for the period analysed, or approximately 3.5% of Brazilian exports to the United States in 1996. Although still relatively low, this percentage is significantly higher than the estimates of trade diversion from Brazil to Mexico made prior to the implementation of NAFTA.

(Original: English)

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Economic Survey of Latin America and the Caribbean 2001-2002. Current conditions and outlook, LC/G.2184-P, United Nations publication, Sales No. E.02.II.G.71, ECLAC, Santiago, Chile, August 2002, 50 pages.

Against the backdrop of a very sluggish international economic environment, the reactivation that began in Latin America and the Caribbean in 2000 was short lived. After having stalled in 2001, economic growth is expected to be negative (-0.8%) for 2002, and unemployment is expected to reach a record level of over 9%. The severe crisis in Argentina accounts for a great deal of this downturn, however; while the growth rates of the rest of the economies in the region also slackened, they will nonetheless be positive in most cases. In fact, if Argentina is left out of the totals, then a modest expansion (slightly over 1%) of the region's GDP is projected. Inflation has remained low in most of the countries, with the rise in the regional indicator being attributable to the effects of major devaluations in Argentina and Venezuela.

Given the slow pace of the industrialized economies' recovery and the still low prices being registered by the region's main commodity exports, its external sales of goods are estimated to have declined by a further 1.5% in 2002. The improvement in the regional trade balance is primarily a reflection of plummeting import demand in Argentina. Flows of direct investment, which have been the largest component in the region's inflows of external capital since the mid-1990s, continued to dwindle, and financial capital will remain scarce. The terms and conditions for external financing continue to be less favourable than they were prior to the Asian crisis and, as a result, the region is expected to register a net outward transfer of resources for the fourth year running.

Unlike the crises that occurred in the 1990s, which affected a limited group of countries, in 2001 the recession engulfed all of the region's economies, and this contractionary climate remained in evidence during the first quarter of 2002, as is shown by the fact that regional GDP was 3% lower than it had been in the first quarter of 2001. Thanks to more flexible management of fiscal, exchange and monetary policies in 2001 and 2002, however, most of the countries have managed to avert a full-blown crisis. These measures have, however, revealed just how little leeway is available for domestic economic policy. Unlike the situation in the industrialized economies, where a more expansionary monetary and fiscal policy stance has been adopted in order to counter the recession, the region's governmental authorities have come under increasing pressure to cut back spending in order to control a public debt that has been inflated by a five-year-long upward trend in the fiscal deficit. Private firms also have less breathing space, as several years of sagging profits have undermined their capital base. Despite the monetary authorities' efforts to expand the money supply and lower interest rates, in most of the countries the private sector's supply and demand for domestic credit continues to shrink. The banking

system in several of the MERCOSUR countries has also become quite fragile as a result of the crisis.

Looking beyond the immediate situation, there is concern about the possibility that an economic climate of low growth, worsening domestic conditions and uncertain prospects for the future may come to prevail in the region. Within this context, the expression "adverse expectations" appears again and again as a *leitmotiv* in economic analyses, and the fixed investment coefficient has dropped to a 10-year low. The economic situation in 2002 clearly reveals the disparity between the expectations awakened by the new economic model that took hold in the region during the 1990s and the current growth prospects, thus highlighting the existence of a gap that is raising a series of questions as to the economic and social sustainability of the present development patterns. As has been seen in a number of cases, the protracted economic recession, high unemployment and the limitation of social expenditure are creating social tensions that undermine domestic governance and make it harder for national authorities to implement needed economic reforms and policies.

The economy's weak performance in 2002 fits in with the stage of slow growth that began with the Asian crisis. Although the different countries' experiences cover a wide spectrum, the ensuing economic slowdown has been widespread, and per capita GDP has declined in a large number of countries. As a result, 2002 will mark the fifth "lost year" in a row, with the per capita product slipping to a level nearly 2% below that of 1997. Within this context, the increasingly evident conflicts arising between the external economic environment, domestic macroeconomic policy, and economic and social development processes pose a series of challenges for the Latin American and Caribbean countries.

Thanks to more flexible exchange-rate regimes and the adoption of macroeconomic policies based on inflation targets, a number of the countries have improved their macroeconomic policies since the mid-1990s. In the realm of fiscal policy, however, further progress needs to be made in correcting procyclical biases, increasing tax revenues, improving taxation structures and raising the quality of public expenditure. Moreover, little headway has been made in implementing reforms to promote more dynamic changes in production patterns, whose materialization depends on a number of other factors in addition to a strong macroeconomic performance. Furthermore, even though public social spending has been increased and steps have been taken to improve social policy design, much remains to be done before the new patterns of development benefit the population as a whole.

Social Panorama of Latin America 2001-2002, LC/G.2183-P, United Nations publication, Sales No. E.02.II.G.65, ECLAC, Santiago, Chile, November 2002, 264 pages.

The 2001-2002 edition of the *Social Panorama of Latin America* explores issues related to the Millennium Development Targets and the likelihood of achieving the objectives unanimously adopted by the States Members of the United Nations for 2015. It examines the region's ability to meet the targets for reducing extreme poverty, eradicating hunger and ensuring universal access to primary education under conditions of gender equality, and it also looks at the Latin American countries' ability to absorb the growing supply of skilled human resources and deals with the issue of social capital in terms of its potential and limitations for poverty reduction programmes.

The first chapter gives poverty estimates for Latin America for 2000, 2001 and 2002, based on the economic growth in each

country. To complement the analysis included in the preceding edition of the *Social Panorama*, this chapter takes another look at the feasibility of the Millennium Declaration target of halving extreme poverty by 2015. It also looks at the economic growth required to achieve the more demanding target of halving total poverty in the region, as well as the effects of improved income distribution.

The second chapter deals with the under-utilization of skilled human resources in Latin America as a result of the scant creation of jobs that make use of the knowledge and skills of individuals entering the workforce with post-secondary training. It provides data showing the rapid growth in the supply of technicians and professionals (particularly women) in the countries of the region, and examines the factors that have led to widespread under-utilization of these resources: involuntary inactivity, open unemployment and the low wages that the market offers many professionals and technicians.

The third chapter analyses school drop-out rates and trends in 18 Latin American countries in the 1990s. It suggests a methodology for estimating their magnitude at different stages in the educational cycle, based on data from household surveys, and provides information that helps to identify the causes of and factors associated with dropping out of school. In addition, figures are given on the costs incurred, in terms of wage income forgone, by individuals who leave the educational system before completing their secondary education.

The final chapter examines the main approaches and positions which different authors and institutions have taken with respect to social capital and describes both their contributions and their analytical shortcomings. The chapter analyses the potential and limitations of social capital for poverty reduction programmes, highlights some successful experiences, and concludes that taking into consideration the different forms of social capital in a community helps to strengthen weak social actors and improve the accountability of programmes and projects, while also underlining the importance of a participatory, democratic environment.

The section on the international social agenda gives a summary of the sixteenth meeting of the Rio Group and the eleventh Ibero-American Summit of Heads of State and Government, which dealt, respectively, with family and children's issues. It also refers to the two non-governmental meetings convened by the World Social Forum in Porto Alegre to analyse the social impact of globalization.

This edition of the *Social Panorama* includes a statistical appendix with 43 tables giving indicators on a wide range of social phenomena.

Other publications

Notas de población No.74, LC/G.2148-P, United Nations publication, Sales No. S.02.II.G.61, ECLAC/CELADE, Santiago, Chile, June 2002, 250 pages.

The twenty-fourth General Conference of the International Union for the Scientific Study of Population (IUSSP) was held in Salvador, Brazil, from 18 to 24 August 2001. The Editorial Committee of *Notas de Población* considered it of interest to publish in the issue reviewed here the addresses delivered on that occasion by Professor José A. Magno de Carvalho, outgoing President, and Professor Jacques Vallin, incoming and current President of the Union. As in past issues, other articles on highly topical issues are also included.

The subject of the address by José A. Magno de Carvalho is the global "new demographic pattern", which he says consists of an increasingly widespread trend towards low fertility and mortality levels, with consequent rapid ageing of the population and, probably, an increase in international migration flows.

The next item is the speech made by Jacques Vallin at the closing session of the General Population Conference. Subsequent articles, dealing with various topics, include one by Luis Risero-Bixby, Gilbert Brenes Camacho and Mario Chen Mok on differential fertility and Nicaraguan migrants in Costa Rica, in which the relative fertility of the migrants is estimated on the basis of data from different sources, and the method used and the results of the exercise are described. Viviana Masciadri analyses recent trends in the formation and dissolution of unions in Argentina on the basis of data from the 1991 census, and notes that there are different models for forming, maintaining and ending unions, with specific characteristics depending on the province, gender and age.

With a view to gaining an insight into the problems of social and demographic vulnerability in Uruguay, Alejandro Retamoso analyses family strategies for the use of available resources in the article "Ciclo de vida familiar, patrones reproductivos y el trabajo como activo: evolución y estrategias en Uruguay" (Family life cycle, reproductive patterns and labour as an asset: trends and strategies in Uruguay). Alberto Arenas de Mesa and Pamela Gana explore the gender dimension and social safety nets for women in the paper entitled "La reforma de los sistemas de salud y los desafíos de la dimensión de género" (Health system reform and the challenges of the gender dimension).

Lastly, Gustavo Álvarez presents an approximate indicator of inadequate household income based on census data, with a view to establishing a stratification of households that goes beyond the simple dichotomy of poor and non-poor, by defining different levels of resources allocated to meet current needs.

NOTE: All of the documents referred to above may be accessed through the ECLAC web page: <http://www.eclac.cl/publicaciones>.

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