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ECONOMIC COMMISSION FOR
LATIN AMERICA AND THE CARIBBEAN

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The devious maze of the international order the importation of reforms

David Ibarra

This paper seeks to make a historical review of the models which have guided the international economic order since the last century: how and why they evolved until bipolarism spilled over into international relations and the neoliberal ideology took root. It also examines the adjustments that the countries on the periphery have made in order to adapt to these models. In Latin America, the abrupt opening of frontiers and the abolition of protectionism, but without an appropriate institutional framework, have given rise to lower economic development, deterioration in the social field, and the discrediting of democracy. This analysis, when applied to specific changes which have taken place in the models adopted and the way they have been implemented in the region, reveals their relative degrees of validity and the existence of considerable areas of leeway which have so far been insufficiently exploited.

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I

Introduction

For over two decades, the basic neoliberal economic policy package has remained unaltered in spite of the succession of governments of different political inclinations which have taken office all over Latin America. At best, proposals have been put forward for second- or third-generation reforms designed to make up a posteriori —a decade later— for the shortcomings or imperfections of the original measures.¹

The initial proposals were successful in correcting the imbalances in prices, the fiscal accounts and external indebtedness which plagues the Latin American economies in the 1980s, but in most cases they were a resounding failure in terms of satisfying the basic popular demands: promoting growth, employment and distributional equity; strengthening social rather than merely political democracy, or taking full advantage of the removal of frontiers all over the world.

Furthermore, in a number of cases the presidential candidates, such as Fujimori and Menem, won their election on the basis of anti-neoliberal policy platforms, only to turn later into singularly enthusiastic implementers of the reforms contained in the Washington Consensus. Even social democratic governments have had to curb initiatives seeking to depart from the prevailing orthodox approach, because of the risk of losing the support of foreign interests or powerful domestic groups. Thus, the policies and objectives of governments, whatever their political leaning, have never been independent of the unitary concept which has determined the common denominators of the continent or, hence, of the approaches taken by preceding governments, even when there has been a transfer of power from one political party to another. It is hardly surprising, then, that the strategies applied have proved to be almost identical even when there has been a change of the political groups in power, thus failing to reflect the people's will. It is therefore important to explain how the roads to be followed are defined, how national priorities and objectives are chosen, and how the national social and political balances are reconciled with those of the external economic environment.

¹ See Williamson (1990) and Kuczynski and Williamson (2003).

A decisive influence has undoubtedly been exerted in this by the new configuration and rules of the world order, which have found the Latin American countries not only ill-prepared but also weakened by the effects of the 1980s debt crisis. When countries are struggling to cope with the imbalances of that decade, the international financial agencies make their support subject to compliance with certain conditions. These criteria have sometimes caused national policies to follow directions other than those that the governments would have chosen of their own free will. It should be noted that these rules have been multiplied in recent times and have been aimed at promoting the adoption of neoliberal-type structural reforms rather than favouring development.² Under the pressure of these circumstances, governments have adopted compromises which have caused them to open up their markets and dismantle protectionist measures, those reflecting authoritarian and populist approaches, and many of the measures for the protection of workers and businessmen.

Free trade, deregulation and the withdrawal of the State from productive activities run counter to criteria, values and policies for which the free play of the market is only an imperfect substitute, especially when the systems of institutions of the countries concerned are incipient or suffer from serious gaps. Let us take two simple examples. Financial liberalization, in the absence of mechanisms to regulate the market, has given rise to a wave of banking crises in much of Latin America. Likewise, the abrupt elimination of frontiers has created a system in which competition is not between equals but often between advanced foreign producers and backward domestic producers, with

² The programmes of the International Monetary Fund (IMF) have been criticized as being over-restrictive, as being designed to compress demand, and as neglecting the development of the countries concerned. In the opinion of Feldstein, the IMF should resist the temptation to force reforms on the countries. The criticisms of the World Bank have accused it of giving up the financing of investment projects and concentrating instead on the promotion of globalizing reforms, while paying little attention to protection of the environment and increasing the supply of public goods. See Feldstein (1998), Rodrik (2000), Kapur and Webb (2000), Kahn and Sharma (2001) and Buirra (2003).

effects which have been destructive but rarely in the Schumpeterian sense.

At all events, by being forced to enter more or less abruptly into a globalized world, the countries of the region are being forced to absorb enormous historical imbalances, since their institutional structure is incompatible with the demands of markets that know no frontiers, and the mix of winners and losers in the political and economic game has been radically altered. While the countries of the periphery naturally do not have much influence on the direction of the changes in the international order, they have to cope with the problems of the speed and manner in which their economies have to absorb the resulting changes. In effect, the one-sided impact of the reforms gives rise to a disorderly and divided transition within the countries which impedes the formation of flexible national consensus that can facilitate economic and political change.

It is important to limit the division of common interests that were previously united by nationalism. Today, the Latin American societies are deeply divided internally: the interests of labour groups are divided between skilled and unskilled workers, between those working in the modern sector of the economy and those in the informal sector, and between those employed in big firms and those working in small and medium-sized enterprises. The same sort of thing occurs in the business sector: there is a division of interests between foreign and domestic investors, between importers and those producing for the domestic market, between large firms and smaller ones, and between the real and financial sectors of the economy.

Similar divisions exist among the different social groups, political parties and between the provinces and metropolitan areas of the countries.

All this has led to internal divisions: while the alliances which have been formed between the national and foreign elites ensure the punctual fulfillment of international demands, national arrangements to lighten the enormous social costs of the relevant changes are constantly put off. For this reason, people have begun to be disappointed with democracy, to feel that elections do not serve to change anything, and that one government is much the same as another.

In the following pages, we will try to put the models of the world economic order in their proper dimension: to strip them of their sacred aura. Thus, section II makes a historical review of the forces which originally led to the disappearance of the colonial world and subsequently to the end of the bipolarity of international relations, giving way eventually to the predominance of the neoliberal ideology which has resulted in tensions between the world order and national democracies and between free trade and the domestic development of the Latin American countries. In section III, the level of abstraction of the analysis is lowered in order to make a critical analysis of specific changes over the last half-century in the models advocated by the central countries for the development of the periphery. These changes have modified the validity of these rules and reveal that there are substantial areas of leeway which have so far been only poorly exploited by the Latin American countries.

II

Historical overview

In the first half of the past century, colonialism finally disappeared and a number of totalitarian regimes collapsed. Between 1945 and the present day, the number of sovereign nations increased from 45 to almost 200.³ The prevailing ideas led to the creation of a large number of States which, in order to be members of the international community, had to make themselves responsible for their internal order and development, thus representing a further step in the process of Westernization of the nations.

Looking back, the breakdown of the colonial pact involved deep changes in the international order and the way societies on the periphery link up with it. Many of the forms of support previously given by the metropolitan countries and the linkages with the latter in terms of trade, production specialization and finance were cancelled or reduced. There were, however, new opportunities for the establishment of links with a broader range of developed countries, and above all there was more room for the economic and political independence of the newly independent nations. Libertarian ideas and struggles between the dominant countries softened the demands made on subordinate countries, facilitating the reorientation of their internal forces towards the interests of the Third World.⁴

At this time, modernization of the State was considered to be essential in order to achieve an effective development strategy. Nationalism and social engineering were therefore put forward as ways to liberalize the development of the former colonies and the countries of the periphery in general. This, together with the changes in economic and social structures brought about by the changes in the international order, made it necessary to abandon rigidly economic approaches and embrace instead the broader concepts of political economy and integrated social development.⁵ The world order of the time needed legitimate States able to keep order and seek the well-being of their countries.

Likewise, the end of the Second World War and

the desire to avoid possible conflicts between nations (especially the superpowers) led to the creation of the Security Council as the supreme political organ of the United Nations and guarantor of international collective security. Within this Council, the power of veto possessed by its five permanent members served as a means of impeding the dominance of one or the other of the great blocs into which the world was divided. At the same time, the extension of the competitive struggle of the Cold War to the Third World increased the opportunities both for development support and for the freedom of governments to run the economic and social affairs of their countries within a range of predominantly Keynesian styles.

This situation favoured more intensive development on the periphery, especially in Latin America. Since economic and political models are ideological constructs which inevitably reflect the rationalization of interests, as well as the consensual views of First World academics, however, they are not and cannot be unchangeable. Through them, the central countries seek to regulate the behaviour of the countries on the periphery and lay down the conditions for their incorporation into the international community. There are incentives and punishments which range from access to the markets of the industrialized countries to political alliances or ostracism.

In a dependent relationship it is not necessary for a country to be a colony in order to suffer limitations on its sovereignty, nor does full sovereignty depend on being a member of the United Nations (Badie, 1992). As long as the First World holds the economic, political and military power and its institutions generate the ideas that guide the world, develop the most advanced technologies and products and fix the rules of the international order, the countries of the periphery will continue to be subordinates even though they may have some leeway for action. In any case, the emancipation histories of those countries usually involve the idea of integration, not separation: they are the stories of peoples excluded from the main community of nations who strive to gain entry to it and follow its rules. This explains the enormous integrating power of universal models which also usually bring with them the formation of alliances of interests between the

³ See Crocker, 2003, pp. 32-45.

⁴ See Cardoso and Faletto (1970), Furtado (1965), Migdal (1988) and Dos Santos (2003).

⁵ See Cardoso and Faletto (1970).

elites of the dominant and dominated countries, leading to a symbiotic relationship from which it is hard to escape.⁶

In the second half of the twentieth century, the changes in the economies of the industrial societies speeded up. The forces of production and cross-border trade created situations of mutual dependence between countries which came up against the safeguards characteristic of national sovereignty. At the same time, private or semi-public actors emerged who weakened the power of national governments. More recently, the collapse of the socialist countries became another central element in the changing realities and models, by doing away with the division of ideological approaches that marked the early post-war years.

The disappearance of bipolarity from the world and the new world economic conditions clamour for far-reaching reformulations of the models governing the international order. The transnationalization of production and trade demands the abolition of frontiers and the international convergence of national economic and social policies – and even cultures – in order to ensure the security of trade, production and capital flows from the world centres.

This accounts for the emphasis on deregulation, the opening up of frontiers, the elimination of State participation in production, and the elevation of price stability to the level of a central objective of governments. The former concern for the domestic well-being of countries and for growth has given way to the requirements of globalization as such. In exchange for the renunciation of economic sovereignty, a boost has been given to the formal modernization of democracy and the international convergence of political systems to correspond with the Anglo-Saxon model.

There has been undeniable progress in this latter respect, as reflected in the decline in authoritarian regimes on the periphery, but this progress has remained incomplete because in many cases it has not been possible to ensure sustained development or to meet the needs of the population in terms of employment, income, security or access to social services. To a certain extent, the progress in terms of the formalization of the political order has been cancelled out by the disturbing effects of economic change. This is where the tensions caused by the unrealistic assumption that economic and socio-political phenomena are independent of each other becomes apparent: an assumed inde-

pendence which is necessary if one wishes to maintain the illusion of national sovereignties untouched by the new international order.

Changes in the universal rules of conduct of States have caused breaks with the past, especially in the case of nations on the periphery. Thus, the war in Iraq led to the abandonment of the political multilateralism of the Security Council; in Africa the new nation-States have not yet been consolidated, but must already be dismantled for the benefit of globalization; and the civilizing promises of the dominant discourse about free trade and formal democracy are already crumbling: first, because of the growing inequalities within and between countries, and second, because there are States which are formally democratic and sovereign but have their hands tied when it comes to meeting reasonable demands by their citizens.

The abandonment of the goals for Third World growth is in stark contrast with the emphasis and efforts placed on reducing inflationary pressures and creating a favourable climate for transnationalized trade or investment flows. The concentration of efforts on the stabilization of prices all over the world has been tremendously persistent and successful. Thus, after standing at almost 16% in 1985-1989 and over 30% between 1990 and 1994, world inflation sank to 4% in 2000-2003. Between the first and last periods, the average rise in prices went down from 4% to 2% in the advanced countries, from 48% to less than 6% in the developing economies as a whole, and from 186% to 8% in Latin America. This was achieved at the cost of innumerable institutional reforms, policy changes and social sacrifices: suffice it to mention the abolition of national frontiers, deregulation and the decline of national monopolies, the independence of central banks, or extreme fiscal discipline, carried to the point of ruling out any type of anti-cyclical action.⁷

Much less effort has been made to raise and equalize world growth, however. The world economy is in a phase of unsteady development: it grew at the rate of 3.6% per year between 1985 and 1989, 1.4% between 1990 and 1994, and 3% between 2000 and 2003, while Latin America reached only 1.5% in these last four years. On average, the rise in per capita income between 1975 and 2000 shows that the gap between rich and poor is widening still further: the countries with high levels of human development registered an increase of 2.1% per year, those with intermediate

⁶ See Said (1993).

⁷ See Rogoff (2003).

levels 1.6%, and the poorest nations, only 0.5%. Latin America also lost ground, since its per capita GDP grew by only 0.7% per year over this quarter-century period.⁸

The post-modern tension between world-level demands and those of the national democracies is eroding the foundations of nationalism as the primary source of identity and of unity of the citizens around collective goals such as development or the defence of their own interests. Over the last two decades, at least in Latin America, the first-named demands have been punctually met, but the satisfaction of the second ones has been systematically postponed. It is paradoxical to see how the efforts to democratize the peripheral States have taken place side by side with a relentless assault on nationalism, which, like it or not, captures the imagination and aspirations of the people and, above all, seeks self-government for society. For two decades now, in Latin America vital State functions have been turned over to the hidden hand of globalized markets and governments have renounced the use of the main instruments of social engineering and the underlying development and employment policies.⁹ As a result, countries have been put in a position where foreign investment and the sale of the best national enterprises to foreign owners are used to provide – but only temporarily – the resources to shore up the economic apparatus of the first-, second- and third-generation neoliberal reform process, while the social structures and ultimately the prestige of democracy itself continue to crumble. The ideologized view that the State commits all kinds of errors, while the hidden hand of the market possesses all kinds of virtues, is still alive, although the market has shown itself to be deaf to almost all the legitimate demands of the citizens of developing countries.

As a result, the social tensions associated with the dominant model have grown so strong that they can no longer be concealed. This is shown by facts ranging from the social decay and symptoms of ungovernability that affect the underdeveloped areas, and the failure of the members of the European Union to comply with their budget ceilings, to the failures of the Seattle (1999) and Cancún (2003) ministerial meetings of the World Trade Organization. It is also shown by the persistence of hunger, poverty and disease in vast areas of the world,¹⁰ even including some segments of the industrialized nations.

⁸ See UNDP (2002).

⁹ See Ibarra (2003).

¹⁰ According to the United Nations, over 1,150 million people had to survive on less than a dollar a day in 1999. See UNDP (2002).

Like it or not, globalization and its demands have closed off the ways towards incorporation into the industrialized world that were followed by the nationalist societies of Germany, Japan or the United States itself. The leeway in this respect has narrowed and changed, since the international rules now in vogue do not permit industrial protectionism and subsidies, public enterprises, or the fixing of national economic priorities or maintenance of deficits by governments. These privileges are now confined to the advanced countries, as shown by their anti-cyclical policies or the protection given to their agriculture and industry: for these and other reasons they have budget deficits much higher than those considered acceptable for peripheral countries¹¹ and they permit the absorption by the public authorities of the losses of their big enterprises.¹² Likewise, the governments of the First World maintain or adopt protectionist measures in response to domestic political or electoral pressures, in violation of the spirit or letter of international laws and agreements. The refusal to do away with agricultural subsidies, the agonizingly slow opening up of their markets for textile products, or the recent protectionist actions of the United States government (in the case of steel, among others) are typical examples of flagrant imbalances in the international trade regime which prejudice above all the countries of the periphery.

At the present time, one way of incorporating countries into development with a view to future access to the First World is that followed by India, China or the south-east Asian countries. These countries have been orthodox in the defence of their interests and heterodox in their observance of the universal models. Their elites and governments have united to establish development strategies, create economic power centres, apply industrial policies, subsidies and tax reductions and attract investments, while at the same time mixing improvements in the well-being of the population with sometimes repressive social policies. In this way, they have weakened their economic and technological dependence relationships, obtained greater leeway for action, and at the same time taken advantage of the worldwide opening up of markets.¹³

Another way, albeit slower and more uncertain,

¹¹ The budget deficit of the United States is 5%-6% of GDP, that of Germany 3-4%, that of France 3-4%, and that of Japan 7%. See IMF (2003) and OECD (2003).

¹² Such as Chrysler, Air France, savings and loan associations, the Capital Risk Management Fund and Japanese banks, to name only a few. See Ho and Lin (1991).

¹³ See Amsden (2001).

would be to redouble the efforts made in international forums to secure a change in the universal models so as to make them more equitable and favourable for the development of the periphery. In this field, as the Fifth Ministerial Conference of the WTO (Cancún, 2003) showed, real progress still seems to be far off in view of the vested interests and reluctance of the advanced countries. Nevertheless, some progress is being made. The First World's concern to channel aid preferentially to the poorest areas of the globe, as manifested at the International Conference on Financing for Development (Monterrey, 2002), seems to be a step in the right direction, although halting and incomplete, provided such aid is not linked to a demand that the beneficiary countries must first carry out the first-, second- and third-generation reforms.

The innovative proposals made in the developing world present a wide range of variants. Because of their enormous population and internal diversity, China and India are areas of multinational integration which even represent or could represent serious political and economic challenges to the leading world centres. This enables them to enjoy greater freedom to remodel the rules governing the world order. The south-east Asian countries, under the protective umbrella of Japan and the other giants of the region, have benefited and continue to benefit from degrees of political and economic heterodoxy not enjoyed by other areas of the periphery.

In Latin America, the possibilities seem smaller, but by no means non-existent. Central America has not yet succeeded in reaching the stage of political integration or even of the convergence of national economic policies. Paradoxically, the experiment of the Central American Common Market and the possible political union which was to follow it (there is already a Central American Parliament) has been held up by the abolition of trade frontiers worldwide and the multiplicity of rules for the new world order which were designed for nation-States. The Mercosur countries have better prospects because of the joint size of Brazil and Argentina, but in addition to the sequels of the various crises they are faced with political and economic strategy disparities which do not appear to be easy to reconcile, especially against the background of

the existing international tensions and the continental free trade project sponsored by the United States. In the case of Mexico, there are opportunities which have not yet been exploited because of its proximity to the United States and its integration with that country's vast markets. In short, the possibility of freely shaping the future of Latin America seems to be running up against hegemonic influences which hinder the formation of innovative systems of its own. Even greater obstacles stand in the way of the evolution of Africa and the Moslem Arab world, but even there initiatives are being put forward.

All in all, however, the available options for independent development are shrinking (Chang, 2002), and against all the ideas of nationalism this is leading almost inexorably to the political incorporation of the Third World countries into the multinational integration blocs into which the world of the future will probably be divided and which will be on a more even footing for competing with each other. Naturally, the advance of the globalizing post-modern model will lead to a significant loss of cultural, social and economic diversity in the world, as well as keeping citizens far removed from participation in the decisions which most affect their social life, especially in the case of the groups which will be absorbed by the dominant power centres. The process of the merging or integration of countries is already well advanced in Europe, although less so in North America, and it could still run into obstacles, resistance and even ethnic prejudice in various parts of the world.

Looking into the future, this process—together with the gradual abandonment of multilateralism by the great economic and political centres of the world—hints at a return to a multipolar world in the not so distant future, with all the advantages and disadvantages that that entails.¹⁴ At the same time, the shortcomings and failures of economic neoliberalism and the war against terrorism suggest the possible return—however remote it may be—of political economy, in the sense of creating a more balanced relationship between the economy and society, between the State and the market, and between the rights of the individual and collective or basic human rights.

¹⁴ See Kennedy (1993), Connelly and Kennedy (1994) and Kupchan (2003).

III

The importation of reforms

The economic models and paradigms we import are not immutable: they change with circumstances and with the inevitable confrontations between forecasts and actual results. We may refer, for example, to the evolution of the conceptions of the industrialized countries – which we accept for ourselves – about the development of the periphery. These conceptions frequently place emphasis, in a general and simplified manner, on some fundamental obstacle to progress, leaving aside any other order of priorities.

History permits us to clarify these questions. Between 1940 and 1950 underdevelopment was explained by the insufficiency of investment and saving, which should be made good through the entry of international funds. It was believed that by increasing capital formation it would be feasible to move the factors of production from low- to high-productivity sectors. International trade was considered to be good, but not sufficient to open the doors of development: consequently, some protectionism and moderate external account deficits, to be covered by injections of capital from abroad, were considered to be acceptable, as was the transfer of resources from traditional to modern activities with support from active industrial policies, even if this was reflected in fiscal deficits, provided these were only small.

Some progress was made in these ideas during the following years (the 1960s and the first half of the 1970s), when it was discovered that the insufficient supply of entrepreneurial cadres was limiting the absorption of resources from the First World and reducing the effectiveness of the promotional measures of governments and international agencies. Following this logic, the deliberate promotion of business training and measures to make up for shortcomings in this respect were incorporated into government programmes. The peripheral countries were persuaded to set up development banks, to encourage joint investments in strategic areas of the economy, and to strengthen national capacity for training and project evaluation. Contrary to what it is doing now, the World Bank promoted the establishment of development banks all over Latin America, set up the International Finance Corporation –which provides backing for private enterprises and projects– and the Economic

Development Institute for the training of business cadres. Up to this point, the changes made in the models may be described as fine-tuning which does not depart from the basic tenets of the international order of the early postwar years and of Keynesianism.

From then on, however, the recommendations by the First World to the peripheral countries changed rapidly until they penetrated to the core of the countries' economic policies. Now, the central objective ceased to be the lack of saving, investment or business capacity: these were only petty sins. The new diagnosis held that the problem lay in a distorted price structure which limited the absorption of labour and led to sub-optimal rates of GDP growth. The main blame of this phenomenon was laid at the door of State interventionism which aggravated faulty resource allocation, promoted the use of capital-intensive techniques, and gave rise to unproductive rents protected by official policies. The remedy therefore lay in competitive exports with a high labour content. To this end, it was recommended to open up markets and do away with subsidies and all protectionist measures, including State participation in production. The technological backwardness or deficient trade networks of the peripheral countries did not matter, as the market would soon reveal the real competitive advantages of each country.

This was how the neoliberal explanation of development began. Countries must abandon State Keynesianism at the economic level and nationalism in the political field. On the one hand, governmental failures and the inability of the State to take the place of the wisdom of the market were highlighted as the reason for the main structural imbalances in the economy, while on the other hand it was held that renewed access to development could be achieved through an increase in exports, which depended on the liberalization of product and capital markets.

In practice, however, an increase in export trade is not something that can be achieved immediately, nor is it easy to make exports the driving force of developing economies. In contrast, the abolition of frontiers is usually accompanied by an avalanche of imports which destroys domestic enterprises and favours the formation of privileged export enclaves, while foreign

investment, rather than giving rise to new products and jobs, often serves only to finance the transfer of the best domestic resources and enterprises into foreign hands. Furthermore, such investment can hardly take the place of public investment in infrastructure or human capital or the supply of many non-tradeable goods and services (energy, transport or essential production services), and much less can it define a country's long-term strategy for its insertion in world markets.

Nevertheless, the views of the centres prevailed. The Latin American countries liberalized their markets and deregulated their economies, in the belief that this would open the door to rapid development or win the First World's acquiescence. What actually happened was at variance with these hopes, however: over more than two decades (1980-2000) the pace of Latin American development fell to half of that reached in the previous thirty years, with high levels of unemployment, marginalization and enormous maladjustments in the labour market. Reformulation of the models was therefore called for.

The abundance of skilled human resources was rapidly identified as the reason for the success of some nations (Southeast Asia), while a shortage of such resources was an obstacle to development. The World Bank's 1991 annual report repeats the neoliberal discourse of previous years, but it adds a new ingredient: investment in human capital as a precondition for development (World Bank, 1991). This represented some progress in the model, but it does not solve all the problems, for the training and optimal use of human capital requires growth and complementary facilities which are not created spontaneously by the market.

A revisionist approach to the First World's recommendations gained greater strength in the second half of the 1990s. Once again, the contrast between the meagre results and the enormous social costs of the Latin American reforms based on greater openness, as compared with the success of the activist governments of the Asian countries, led to an exercise of reformulation and the rediscovery of the State as the appropriate agent for leading the transition to globalization. Without good governance, it was said, the reforms would not give the expected results or secure the development of the peripheral countries. This assertion was correct, but insufficient, as the proper play of democracy cannot be reduced merely to questions of administrative efficiency, as suggested. Reluctantly, it

began to be accepted that the State and the political sphere have an essential part to play in the handling of domestic political reforms and external relations.¹⁵

Good governance, or at least better governance, is undoubtedly essential for achieving sustained development. There is a risk, however, that excellence in this respect may be made a prior requisite for gaining access to the solidarity and aid of the First World, as was made clear at the International Conference on Financing for Development (Monterrey, 2002). Adapting to a world without frontiers, completing institutional reform, applying healthy macroeconomic and microeconomic policies, deregulating markets, guaranteeing the rule of law, eliminating corruption, lessening the complaints of those who have lost as a result of the changes made, and achieving so many of the other requirements implicit in the term "good governance" is practically equivalent to having already solved the basic obstacles not only to development but also to the transition to a world without frontiers. Like it or not, sustained development, democratic modernization and adaptation to the new international order are slow and painful processes of adjustment which can hardly be imposed as entry conditions that could only be satisfied by the most advanced nations of the world, not the poorest ones.

The last migration of the paradigm advocated by the international financial organizations – which is not shared by the whole of the First World – seems to raise the concerted fight against poverty to the level of an international priority. In view of the fact that social decay is getting worse rather than better, poverty is no longer seen as being exclusively the result of government errors and over-regulation of markets, but is also attributed to systemic effects of the new international order.

This fundamental qualitative leap forward is expressed in the *World Development Report 2000-2001* (World Bank, 2001a), which proposes a three-pronged strategy that goes beyond the economic level to address political issues. First, it recommends multiplying the economic opportunities of the poor by measures to strengthen their income from scarce assets (land and education) through both market-based and non-market-based policies. Second, it supports the strengthening of social safety nets in order to reduce the extreme vulnerability of the excluded segment of

¹⁵ See World Bank (1993 and 1997), Stiglitz (1998), McGuire (1997), Ibarra (2001), Abramovitz (1989) and Rodrik (1995).

the population. Third, it suggests reforms designed to transfer greater political power to the poor so that public institutions will be more ready to attend to their demands. Finally, it admits that there are multiple ways to development and to the eradication of poverty, and the specific ways adopted must depend on national priorities. Thus, it is beginning to be accepted that it is wrong to recommend standardized policies, in view of the diversity of the historical and institutional situations of each country, and to put economic, social and political reforms in watertight compartments where they have no mutual influence.

This represents an enormous leap forward, because it is now admitted that the importance of relations based on the market, as an area of competition among individual private actors acting strategically to gain profits, must be viewed in more relative terms and must be complemented by political relations based on a very different logic: the sovereignty of the people, the State of law, and other practices for democratic participation and consensus-building.¹⁶ This clearly brings out the underlying unresolved tension between the values of the market and those of democracy.

Much has been said on what the peripheral nations should do to achieve success in their access to the globalized world. Little has been done, however, to make the conditions of competition more equitable and to create institutions to limit the polarizing effects of the free play of the market, that is to say, to create an institutional architecture which is sufficiently transnational to humanize development and make it sustainable. Over twenty years ago, the Brandt Report put forward some indispensable political actions for this purpose, when it asserted the need to give the countries of the South a more equitable share of international power and decision-making, to allow their production centres to grow, to regulate the practices of transnational enterprises, to ease the debt burden, and to promote development (Brandt, 1980).

As we have seen, the First World development model has been constantly evolving, and the institutions and policies of the peripheral countries have also changed at its behest, at the cost of enormous disparities with their actual situations. The great leap forward of the twentieth century took place when national economic sovereignty was sacrificed for the benefit of greater openness and the return of its powers to the market, with the objectives of each country

¹⁶ See McCarthy (1995).

being made subordinate to the goals of a globalized world. Development aid thus gave up the financing of investment projects and openly embarked instead on the task of promoting the neoliberal reform process. Now, while continuing to insist on the maintenance of the parameters of that process, the fight against poverty has been added to the model, as though there were no contradictions between the two goals.¹⁷

The changes in international conceptions on development are due to some extent to a better understanding of the problems, but they primarily reflect the changing interests of the powers which formulate and reformulate those paradigms. The proposals have been completed and fine-tuned, as shown by the identification of the so-called second- and third-generation reforms (which strictly speaking should have accompanied or preceded the reforms initially promoted), but they are still far from addressing the complex dilemmas of the neoliberal transition of the various peripheral countries,¹⁸ especially the establishment of a new stable balance between the functions of the market and those of the State.

Let us look at a typical case. The financial openness process, or global financial integration, as it is now called, was carried out in most of the Latin American countries on the unproven assumption that it would have positive effects on economic growth and the deepening of financial flows. Subsequently, empirical studies made by the IMF¹⁹ concluded that no robust and significant relation could be found between financial integration and development. Furthermore, in the case of the peripheral countries a frequent association was found between financial

¹⁷ As already noted, the distribution of the international funds to combat poverty depends on countries being granted a seal of "good governance" for satisfying the main requirements of the neoliberal reform process. According to the World Bank, "Although some empirical controversies persist, government performance is increasingly accepted by researchers and especially by policymakers as a guide to aid allocation. Government performance is generally agreed to include economic policy, other anti-poverty programs, and the quality of governance and institutional capacity" (World Bank, 2001b, p. 93). The new ingredients added to the model do not eliminate the linking of aid with the application of the reforms advocated by Washington but are additional to this requirement.

¹⁸ The paradigmatic components of the Washington Consensus are now accompanied with a host of new reforms designed to promote profound institutional changes (good governance, reform of the legal system, reform of property rights, labour reforms, eradication of corruption, reform of the regulatory system) which, if implemented, would supposedly make good shortcomings in the initial measures of the Consensus. See Williamson (1990).

¹⁹ See Rogoff and others (2003) and Agosin and Ffrench-Davis (1996).

liberalization and increased volatility of consumption (the latter variable was considered to be a better than GDP as a measure of the well-being of the population) or proclivity to crises and contagion. By imposing small controls on capital, Chile was able to avoid the serious pro-cyclical problems due to oscillations in short-term foreign capital flows.

On the other hand, the IMF's studies seem to show that there is a certain minimum organizational and institutional threshold below which financial integration does not help countries much and may even cause them damage. This happens in the absence of a solid legal and supervisory infrastructure, codes of conduct for transnational corporations, and low levels of corruption, among other factors. It would be hard for most of the countries of the periphery to meet these requirements, because of their backwardness and the fact that their institutions corresponded to the previous system of financial protectionism and not to full internal and external financial freedom. Consequently, the institutional framework which was essential for the transition was absent, incomplete or only incipient, as well as often corresponding to a level of development not yet reached by the those countries. The Mexican banking crisis is a clear example of long-standing disparity between reforms and an outdated institutional framework.²⁰

By way of conclusion, we cannot but note the inconstant nature of the models proposed by the First World and the imperfections of the transnational institutions and their conceptions on how to harmonize the

economic and social development of the peripheral countries with the place they are forced to occupy in the new world order. Economies are integrated and become interdependent, but the transnational institutions needed to lessen the polarizing excesses of the market are yet to be created or else are at an extremely incipient stage. This is why it is necessary to proceed cautiously rather than unquestioningly adopt the model rules which the central countries want to impose. The imported models are usually over-simplistic in failing to take account of the mutual influences between the economic, political and social spheres, and they are also at fault in seeking to standardize policies and reforms without bearing in mind the special historical and institutional features or degree of development of each individual country. Consequently, these models should not be viewed as immovable dogmas but rather as flexible guidelines for international coexistence, within which to incorporate and safeguard each country's own goals and interests. Ultimately, the success of modernization and development programmes depends on them springing from proposals which are broadly shared within each country, not on copying outside ideas supposed to be applicable to all nations.²¹ This, and no other, was the road which the United States, Germany and Japan followed in their entry into the industrialized world and which is being followed by South Korea, Taiwan, China and India today.²²

(Original: Spanish)

²⁰ See Ibarra (1998).

²¹ These criteria are already beginning to be taken into account in the new rules on conditionality adopted by the Executive Board of the IMF late in 2002 (IMF, 2002).

²² See Bourgin (1989), List (1885), World Bank (1993), Amsden (2001), Skocpol and others (1985), Komiyama and others (1988), and Stiglitz and Yusuf (2003).

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Foreign banks in Latin America: a paradoxical result

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During the 1990s there was a dramatic increase in the presence of foreign banking in Latin America. Macroeconomic stability and economic reforms, especially capital market and financial liberalization, created attractive conditions for banks which were looking for economies of scale and worldwide growth. At the same time governments hoped that foreign bank penetration would provide a solution to the need to increase capital within the system, as well as representing an insurance against systemic risk. The efforts to attract foreign investment coincided with the strategy of the leading players to become global banks. Now that the initial penetration has been achieved, it is worth analyzing what the impacts have been on the performance of the financial system. The main conclusion is that there has been a positive outcome for the region in terms of microeconomic efficiency, but this contrasts with the macroeconomic impact.

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I

Structural characteristics and problems of banking systems prior to the 1990s

For the purpose of this analysis, attention needs to be drawn to four basic characteristics of the Latin American financial system, which have been present throughout its history and in some cases still persist today. The first is that the region's banks have predominantly focused on traditional commercial-banking activities, while the securities market remained very poorly developed, and was in fact non-existent in many countries. Secondly, despite the systemic importance of banks, the volume of lending in relation to Gross Domestic Product (GDP) was and remains very small. Thirdly, the State has traditionally played a major role in the financial sector, and this has been associated (albeit without proven causality) with a concentration of private-sector banking activity in the short-term credit segment. Public-sector financing institutions have tended to specialize in long-term funding, generally linked to the national development plans that were commonplace until the 1970s. Lastly, the region's banking systems have always been characterized by their shallowness and narrow coverage.¹ This has meant that a significant fraction of firms and families have little or no access to credit, and that private financing is characterized by large spreads, and

hence high interest rates on loans, with very short maturities.

Government policy to attract foreign banks stemmed directly from the need to resolve these structural problems in the banking sector. So-called "first-generation" financial reforms (table I and box I) were an attempt to increase sectoral competitiveness and improve efficiency by liberalizing its operations and reducing State intervention, both directly (downsizing of the public financial sector) and indirectly (lower reserve requirements, together with deregulation of interest rates and directed credit mechanisms).

The structural reforms created a new macroeconomic environment, which in turn had effects on the way banks operated. In many cases, this interaction between the performance of the banking system and the new macroeconomic climate generated tensions or banking crises that had two broad consequences: firstly, the introduction of a new wave of (second generation) reforms aimed at strengthening the institutional framework (through new regulation and supervision); and secondly, the adoption of an explicit policy to attract international banks, which led to privatization and acquisition processes.

TABLE I

Latin America: First-generation reforms of the financial system

Country	Liberalization of interest rates	Start of an intensive period of privatization	Adoption of capital adequacy requirements	Bank reserves (%)		Tension (1) or systemic crises following reform (2)
				1990	2000	
Argentina	1989	1995	1991	24	4	1995(2)
Bolivia	1985	1992	1995	25	9	1985(1)
Brazil	1989	1997	1995	15	12	1994(1)
Chile	1974 ^a	1974-1987	1989	6	5	1982(2)
Colombia	1979	1993	1992	38	8	1998(2)
Costa Rica	1995	1984	1995	43	18	1994(1)
Mexico	1988	1992	1994	5	7	1994(2)
Paraguay	1990	1984	1991	33	26	1995(1)
Peru	1991	1993	1993	31	26	1995(1)
Uruguay	1974	1974	1992	45	22	1982(2)
Venezuela	1989	1996	1993	18	29	1994(2)

Source: Prepared by the authors, on the basis of ECLAC (1995 and 1996).

^a The banks were intervened between 1982 and 1984; the system was re-liberalized starting in 1985.

¹ This refers to the proportion of enterprises and families with access to credit.

Box 1

FIRST - AND SECOND- GENERATION FINANCIAL REFORMS IN LATIN AMERICA

The financial reforms introduced in Latin America during the last two decades differed from country to country, not only in terms of when the reforms were implemented but also in their intensity and scope. To simplify the analysis, however, they can be divided into two phases, in some cases overlapping in time: the first phase, which can be described as first-generation reforms, entailed dismantling State controls on the returns to financial assets (especially interest rates), on the allocation of financial resources, and on the entry of agents into the system (lowering of entry barriers). All of this was accompanied by financial opening to the exterior. In terms of regulatory reform, this phase also included the adoption of capital requirements in compliance with the Basel Accord of 1988. As shown in table 1, this process took place between 1985 and 1995 in many countries, and it was often followed by economic crises, frequently stemming from the exponential growth of bank lending that had occurred earlier.

Given the problems of stability that emerged from the mid-1990s onwards, many countries began to implement second-generation reforms aimed at enhancing regulatory and supervisory mechanisms, in order to make their domestic banking systems sounder. These reforms were particularly intensive following the “tequila crisis”, which in many countries had destabilized the financial system and in others had triggered an outright banking crisis. This second wave of reforms, particularly those implemented following the Basel Accord, required banks to maintain a level of capital that was adequate in relation to the risk attached to their banking assets; to evaluate and rate their loan portfolios more carefully according to the structure of those risks; and to provide more transparent information to the supervisory bodies.

The pace and depth of regulatory and supervisory reform in each country were directly related to the strength of the effect of the “tequila crisis” on the banking sector in question, and the desire of the domestic authorities to rapidly restore “business as usual” in institutions and markets. For example, while regulatory adjustments were minimal in Chile during the second half of the 1990s, far-reaching changes were made in Argentina, Brazil and Mexico. In most of the countries hit by the crisis, reform began with a restructuring of the domestic banking sector; this process was accompanied by State guarantees, and usually included an injection of liquidity into the system, all of which facilitated bank mergers and acquisitions. In this process, giving incentives for foreign banks to enter the market became an overt policy. The State guarantees extended to the financial system were generally accompanied by requirements relating to deposit insurance, capital requirements and greater liquidity.

The financial reforms of the 1990s overtly encouraged the entry of foreign banks. First-generation reforms had allowed banks to operate in markets that had previously been off-limits –providing services such as factoring and leasing, for example– and had also facilitated stock-market operations, particularly brokerage, underwriting and pension-fund management. As we shall see below, these additional freedoms and broader scope of action were fundamental for the operations of international banks, particularly as their strategy had now shifted towards universalization. In their attempt to grant equivalent legal status to all nations, second-generation reforms created a regulatory and supervisory environment similar to that prevailing in developed economies, thereby opening the doors to foreign banks. In this respect, the two generations of reforms complemented each other to create a climate more suited to the expansion strategies of international banks.

Source: Prepared by the authors on the basis of Stallings and Studart (2001).

1. Financial market liberalization, crisis and restructuring: from the “tequila crisis” to 1997

An essential background for understanding the current development of the Latin American banking system is the financial liberalization that took place between the 1980s and 1990s, both locally and internationally. Chile was an exception to this, however, having begun the process a decade earlier than the other countries in the region. Starting from a system in which State authorities set interest rates, directed credit and required a high proportion of bank deposits to be held as reserve requirements, commercial banks were now given freedom to decide where and how much to lend, and at what price. More or less at the same time, capital-market liberalization enabled local banks to borrow in foreign currency, and allowed foreign banks to operate in the local market. Frequently, these changes were implemented without an adequate system of bank regulation and supervision in place, which in several instances led to problems in regional banks whose executives had little or no experience in analyzing local credit, let alone the international market.

The initial financial deregulation also affected business goals. Existing institutions could now engage in new activities and become “universal banks”. This allowed them to operate in securities and insurance markets, provide asset-management services, and hold equity positions in non-financial firms. To some extent, this process mirrored what was happening in the industrialized countries, but with the difference that the securities market in the region remained very underdeveloped. Accordingly, despite greater diversification, bank portfolios were restricted to short-term securities dealing, insurance products and real-estate activities.

Financial opening and deregulation did not yield the expected results, however. Instead, they provoked credit booms, mismatches between currencies and maturities, and ultimately banking crises. As had happened in Chile during the external debt crisis, then in Mexico in 1994, East Asia in 1998 and Argentina in 2001, mistakes made by local actors themselves were reason enough for crisis, but when compounded by external shocks, the situation became much more serious (Held and Jiménez, 2001). By the mid-1990s, banking crises had become a new feature of Latin America’s financial systems, and bank bailouts by government had become commonplace. Initially, salvage operations were limited to non-recoverable port-

folios, but this was later followed by bank recapitalization, then liquidation, or mergers and acquisitions by foreign banks. Subsequently, in order to avert future crises, banking regulation and supervision were introduced, greater information and transparency were required, and in some cases deposit insurance was put in place. As a result of these crises, the initial expectations of financial reform changed: financial liberalization was and remains a condition for long-term market development, but the latter cannot be achieved without stability in the system. This aim spawned a debate which clearly highlighted two specific needs: firstly, to regulate and supervise the sector, and secondly, to attract foreign banks.

2. The macroeconomic environment

Unlike events in the preceding decade, the macroeconomic climate of the 1990s was one of accelerating growth, which fostered a rapid expansion of short-term lending to consumers and firms. Capital-market liberalization, at a time of abundant liquidity in the international financial market, attracted foreign capital inflows, thereby removing the traditional external constraint on the expansion of demand and imports. This facilitated low-inflation growth, particularly in countries that had adopted stabilization programmes based on an exchange-rate anchor, combined with rapid commercial opening. In this situation, the banks faced strong demand for short-term credit and were able to expand their operations merely by accommodating it. In the second place, the international scenario allowed all banks, local and foreign alike, to increase their external financing. This phenomenon is related to more stable exchange rates and the development of the international derivatives market, which enabled financial investors to partially hedge exchange-rate risk and uncertainty.

3. From changes in financial regulation and supervision to the entry of international banks

A major obstacle to development of the financial system in Latin American countries, and particularly for attracting foreign banks, was the absence of appropriate institutions for regulation and supervision – a key

element for the development of market infrastructure. This shortcoming had discouraged foreign banks from engaging in credit transactions with local consumers or firms. Laws on guarantees were inefficient or non-existent, for example, and legal rulings could be indefinitely postponed and arbitrarily overturned once adopted. Anglo-Saxon law, commonly followed in the international financial market, was unknown in the region, and in general there were no legal precedents, which made the outcome of litigation unpredictable. Given that the development of certain segments of the financial system generally requires long-term contracts, regulatory shortcomings prevented such development – and in many cases still prevent it – by leaving foreign banks permanently exposed to the risk of contracts being breached. This undermined their competitive advantages because, in the absence of appropriate legislation, information management and knowledge of potential clients and the authorities become particularly important, and local institutions clearly held the advantage in these domains.

The reforms to financial regulation formally or informally removed the entry barriers facing foreign banks, thanks to which they began to move into the region and gain an increasingly large market share (table 2). Three vehicles were used in this process: privatizations, mergers and acquisitions, together with greenfield investments driven by the expansion needs of individual corporations. As a result, within a few

years foreign banking institutions were owners of over half of the region's largest banks as measured by assets. Another change stemming from the opening-up policy was the acceptance of greater concentration in the banking industry, with the number of banks decreasing as a result of privatizations, mergers and acquisitions. As shown in table 3, this phenomenon has not been exclusive to the region, since Asia and to a lesser degree Central Europe have experienced a similar trend, albeit with certain differences. Whereas concentration has generally declined in Asia and Central Europe, in Latin America the market shares of the three largest and 10 largest banks have increased, with numerous smaller firms disappearing altogether.

TABLE 2

Latin America (seven countries): Foreign banks' share of banking assets in the Region, 1990-2001
(Percentages)

	1990	1994	1999	2000	2001
Argentina	10	18	49	49	61
Brazil	6	8	17	23	49
Chile	19	16	54	54	62
Colombia	8	6	18	26	34
Mexico	0	1	19	24	90
Peru	4	7	33	40	61
Venezuela	1	1	42	42	59

Source: Prepared by the authors on the basis of IMF (2000), BIS (2001b) and Salomon Smith Barney (2001).

TABLE 3

Latin America, Asia and Central Europe: Indicators of concentration in the banking sector, 1994-2000
(Share of total deposits)

Country	1994			2000		
	Number of banks	Three largest banks (%)	Ten largest banks (%)	Number of banks	Three largest banks (%)	Ten largest banks (%)
<i>Latin America</i>						
Argentina	206	39.1	73.1	113	39.8	80.7
Brazil	245	49.9	78.8	193	55.2	85.6
Chile	37	39.5	79.1	29	39.5	82.0
Mexico	36	48.3	80.8	23	56.3	94.5
Venezuela	43	43.9	78.6	42	46.7	75.7
<i>Asia</i>						
Republic of Korea	30	52.8	86.9	13	43.5	77.7
Malaysia	25	44.7	78.3	10	43.4	82.2
Philippines	41	39.0	80.3	27	39.6	73.3
Thailand	15	47.5	83.5	13	41.7	79.4
<i>Central Europe</i>						
Czech Republic	55	72.0	97.0	42	69.7	90.3
Hungary	40	57.9	84.7	39	51.5	80.7
Poland	82	52.8	86.7	77	43.5	77.7
Turkey	72	40.7	79.1	79	35.9	72.0

Source: Stallings and Studart (2001) and IMF (2001, p. 11).

4. The environment in which foreign banks entered the region in the 1990s

Unlike the pattern in industrialized countries, the financial sector in Latin America continues to be dominated by banks, with little development of other types of financial institutions. Nonetheless, significant changes have occurred in recent years. Firstly, markets have become broader and deeper. This occurred partly as a result of the spectacular reduction in inflation rates throughout the region – price increases today are in single digits, compared to three and even four digits in the 1980s. As a result, families and firms are now more willing to hold money and other financial assets,

thereby providing the basic requirements for development of the financial system. The stronger institutional framework obtained from regulation and financial supervision reduces the risks run by individual agents. In terms of market deepening, the ratio of money supply (M2) to GDP increased significantly in several countries in Latin America during 1992-2000 (ECLAC, 2003). Some diversification has also taken place in the capital market, in response to multiple causes: increased capital flows up to 1998; privatization of social security; and the deregulation of institutional investors, which led to increased investment in securitized instruments and generated a virtuous circle in several of the region's economies (ECLAC, 2003).

II

Foreign banks: microeconomic efficiency versus macroeconomic effectiveness

This section analyses the impact that foreign banks have had on microeconomic efficiency and macroeconomic effectiveness, particularly in terms of solving the problems that have traditionally afflicted the Latin American financial system. This obviously has consequences for the financial constraints facing firms and the stability of the regional banking system. The microeconomic indicators presented here are not very different from those used in other studies, since they compare the performance of foreign and local banks in terms of profitability, efficiency and liquidity. To simplify, we refer to this as the microeconomic efficiency of the banking system. Despite their limitations, these indicators are normally used to evaluate the way in which banks are operating, and their degree of risk exposure. The counterpart at the aggregate level would be macroeconomic effectiveness. To study this aspect, we analyse access to credit by the productive sector and families, together with the corresponding interest rates and spreads, and the contribution made by the banking system to stability.

As is true of most economic analysis, the step from micro- to macroeconomic performance is not a direct one. Nonetheless, some of the results presented below suggest that the microeconomic efficiency of the regional banking system increased during the 1990s, thanks partly to the role played by foreign banks. In the

macroeconomic domain, however, cost of and access to credit and stability all failed to improve. This section attempts to explain this paradox.

1. Microeconomic efficiency

Three indicators in particular can be used to compare the performance of banking institutions: profitability, efficiency and liquidity. Given that the foreign banks only gained a strong presence in Latin America in the late 1990s, the analysis considers the period 1997-2001. The data cover the 20 largest institutions in terms of total assets in the countries where international banks were mainly concentrated: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. The 20 largest banks generally encompass over 80% of the system.

When evaluating microeconomic performance, it must be remembered that the local banking system has faced strong competition from foreign banks in their drive to gain market share. This has certainly forced the local players, especially the larger ones, to become more efficient. On this point, it is interesting to consider not only the average performance trend for the two groups, but also the deviation from the mean, since this

can be used as an indicator of the capacity of small entities to incorporate new technologies and raise their performance in a more competitive environment.

a) *Indicators of profitability*

Taking Latin America as a whole, there are no statistically significant differences in profitability between local and foreign banks² (table 4), whether measured as the return on assets or as the return on equity. A similar analysis for each individual country confirms this result. After acquiring local institutions, foreign banks took a series of measures, which will undoubtedly enhance efficiency and profitability in the future, although possibly raising costs in the short run. In strategic terms, these banks are just beginning to move out of a positioning phase towards one of

increasing profitability.

Additional confirmation of the scant difference in profitability between local and foreign banks, whether measured in relation to assets or with respect to capital, is the similarity of their period-to-period trends, which display a very high correlation – 0.74 on average for the entire set of countries.³ Nonetheless, variance analysis reveals less dispersion among foreign banks than in local ones: profitability varies more among local institutions than among their foreign competitors, as is verified by the available statistics, especially in Argentina, Chile and Mexico. This is probably because local banks are considerably more heterogeneous than their foreign counterparts in terms of size, liquidity, target markets and managerial and technological structures.

TABLE 4

Latin America (seven countries): indicators of the profitability of local and foreign banks, 1997-2001

Country	Return on assets						Return on equity					
	Local banks			Foreign banks			Local banks			Foreign banks		
	1997-2001	1997	2001	1997-2001	1997	2001	1997-2001	1997	2001	1997-2001	1997	2001
Argentina	0.79	0.33	1.78	0.30	-0.72	0.29	3.06	2.49	5.87	6.03	2.13	7.43
Brazil	0.90	1.04	0.49	0.71	0.20	0.60	12.30	13.08	5.26	8.47	0.23	7.17
Chile	0.81	1.85	0.99	0.57	0.38	0.72	13.11	12.38	15.82	10.45	6.34	14.17
Colombia	-0.11	1.33	1.03	-0.63	-0.11	0.15	7.43	8.18	9.79	1.35	-2.65	0.15
Mexico	1.16	0.60	2.45	1.21	1.09	1.82	6.88	0.48	9.36	11.20	7.64	19.29
Peru	0.76	0.70	1.18	0.37	-0.20	0.21	7.77	10.63	6.86	4.48	0.29	3.70
Venezuela	2.20	2.19	2.20	1.92	2.11	n.a.	14.94	20.66	2.56	16.24	15.74	.

Source: Prepared by the authors on the basis of Latin Banking Guide & Directory (2002).

TABLE 5

Latin America (seven countries): indicators of the efficiency of local and foreign banks, 1997-2001

Country	Overdue loans/gross loans						Operating expenses/total income					
	Local banks			Foreign banks			Local banks			Foreign banks		
	1997-2001	1997	2001	1997-2001	1997	2001	1997-2001	1997	2001	1997-2001	1997	2001
Argentina	10.86	13.01	12.06 ^a	5.92	5.80	6.01	79.91	102.1	21.9	85.13	163.9	19.06
Brazil	10.29	5.84	14.13	4.68	1.91	7.37	79.74	84.4	76.3	93.10	115.9	67.2
Chile	1.58	0.97	1.82	1.03	0.37	1.31	82.80	77.9	69.8	65.03	63.7	62.9
Colombia	8.01	5.54	3.96	6.10	4.91	3.69	102.79	82.1	64.6	125.29	92.4	74.5
Mexico	6.17	6.21	6.43	1.96	1.48	2.09	108.59	102.4	73.2	90.27	86.0	63.7
Peru	6.78	4.61	7.70	6.43	4.91	6.36	91.67	83.7	78.2	114.78	106.4	84.9
Venezuela	7.02	3.42	12.15	6.59	2.05	.	73.86	65.3	70.9	75.26	72.0	.

Source: Prepared by the authors on the basis of Latin Banking Guide & Directory (2002).

^a 2000.

² This is measured by the probability of overlap between the confidence intervals of the means. The confidence interval considers the standard deviation with respect to the mean of each group, thereby taking into account in the comparison not only the mean value, but also its dispersion (see table A.1 of the Appendix).

³ The correlation is very low for Argentina, however, and negative in the case of Peru. Brazil, Chile, Colombia, Mexico and Venezuela register correlations that range between 0.46 and 0.92

b) *Indicators of efficiency*

The analysis in this case is based on two indicators normally used by banking regulators: i) operating expenses in relation to total income; and ii) overdue loans as a percentage of the total loan portfolio. The first of these indicators measures operating efficiency, while the second is a fairly crude approximation to the quality of risk management (table 5). Analysis of the data reveals an interesting initial result, namely a general improvement in the operational efficiency of local banks during the period studied. In six of the seven countries, both foreign and local banks significantly reduced their ratio of operating expenses to total expenditure.⁴ Most of this efficiency improvement has occurred since 2000, which suggests that it may be linked to processes of operations rationalization, optimization of human resources, and the incorporation of new technologies and technological platforms that the banking industry is embarked upon. In Argentina, notwithstanding the financial crisis, efficiency improved continuously between 1997 and 2001 in local and foreign banks alike. In Brazil, on the other hand, the efficiency of local banks remained relative stable, before increasing slightly during 1999-2001, while the foreign banks registered a more substantial improvement. In Colombia, Mexico and Peru, efficiency trended steadily upwards from 1999 onwards in both types of banks.

Although in terms of overlapping confidence intervals there are no statistically significant differences in risk management between local and foreign banks, the coefficient is always lower among the latter. Unlike their local counterparts, foreign banks maintained a relatively healthy loan portfolio on average throughout the period under analysis. This should not be surprising, because most foreign banks were embarked upon an aggressive policy of loan restructuring when they began activities in Latin America, as a key element of their positioning strategy in the region. The policies of SCH (Banco Santander Central Hispano) and BBVA (Banco Bilbao Vizcaya Argentaria) in Argentina, Brazil, Chile and Mexico are clear examples of this. Comparing data over time, however, the percentage of non-performing loans in the total portfolio of each country shows no sign of

decreasing. This is true for national and foreign banks alike, and is explained by the worsening macroeconomic situation in the region, which has resulted in many firms and families falling into payment arrears, despite the banks' efforts to improve risk management.

c) *Indicators of liquidity*

The liquidity indicator chosen here is the effective availability of loanable funds - understood as the difference between total credits and provisions for non-performing loans- over total deposits: thus, liquidity indicator = (total credits – provisions)/total deposits

The larger this difference, the greater is the risk being incurred by the bank; and, conversely, the smaller the difference the more cautious is its strategy. This is because the variation in loans reflects the bank's level of indebtedness; but a larger provision against non-performing loans indicates either that the bank is subject to more stringent regulatory constraints or simply that it expects loan recovery to be more difficult.

The liquidity situation differs across countries (table 6 and figure A.1 of the appendix). In Brazil, for example, foreign banks were more liquid than local ones throughout the period, and increasingly so in 2000 and 2001; but at the same time, the liquidity of foreign banks in Brazil is the most heterogeneous of the region. Thus, while liquidity is higher on average among foreign banks than among local ones, the dispersion is so great that it is hard to draw aggregate conclusions, which therefore weakens the initial argument. The opposite is true of Chile and Mexico, since local banks have a liquidity index that is both higher and more stable (smaller standard deviation).

Another interesting phenomenon is the sharp drop in liquidity registered among foreign banks following the Asian and Russian crises. In Argentina this indicator declined steadily from 1997 to 2001 for all types of banks, with no major differences between local and foreign players. Given that, in general, all banks have seen their loan portfolios deteriorate, it is hardly surprising that they have adopted a more prudent policy. Rather than changes in ownership, this attitude seems to reflect a more uncertain economic climate, which leads us to the final point in the analysis, namely, the macroeconomic effectiveness of foreign banks in the region.

⁴ In Chile, foreign banks have been much more efficient than their local counterparts. Nonetheless, competition in the market has forced local banks to cut costs, so this indicator has shown a persistent narrowing of the gap each year, to the point where the difference in 2001 was no longer statistically significant.

TABLE 6

Latin America (seven countries): Effective availability of loanable funds in relation to total deposits, as a liquidity indicator, 1997-2001
(Percentages)

	Local banks			Foreign banks		
	1997-2001	1997	2001	1997-2001	1997	2001
Argentina ^a	84.5	97.0	90.9	91.9	93.9	82.1
Brazil	95.2	102.1	71.9	201.5	163.8	167.3
Chile	111.6	118.3	108.7	95.2	139.6	85.2
Colombia	142.0	105.5	128.9	192.9	112.2	208.1
Mexico	106.9	108.2	132.9	74.9	90.0	44.1
Peru	134.0	113.2	118.2	130.2	165.7	95.4
Venezuela	74.2	66.1	107.5	68.5	73.4	...

Source: ECLAC, on the basis of Latin Banking Guide & Directory (2002).

^a In the case of Argentina, the figures are for 2000.

2. Macroeconomic impact

The microeconomic analysis shows that while foreign banks do not differ significantly from local ones in an operational sense, they do act much more prudently in assessing and managing risk, and they make significantly higher provisions against losses than local banks do. This is a genuine benefit for the region. Nonetheless, a microeconomically sounder banking system is not necessarily better, *per se*, for economic development. Greater macroeconomic effectiveness would be obtained only if foreign banks were indeed helping to improve (or mitigate) bad credit conditions—in other words, if they improved the existing supply, cost and maturity conditions of financing. Despite constraints arising from data availability and the period of analysis, the present section attempts to evaluate this.

a) Foreign banks and the aggregate supply of credit

The strengthening of international banks in Latin America in the late 1990s coincided with a period that was particularly unfavourable for the expansion of banking activities, due to slower growth and the instability that followed in the wake of the Asian crisis. Powerful external shocks (financial problems and a loss of trade momentum), compounded by the corresponding domestic responses, nearly always resulted in monetary tightening. Given the wider spreads and higher capital costs that such policies usually entail, a vicious circle tends to be generated between credit and risk (because of greater insolvency), and the banks necessarily become more conservative. In some coun-

tries, such as Argentina and Ecuador, the period was also characterized by banking crises.

It is no surprise, therefore, that in many Latin American countries the deepening process among private-sector banks (expansion of credit to broader sectors of the population) has stalled since 1997. As shown in figure 1, which considers seven countries, the ratio of private credit to GDP was lower in 2001 than in 1998 everywhere except Chile; and in 1998 it was already far below the level prevailing in most other developing countries (let alone developed ones). Indeed, the credit standstill seems even more worrying in view of the average interest rates being charged on loans in those countries (see table 7), because part of the variation in loans consists of existing credit being renewed (rollovers). A situation where the rate of variation in loans is less than the average interest rate charged in the system could be an indication of effective contraction in the supply of credit; in other words, the volume being rolled over does not include the payment needed for debt service, so the effective availability of financing for expenditure is correspondingly less. In 2001, there were signs of this phenomenon in several countries of the region (ECLAC, 2002).

In some countries the situation is particularly alarming. In Mexico, for example, the real supply of credit has fallen almost continuously since the “tequila crisis” of 1994, dropping from 35% of GDP in that year to about 10% in 2001, as the banks have been engaged in an ongoing process of writing off the large number of impaired loans. In that country, a substantial proportion of the financing of domestic activity consists of supplier credits and foreign loans. Moreover, the restructuring of the banking system led to a vigorous entry of foreign banks (see box 2), as a

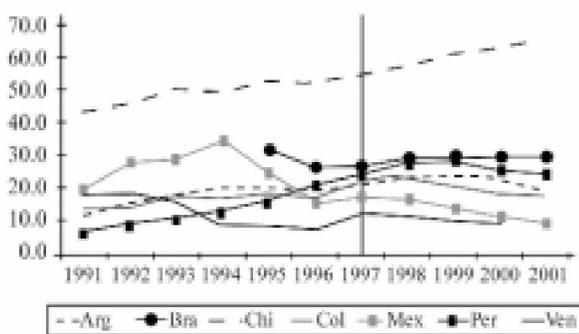
result of which Mexico has recently become the country with greatest foreign participation in the region. Even so, given the negative impact of the retrenchment in the United States economy, bank credit is not showing signs of recovery.

The situation in Argentina was highly unsatisfactory even before the upheaval of 2001. Lending began to stall in the period between the Asian and Russian crises, and the situation worsened during the ensuing years. Between 2000 and 2001, lending fell by nearly

18%, and the system collapsed completely following the ending of the convertibility regime and the implementation of the freeze on bank deposits known as the "corralito". In general, the credit standstill is directly related to a more cautious attitude among the banks, especially foreign ones. If one considers the portfolio distribution of the banks in the region, the credit crunch is not surprising: in three countries (Argentina, Brazil and Chile), there was a reduction in the share of loans in total bank assets, local and foreign alike, reflecting the fact that banks sought lower-risk assets, such as government bonds. In Mexico and Colombia, loans declined in relation to total assets in local banks, but not in the case of their foreign counterparts.

FIGURE 1

Latin America: Ratio of credit to GDP, 1991-2001
(Percentages)



Source: ECLAC, on the basis of IMF (2002).

TABLE 7

Latin America: Variation in lending to the private sector in constant 1998 values and real interest rates, 1997-2001
(Percentages)

	Real variation in credit		Real interest rates on loans		
	1997-2000	2000-2001	1997-2000	2000	2001
Argentina	1.4	-17.6	11.0	12.7	27.0
Brazil	11.4	14.4	66.6	48.1	46.4
Chile	6.8	9.1	11.0	9.7	9.5
Colombia	-1.5	12.9	16.1	9.5	12.4
Mexico	-4.2	-7.5	9.6	9.4	8.6
Peru	4.2	-2.6	23.8	23.2	21.4
Venezuela	0.2	26.4	6.1	11.2	9.0

Source: ECLAC, on the basis of IMF (2002).

Box 2

FOREIGN BANKS DOMINATE THE MEXICAN BANKING SYSTEM, BUT CREDIT FAILS TO RECOVER

The Mexican banking sector was reprivatized in the early 1990s, in a process involving Mexican shareholders. As the legislation of that time did not allow more than 20% foreign ownership of banks, international financial corporations chose to maintain a presence exclusively through representation offices. The new owners of the banks came from the management of Mexican stock market firms; their experience in lending and risk analysis was virtually non-existent. This, compounded by regulation and supervision shortcomings, magnified the financial crisis and economic recession that befell the country in late 1994 and 1995. The need to recapitalize the banking system, together with the signing of the NAFTA agreement, provoked major institutional changes in the Mexican financial system, including the removal of obstacles to the entry of foreign banks. By signing up to NAFTA, Mexico had undertaken to open up the financial sector to international competition (albeit in different ways for different intermediaries), and this meant participation by foreign capital in local banking institutions. The process occurred in two stages; until 1998 foreign ownership of a bank's equity was limited to 50%; but thereafter the limit was completely lifted, thereby fully liberalizing the sector.

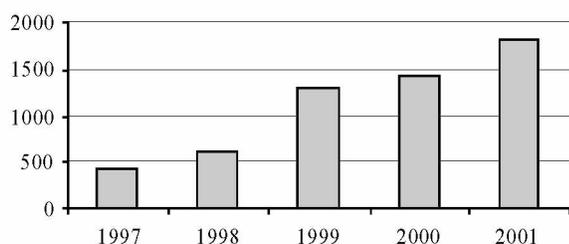
Opening-up occurred as part of a general restructuring of the banking sector, which had been severely weakened by the "tequila crisis" and by a massive non-performing portfolio. To promote capitalization of the banking sector, the State took over the non-performing portfolio amounting to some US\$ 120 billion. This was managed by the Bank Savings Protection Fund (FOBAPROA), which subsequently became the Bank Savings Protection Institute (IPAB). The fund was recognized as public debt guaranteed by the State, on which the latter paid interest of the order of 40% per year until late 2000 – firstly to local banks and then to foreign ones. The sale of local banks to foreign banking institutions involved large volumes of foreign exchange. In 2000, BBVA paid US\$ 1.75 billion to acquire Bancomer. Its rival, BSCH, purchased Serfin for US\$ 1.56 billion in 2001, and Citigroup paid US\$ 12.5 billion for Banco Nacional de México (BANAMEX). The final entrant, HSBC Holdings, paid US\$ 1.14 billion in August 2002 for the Bital financial group, the fourth-largest player in the Mexican financial system. As these monies went straight into the hands of the banks' former shareholders, the process did nothing to reduce the bank debt which the State had had to assume in order to bail out the system.

Foreign banks have also had access to cheaper funds than those mentioned above, but this did not result in credit expansion or lower costs for Mexican firms. The fact that domestic banks have been acquired by foreign institutions has not altered their oligopoly status or risk-aversion, and they continue mainly to live off high yields obtained on risk-free assets, such as public bonds. This means that their rent-seeking relationship with the State has not changed. Bank profits grew rapidly following their acquisition by foreign institutions (see figure 2). Although the yield on public bonds has fallen sharply (in 2002 it dropped below 10%), instead of lending to firms or families, the banks have raised their service commissions to shore up their profitability. This partly explains why credit has ground to a standstill in Mexico: the change of ownership in the private bank sector has not stimulated greater competition, and banks have accommodated their strategy to portfolio-allocation and risk-evaluation practices that discourage lending. The recession of recent years, compounded by doubts that bankruptcy legislation would be effectively enforced, have been powerful motives for banks not to alter their behaviour.

Source: Prepared by the authors.

FIGURE 2

Mexico: Net income of the banking system, 1997-2001
(Millions of dollars)



Source: Prepared by the authors on the basis of Latin Finance (2002) and Latin Banking Guide & Directory (2002).

b) *Spreads and the cost of credit*

With regard to bank intermediation, although spreads actually narrowed between 1997 and 2001 in nearly all the Latin American countries, spreads have remained large, resulting in average interest rates that are far above international levels. In Brazil, for example, spreads remain above 30%, with lending rates over 45%, despite the central bank having implemented an explicit policy since 1999 to reduce spreads through lower compulsory reserve requirements and measures to increase competitiveness and transparency,

among others. Despite the significant increase in foreign-bank participation in the region, only two of the seven countries analyzed (Chile and Venezuela) had spreads no larger than 6% in 2001; but even this was far above the averages in OECD and Asian countries.

Except for Brazil, there are no figures that distinguish foreign and local banks in terms of spread, although the signs are that they are quite similar. In Brazil, spreads among local and foreign banks are not only very similar, but they also follow the same time trend. Although the increase in spreads is a reaction to higher risk stemming from macroeconomic instability, this is unrelated to the increase in overdue loans or in the reserves made by the banks. As shown in table 9, in at least three countries (Brazil, Chile and Venezuela) local banks made smaller provisions against the non-performing portfolio in 2001 than the average for the period 1997-2001; the same is true of foreign banks in Brazil and Chile. To summarize, the entry of foreign banks has not had a very significant effect on the cost of capital, since this responds more to the macroeconomic climate than to differences in cost management, for local and foreign players alike. Foreign banks seem to be adapting to the regional reality rather than imposing their own dynamic on the determination of capital costs.

TABLE 8

Latin America (15 countries): Bank intermediation spreads, 1997-2001

Country	Deposit rates		Spreads		Lending rates	
	1997	2002	1997	2002	1997	2002
Argentina	7.0	40.9	2.1	10.8	9.2	56.2
Bolivia	14.7	9.3	30.8	10.5	50.1	20.8
Brazil	24.4	18.6	43.3	36.2	78.2	61.5
Chile	12.0	3.9	3.3	3.8	15.7	7.9
Colombia	24.1	9.2	8.1	6.8	34.2	16.5
Costa Rica	13.0	11.3	8.4	13.5	22.5	26.3
Ecuador	28.1	5.4	11.7	9.2	43.0	15.1
Guatemala	5.8	7.0	12.1	9.3	18.6	16.9
Honduras	21.3	14.1	8.9	7.7	32.1	22.9
Mexico	14.7	2.9	8.6	6.3	24.5	9.3
Panama	7.0	5.0	3.4	5.2	10.6	10.5
Paraguay	13.0	22.5	13.1	9.4	27.8	34.0
Peru	15.0	4.1	13.0	10.2	30.0	14.7
Uruguay	19.6	33.5	43.4	64.9	71.6	120.1
Venezuela	14.7	29.3	7.8	5.9	23.7	36.9
Simple average Latin America	15.6	14.5	14.5	14.0	32.8	31.3
Weighted average L. America	18.6	14.6	21.6	18.4	45.0	36.3
Simple average OECD ^a		0.1		3.7		3.8
Simple average Asia ^b		1.9		3.5		5.4

Source: Prepared by the authors on the basis of IMF (2002).

^a Sample includes Germany, Italy, Japan, Netherlands, Spain, Switzerland and the United States.

^b Sample consists of Indonesia, South Korea, Malaysia, Philippines, Singapore and Thailand.

TABLE 9

Latin America: Ratio between provisions for doubtful loans and non-performing loans, 1997-2001

	Local banks			Foreign banks		
	1997-2001	1997	2001	1997-2001	1997	2001
Argentina	2.68	0.72	4.22	1.90	0.75	5.13
Brazil	1.43	1.67	0.74	1.58	1.83	0.62
Chile	2.14	2.71	1.76	2.69	2.85	1.57
Colombia	0.78	0.48	2.05	0.98	0.54	1.84
Mexico	1.84	1.27	2.75	2.47	1.00	1.59
Peru	1.18	1.37	1.42	1.21	1.01	1.43
Venezuela	1.67	2.45	1.39	1.82	2.03	...

Source: Prepared by the authors on the basis of IMF (2002).

c) *Stability of the banking sector*

To evaluate the impact of foreign banks on the macroeconomic effectiveness of regional banking systems, a different criterion is useful, namely stability. Before the arrival of foreign banks, much was said about their likely beneficial effect in terms of making the system less fragile. At least three arguments were deployed: i) foreign banks would have more sophisticated risk-management systems, based on more rigorous supervision by the authorities in their countries of origin; ii) they would be less vulnerable to the region's domestic cycles, because their effective exposure to them would be relatively small in relation to their broad global diversification; and iii) local subsidiaries of foreign banks would always be able to rely on their parent companies in the event of abrupt swings in liquidity.

Considering only indicators of risk management and provision against losses, clearly the foreign banks must have contributed to a sounder banking system. Nonetheless, as Stallings and Studart (2001) indicate, the violent macroeconomic shocks of recent years rendered even the most sophisticated monitoring and risk-management systems ineffective. In fact, in highly unstable macroeconomic situations, such systems may even aggravate risk, given their well-known pro-cyclical properties.⁵ Accordingly, it is not surprising that foreign banks, which in general have more sophisticated (and more conservative) risk evaluation systems than

their local counterparts, end up reacting to economic cycles in a much more accentuated fashion.

As regards the argument that the global diversification of foreign banks has positive effects on stability, the other side of the coin is that these banks are much more sensitive than local ones to expectation shocks originating in the advanced economies. For that reason, just as international banks have reduced their exposure to the region's economies (BIS, 2001a), their local subsidiaries have adopted an increasingly cautious stance.

Lastly, in response to the argument that foreign banks can count on unconditional support from their parent companies at times of liquidity loss, two comments need to be made. Firstly, the possibility of supporting their subsidiaries is compromised by the fact that the parent company has to maintain in its country of origin a level of capital compatible with the weighted risk of its assets. This is because episodes of financial crisis in an emerging country are usually reflected in its "country-risk" rating, and any contribution from the parent company has to represent an expansion of its global capital. As seen recently in the Argentine crisis, this places severe restrictions on the ability of parent companies to supply funds at times of major macroeconomic uncertainty and/or liquidity crisis in emerging economies. Secondly, there are provisions in financial-system regulations that prohibit supporting the liquidity of an ailing subsidiary under certain circumstances. For example, legislation in the United States⁶ establishes that a bank is not obliged to pay deposits made in a subsidiary abroad, if it is unable to do so because: a) a state of war, insurrection or civil revolt exists; or b) because it is prevented by an action or instrument of the government of the host country, undertaken without explicit written agreement with the bank. This law was added to the existing legislation in 1994, after Citibank was taken to court by depositors in the Philippines and Vietnam and lost the respective cases.

In short, the macroeconomic effectiveness of the banking system is profoundly damaged by the current macroeconomic climate, which is extremely unfavourable for banking activity. This climate generates a more cautious attitude on the part of the banks, which in turn leads to a credit standstill, maintenance of

⁵ As Borio, Farfina and Lowe (2001) show, the pro-cyclical nature of the banking system, stems from the fact that most risk evaluation systems work with a horizon that is too short to accurately determine default risks and correctly value the financial and real assets used as collateral. Accordingly, at times of economic retrenchment, risk indicators tend to rise very sharply, while the values of the assets posted in guarantee decline. As a result of these two movements, the banking system as a whole tends to behave more

cautiously, leading to a credit contraction (or slowdown in its growth), which, in turn, ends up generating a vicious circle. As the macroeconomy becomes more volatile, credit risk is evaluated more cautiously, which intensifies the pro-cyclical nature of the system.

⁶ See section 25C of the Federal Reserve Act (section 326 of the Riegle-Neal Interstate Banking and Branching Efficiency Act, codified in 12 U.S Code section 633).

very large spreads and a shortening of loan maturities. In order to avoid greater losses arising from macroeconomic instability in the region (especially in countries that suffered currency crises

similar to that in Argentina), foreign banks adopt a more conservative stance, which entails maintaining high liquidity and therefore relatively low lending levels.

III

Conclusions

The major presence of international banks in Latin America during the 1990s partly reflected their strategy of seeking markets throughout the world, and partly reflected changes in the economic climate and institutional context in the region. Regional penetration has produced costs and benefits, both for banking investors and for the financial systems concerned. In terms of benefits, until 2001 when the Argentine crisis broke out, foreign banks grew on a sustained basis, gaining a significant share of domestic banking systems, ranging from 34% in Colombia to 90% in Mexico in 2001. A decade earlier, Chile had been the country with greatest foreign participation, but this accounted for less than 20% of the market at that time. In addition, the profitability of foreign banks' activities in the region was growing, whether measured by the return on assets or the return on equity; in some cases it exceeded the bank's overall rate of return. At the same time, the foreign banks were expanding their participation in the capital market, especially in pension-fund management, one of the most attractive businesses for financial institutions.

The costs arose from various sources, including the region's instability and its vulnerability to external shocks and currency crises; in many cases foreign banks also underestimated the local competition (Brazil is a good example of this). The Argentine crisis clearly marked the turning point in their expansion strategy, although the cost of this crisis depended on the importance of Latin America and particularly Argentina in the bank's global business. At one extreme are the Spanish banks, whose interests in the region represented between 26% and 29% of their total assets. At the other are banks that only expanded in the treasury management or corporate banking segments. In the middle is Citigroup, whose global diversification prevented it from being seriously affected by the deterioration in regional conditions, notwithstanding its by no means negligible interests in the region (7% of total assets).

The analysis also shows that while foreign banks do not differ significantly from local ones in terms of operating efficiency, they do act more cautiously in the evaluation and management of risk. Nonetheless, the fact that there is no statistically significant efficiency difference between local and foreign banks does not mean they have not had a positive impact in the region. Clearly, the competition generated by the entry of foreign banks has galvanized efforts by local banks to cut costs and enhance profitability, in order to protect themselves from being driven out of the market. In fact, despite the oligopolistic nature of the industry, competition nowadays between large local banks and foreign ones is very strong. The interesting thing about the financial sector is that all competitors have access to state-of-the-art technology. As this is relatively cheap, it is not exclusive to foreign banks, thanks to progress made in information and communication technology, which the financial system uses particularly intensively. Nonetheless, with few exceptions –Chile being one– the cost reduction generated by technological progress has not been passed on in the form of cheaper financial services either for firms or for individuals. Worse still, it has also failed to improve access to credit for firms.

Accordingly, the positive outcome for the region in terms of microeconomic efficiency stands in contrast to the macroeconomic impact (the effectiveness of foreign-bank participation in the system), as measured by the conditions under which credit is extended, the availability of business financing, and the stability of the system. The analysis leads to the conclusion that foreign banks have not had a significant effect at this level: they are more cautious than their local counterparts when extending credit, and their response to crises is clearly pro-cyclical, all of which intensifies the effects of monetary tightening. Despite management efficiency, interest-rate spreads only narrowed in four of the seven countries analyzed, and even in those they remained extremely high – way above rates in

Asia, not to mention those in OECD countries. Spreads have reacted more to the macroeconomic environment than to differences in cost management, and foreign banks seem to be adapting to the national reality in this respect, rather than imposing their own dynamic on the cost of capital.

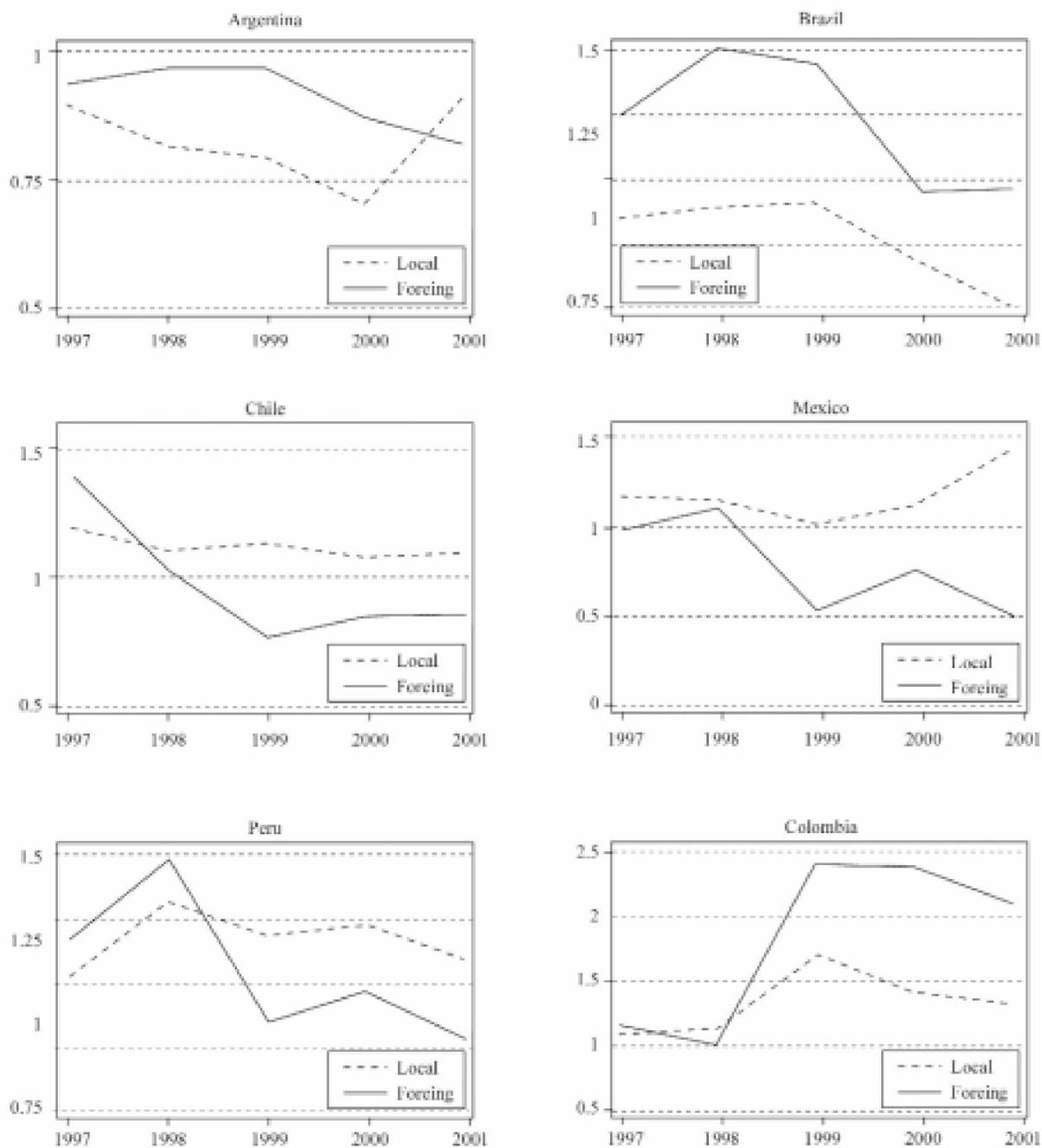
Lastly, in terms of reaction to systemic crises, the experience of recent years has shown that the behaviour of transnational corporations towards their subsidiaries and branches depends on a number of

factors: the institutional framework in the corporation's country of origin; the institutional framework in the host country; and steps taken by the local authorities during the crises. In practice, the parent companies of international banks cannot be considered lenders of last resort; their behaviour at times of crisis has depended on the nature of the problems the banks were facing in the host country and the type of establishment in question.

Appendix

FIGURE A.1

Latin America (6 countries): Trend of liquidity index in each country, by type of bank, 1997-2001



Source: Latin Finance (2002).

TABLE A.1

Latin America (seven countries): Confidence in the region, by profitability indicators, 1997-2001^a

Country	Return on assets		Return on equity	
	Local banks	Foreign banks	Local banks	Foreign banks
Argentina	0.25 ~ 1.32	-0.16 ~ 0.77	-2.35 ~ 8.48	3.43 ~ 8.62
Brazil	0.57 ~ 1.23	0.44 ~ 0.98	9.52 ~ 15.07	4.35 ~ 12.59
Chile	0.64 ~ 0.98	0.45 ~ 0.68	10.55 ~ 15.67	8.16 ~ 12.74
Colombia	-1.02 ~ 0.78	-0.57 ~ 0.75	3.95 ~ 10.91	4.74 ~ 11.75
Mexico	0.48 ~ 1.83	0.78 ~ 1.64	3.43 ~ 10.32	7.86 ~ 14.53
Peru	0.34 ~ 1.17	0.13 ~ 0.90	5.39 ~ 10.1	2.21 ~ 8.86
Venezuela	1.65 ~ 2.74	1.77 ~ 2.97	12.36 ~ 17.01	11.63 ~ 19.22

Source: ECLAC, on the basis of Latin Banking Guide & Directory (2002).

^a 95% of confidence.

TABLE A.2

Latin America (seven countries): Confidence in the region, by efficiency indicators, 1997-2001^a

Country	Overdue loans /Gross loans		Operation expenses/Total income	
	Local banks	Foreign banks	Local banks	Foreign banks
Argentina	63.1 ~ 96.1	66.7 ~ 103.4	8.2 ~ 13.3	4.6 ~ 7.2
Brazil	75.4 ~ 85.0	75.6 ~ 110.8	7.1 ~ 13.4	3.3 ~ 6.0
Chile	74.4 ~ 91.1	57.0 ~ 73.0	1.2 ~ 1.9	0.7 ~ 1.2
Colombia	87.4 ~ 118.1	82.2 ~ 140.3	6.3 ~ 9.6	4.6 ~ 7.6
Mexico	80.8 ~ 136.3	79.6 ~ 101.4	4.6 ~ 7.6	0.9 ~ 2.9
Peru	87.0 ~ 96.2	84.6 ~ 110.1	5.5 ~ 8.0	5.3 ~ 7.3
Venezuela	70.0 ~ 77.6	69.9 ~ 80.5	4.5 ~ 9.4	3.1 ~ 5.4

Source: ECLAC, on the basis of Latin Banking Guide & Directory (2002).

^a 95% of confidence.

(Original: English)

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A proposal for unitary taxes on the profits of transnational corporations

Andrew Mold

Foreign direct investment (FDI) in developing countries has been increasing at an unprecedented rate, and the profitability of the operations of the investing firms in poor regions like Sub-Saharan Africa is extraordinarily high. Yet at the same time there is growing evidence that transnational corporations (TNCs) are paying less and less in terms of tax. The developing countries in particular have suffered from this—it has been estimated that developing country governments lose at least US\$35 billion a year of revenue through tax avoidance practices. This paper presents empirical evidence and a proposal for applying a unitary tax system on the profits of TNCs. Such a system would eliminate one of the most powerful mechanisms at the disposal of TNCs for illegally avoiding tax payments—transfer pricing. The paper concludes by arguing that a proposal for a unitary tax system on a worldwide basis may be sufficient to unblock the negotiations on a multilateral investment code.

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I

Introduction

After a lost decade of structural adjustment and reductions in government expenditure, there is a growing acknowledgement that developing countries should be searching for new sources of revenue. It has recently been estimated, for example, that there is a shortfall of up to US\$80 billion per year in developing countries between what is spent and what should be spent to ensure universal access to basic health and education (Mehrotra, Vandemoortele and Delamonica, 2000). Yet as a result of continuous pressure from the international financial institutions to reduce expenditure, the capacity of the State to provide such services has been seriously weakened in many regions.

Indeed, in some countries revenues are so low that the State is in danger of disintegrating. In Guatemala, for instance, State expenditure currently barely reaches 10% of GDP, and the government has apparently given up any pretence of meeting its obligations with regard to the provision of basic social services, shifting its responsibilities onto the NGO sector: a role which NGOs are obviously ill-equipped to fulfill. In a similar vein, commenting on the case of Mexico, the ex-President of Uruguay Julio María Sanguinetti recently asked “how is it possible to carry out social programmes in Chiapas when the fiscal pressure of the Mexican State is equivalent to only 10% of GDP?”¹ The irony is that these trends have coincided with a growing consensus on the need to build up State and institutional capacity if any progress is to be made in the eradication of poverty. Increasingly, the international financial institutions and many donor governments are putting emphasis on “getting the institutions right” and attaching “governance-related conditionalities”, but there seems to be little predisposition towards finding new ways to provide the necessary finance to support these changes.

In such a context, it seems only logical to place more emphasis on revenue-creating strategies. Ambitious proposals for taxes to help finance development such as the Tobin Tax have apparently fallen by the wayside, in part because of doubts about their effectiveness, and in part simply because of a lack of

political will to push the proposals through.² Little attention, on the other hand, has been paid to the possibility of increasing tax revenue through more efficient taxation of the operations of transnational corporations (TNCs). Foreign direct investment (FDI) towards developing countries has increased more than fourfold since the early 1990s (from an average of US\$ 47 billion between 1988-1993 to US\$ 238 billion in 2000 (UNCTAD, 2002, Annex, Table B.1.). The growing globalization of international production confers enormous benefits on TNCs. Facilitated by liberalization and structural adjustment programmes, they have been able to enter new markets in developing countries, and have participated in privatization programmes, buying public assets often at highly favourable prices. Reflecting the opportunities available, and contrary to popular opinion, in developing regions profitability can be extraordinarily high. For example, data for United States companies reveal an average profit rate for operations in Sub-Saharan Africa in excess of 25% over the last five years (Mold, 2001). In other words, companies recover their initial investment in just four years. Clearly, globalization has been good for the largest TNCs.

Yet there are signs that the boom in FDI has been accompanied by a growing ability of TNCs to avoid tax payments in the jurisdictions where they have operations. Some of the evidence is anecdotal. For instance, a few years ago it was revealed that Newscorp Investments, a holding company with 101 subsidiaries owned by the Australian media tycoon Rupert Murdoch, had made £1.4 billion in profits since June 1987, but had paid no net British corporation tax at all (The Economist, 1999). The situation clearly has to be explained in terms of the company's extensive use of tax loopholes to shelter profits in tax havens.

Newscorp Investments is far from an isolated example. A systematic study in the United States (McIntyre and Nguyen, 2000) found that household names such as Goodyear, Texaco, Colgate-Palmolive, MCI WorldCom and eight other large corporations

¹ See *El país* 2001 p. 7.

² For a discussion of the practicalities involved see Haq Kaul and Grunberg (1996).

earned more than US\$12.2 billion in profits in the period from 1996-98, but none of them ended up paying corporate income taxes in the United States over the same period. Of the 250 large publicly traded companies analyzed in the study, a total of 24 owed no tax or received credits against past or future tax obligations in 1998, and 71 paid taxes at less than half the official 35% corporate rate during the three-year period. Similarly, a study by Altshuler, Grubert and Newlon (1998) on the effective tax rates paid abroad by large United States manufacturing affiliates revealed that average rates had fallen by more than 15 percentage points between 1984 and 1992.

Developing countries are particularly vulnerable to this type of tax avoidance strategies. Although the level of fiscal pressure is generally lower than in industrialized countries, they have far less institutional capacity to control tax evasion. Typically, they lack sufficient information from the parent company to be able to challenge transfer pricing and other forms of tax avoidance. Much of their FDI is located in sectors like the oil industry, electronics and forestry products, where the potential for tax avoidance is high. Because a considerable share of total developing country trade is under the control of TNCs, such countries are typically more vulnerable to tax avoidance practices through the over- or under- invoicing of imports and exports.

Moreover, in many developing countries a combination of low corporate taxes and the extensive use of tax breaks and tax holidays to attract foreign investment has meant that TNCs have reduced their tax liabilities dramatically. One of the most extreme cases is that of the 15 export processing zones/free trade zones set up in Honduras, where foreign firms have been granted permanent exemption from all taxes. But tax holidays of between 10-20 years are nowadays fairly commonplace in developing countries.³ Sri Lanka, for example, has 6 export processing zones (EPZs) which enjoy 10 to 20 year holidays for new large export projects or selected industries. These initiatives continue, in spite of an emerging consensus that, from a developmental perspective, these kinds of measures are ineffective or even counterproductive in the long run.⁴ These trends should force policy makers to consider

alternative methods of raising revenue. The existing system is clearly failing in terms of equity. This is true both from the point of view of what we could call internal and international equity- internal equity in the sense that within individual countries wage earners are increasingly having to finance through taxes the bulk of government expenditure, whereas internationally mobile capital is benefiting from a reduction in effective tax rates, and international equity in so far as there is evidence that tax income from TNC operations has been falling more rapidly in developing countries than in the industrialized countries. Indeed, the only “winners” in all this are the TNCs themselves and the tax havens with the lowest effective tax rates. Thus, whereas stocks of FDI for the world as a whole increased approximately ten-fold over the period from 1980 to 2000, the Cayman Islands experienced a more than 100-fold increase, to US\$24.9 billion. With a population of only 36,000, this represents a massive US\$700,000 of foreign investment per inhabitant. Similarly, Bermuda’s investment stock rose US\$10 billion in just one year, from 2000 to 2001, and now stands at a total of more than US\$66 billion. To put these figures in perspective, this is higher than the US\$50 billion investment stock for the whole of Japan and, for a population of just 64,000, represents more than US\$1 million per inhabitant (UNCTAD, 2002, Table B.3).

Beyond straightforward fraud, one of the principal ways in which TNCs manage to shift income towards low tax jurisdictions, and thereby reduce effective tax rates, is through transfer pricing. Transfer pricing involves manipulating the prices of intra-firm transfers of goods and services so as to lower tax liabilities in countries with high marginal tax rates, and increase profits in countries where the tax liability is correspondingly low. Over 80% of TNCs in one study admitted to facing a transfer pricing inquiry from local or foreign tax authorities at some point.⁵ Although it is illegal in principle, in reality transfer pricing is very hard for tax authorities to control. For many intra-firm transfers, it is very difficult for local authorities to establish a “correct” arms-length price. For instance, some types of components or intermediate products may be readily available on the open market, and thus it is relatively easy to compare the price paid by a subsidiary with the open market price. But other products may be specific to a particular company, and thus

³ A list of selected export processing zones in developing countries elaborated by UNCTAD (1999 Annex table A.IX.3) reveals a total of 16 EPZs with across-the-board tax exemptions. A further 15 EPZs enjoy a 10 to 20 year tax holiday.

⁴ See for instance the article by IMF economists Zee Stotsky and Ley (2002).

⁵ Lorraine Eden (1998) *Taxing Multinationals* University of Toronto Press p.635 cited by Giddens (2000:102).

impossible to value in terms of a “market price”. This leaves tax authorities with a dilemma. How should they estimate the “correct” price of a product traded between affiliates? These difficulties are compounded when one considers that TNCs share all kinds of managerial and innovative resources (e.g. patents). The intangible nature of these goods and services means that in practice it is impossible to assign costs accurately between affiliates. It is not surprising, then, that TNCs have considerable leeway to adjust intra-firm prices so as to reduce tax liabilities to a minimum. Notwithstanding all these difficulties, tax authorities cling to the principle that for tax purposes each affiliate of a TNC should be considered as an independent unit.

Of course, in reality it has always been a fiction to consider the subsidiaries of TNCs as free-standing entities. As Vernon (1998, p.40) has commented, “in the real world, the profit allocated to each country by a multinational enterprise commonly is an artefact whose size is determined largely by precedent and by the debating skill of lawyers and accountants.” In an increasingly globalized world, however, where subsidiaries become deeply enmeshed in the international network of the firm, this fiction is rapidly becoming unsustainable. As we shall go on to show, it is also a very costly fiction for the host countries.

This brief paper offers a proposal for a different system of taxing TNC profits: unitary taxes. Briefly, unitary tax systems involve using some notional allocation of global profits instead of the declared profits by individual subsidiaries. This makes sense because the objective of the TNC is to maximize group profits; company administrators are generally indifferent to where those profits show up within the multinational network. Under a unitary tax system, the amount of profit taxes to be paid in each country would be assigned according to some criterion such as the share of each subsidiary in global sales, employment or assets.⁶

⁶ There is a risk in including labour in formula apportionment. The imposition of a unitary tax system does not prevent different countries from imposing different corporate tax rates. Thus in countries with high relative corporate tax rates formula apportionment based on employment may provide a perverse incentive for TNCs to substitute capital for labour exaggerating a bias which already exists within the TNC because of its relatively cheap access to capital. Evidence on this point from the U.S. experience can be found in Goolsbee and Maydew (1998). Given the priority attached to employment creation in both developing and industrialized countries it may be better to base unitary taxes on an alternative indicator or a combination of different variables (see section IV).

Clearly, this kind of system would not avoid all forms of tax avoidance. Action would still need to be taken to counter the multitude of other (illegal) methods of tax evasion. Fraudulent accounting practices, like those evident in the WorldCom and Enron scandals in the United States, would still be a problem.⁷ But a unitary system would significantly reduce the capacity of TNCs to shift profits from one location to another at will. The system would have the advantage of greater transparency, and would help to increase the overall tax take, freeing up resources which could be used to help achieve developmental objectives such as the universal provision of basic health and education. Although they may be reluctant to admit it, such a system might even result in long-run benefits for the TNCs themselves, reducing the need for them to devote valuable managerial time and resources to finding ways of minimizing their tax bills, and instead allowing them to pay more attention to building up the competitive strengths of their companies.

⁷ Ironically of course both the Enron and WorldCom cases meant higher tax payments because they involved the artificial inflation of real profits - the losers in this case were principally the shareholders of the companies in question. For a prescient critical analysis of Enron's operations just before the scandal broke see Bayliss and Hall (2001).

II

Evidence of tax avoidance by TNCs

Studies on the determinants of foreign direct investment both in developing and industrialized countries reveal that TNCs generally value highly locations with good infrastructure, a well-educated workforce, high-quality social services, etc.⁸ These are all public goods which are best provided by governments. Yet, at the same time, TNCs appear to be increasingly reticent to pay their contribution towards financing these public goods. In the United States, for example, corporate income taxes as a percentage of gross earnings fell from over 40% at the beginning of the 1960s to an average of only 21.5% between 1990-1996 (Poterba, 1999, table 3).⁹ As a share of United States federal tax revenue, corporate income taxes provided 32% of total revenue in 1952, but by 1999 the figure was only 10% (Weisbrot, Naiman and Kim, 2000, p.15). For the Organization for Economic Cooperation and Development (OECD) as a whole, corporate taxes now account for only 8% of fiscal revenue, equivalent to just 3% of GDP (FitzGerald, 2001, p.7).

There are basically two channels through which globalization has facilitated such a big reduction in tax rates. Firstly, the growing importance of trade that takes place within the firm (i.e., between affiliates and the parent company) is enhancing the ability of firms with international operations to shift profits from one tax jurisdiction to another. Intra-firm trade now accounts for approximately a third of all world trade. This creates enormous problems for the national tax authorities, due to the use of “transfer prices” by TNCs and the likelihood that these enterprises manipulate these transfer prices to move profits to the jurisdictions where taxes are low. Moreover, as Tanzi (2000, p.18) observes, “under present tax arrangements this problem is likely to grow. The tax authorities of many countries are now worried about this

trend, but are often at a loss on what to do about it”.

The other means by which TNCs are managing to reduce their effective tax rates is the pressure on governments to reduce taxation on internationally mobile capital. Governments are increasingly putting policies into place to attract foreign investment. Since 1991, a further 58 nations have begun to apply investment promotion policies, making a total of 116 countries that now do so (Moran, 1998, p.37). One of the most popular measures for attracting foreign investment is the granting of tax concessions. As an International Labour Organisation (ILO) report comments, “in a world characterized by a decisive trend towards “globalization”, where liberalization of trade and capital flows has become increasingly prevalent, the temptation for nation-States to engage in “competitive de-taxation” and “competitive deregulation” is self-evident” (ILO, 1997, p.70). Indeed, there are growing fears that this process is degenerating into a damaging “race to the bottom”, whereby the tax base of States is gradually eroded and the remaining tax burden falls disproportionately on non-mobile factors (especially labour) (Kozul-Wright and Rowthorn, 1998; Radaelli, 1999).¹⁰

This trend is easily observable in statutory corporation tax rates. In the past, countries typically levied taxes on the net incomes of corporations at marginal rates ranging from 30% to 50% (Caves, 1996, p.189). Moreover, there was little difference in corporation tax rates between developing and industrialized countries. In contrast, nowadays there is evidence of a widening gap between OECD and developing country rates. Few developing countries apply corporate tax rates in excess of 20%. According to estimates by Oxfam (2000), if developing countries were applying OECD corporate tax rates their

⁸ An extensive review of econometric studies on the locational determinants of FDI is to be found in Mold (2000).

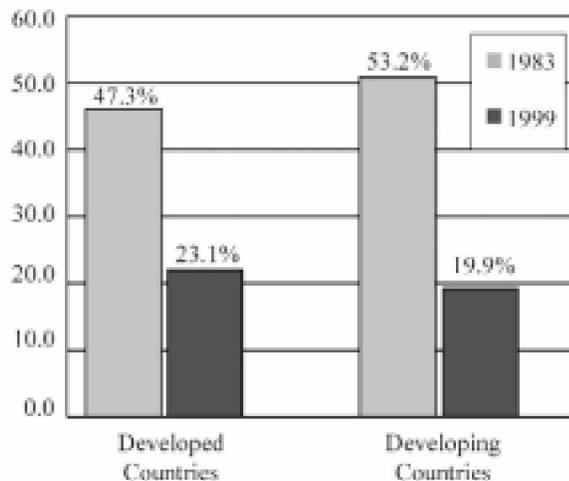
⁹ In the United States case at least it may be misleading to attribute this fall in corporate income tax rates to trends related to globalization: the main cause would seem to be the passing of the Economic Recovery Act of 1981 which resulted in a sharp decline in corporation tax rates (Poterba 1999 p.13).

¹⁰ Of course there is nothing new in these fears. In an article published back in 1974 entitled “Coming Investment Wars” Bergsten was particularly prophetic on this point: “Many investments are largely indifferent to location and hence close to zero-sum games; in such cases a decision that is one party’s gain is another party’s loss. Furthermore world welfare may actually decline as a result of some foreign investments such as those induced primarily by host-country tax preferences” (Bergsten 1974 p.145)

revenues would be at least US\$35 billion higher.¹¹ But the changes are even more notable when effective tax rates are calculated.¹² For instance, calculations carried out for this study on data for majority-owned subsidiaries of United States firms reveal that on a worldwide basis their average effective tax rates have fallen from 49.6% of pre-tax income in 1983 to a mere 23.3% in 1998 (see Annex and figure 1).

FIGURE 1

**Developed and developing countries:
Effective tax rates paid by United States
majority-owned affiliates, 1983 and 1999**
(Percentage)



Source: Prepared by the author on the basis of United States Department of Commerce data (see Annex).

¹¹ This figure was calculated using an estimated FDI inward stock for developing countries of US\$1219 billion. It was assumed that that stock gave a rate of return of 20% and the tax rate was set at a typical OECD rate of 35%. On that basis developing countries should be receiving tax revenues of around US\$85 billion a year from foreign corporations but they actually receive around US\$50 billion per year at most. As the authors of the study concede however this is likely to be an extremely conservative estimate as not only do official figures tend to understate the true value of FDI stock but also these figures fail to take account of the financial transactions of large firms.

¹² Effective tax rates are defined as the ratio of foreign income taxes to gross income (the sum of net income plus foreign income taxes). If a high nominal rate of corporation tax is accompanied by generous dispensations then a large discrepancy can appear between nominal and effective rates. From the point of view of the companies themselves what matters is obviously the effective rate.

Insofar as these figures probably substantially underestimate true pre-tax income, real effective tax rates are likely to be even lower. Moreover, whereas effective tax rates were marginally higher in developing countries than in the industrialized countries in 1983, by 1998 that relationship had been inverted, and effective rates were on average higher in developed countries (19.9% versus 23.1%).¹³ Another point which stands out from the figures calculated in the Annex is the large dispersion in effective tax rates. Thus, whereas in countries like Nigeria or Indonesia the effective tax rates in 1999 were 53.3% and 32.2% respectively, for Luxembourg, Bermuda, Panama or Switzerland the corresponding figures were only 2.5%, 2.8%, 0.5% and 5.7%. The incentive to shift pre-tax profits towards the latter tax jurisdictions is obviously very strong indeed.^{14, 15}

¹³ These findings are broadly comparable with the conclusions of a study carried out by Altshuler Grubert and Newlon (1998) on the average effective tax rates for large United States manufacturing firms. Their study was based on data from the US Treasury corporate tax files between 1980 and 1992. They found that rates fell by more than 15 percentage points between 1984 and 1992. Falls in effective taxation rates were particularly sharp in many developing countries.

¹⁴ Some developing areas in particular Africa appear to have very high effective tax rates. These figures do not necessarily reflect high overall rates however. Rather they reflect the sectoral spread of investment (principally in the oil and mining industries) where the share of gross income retained by the host government is relatively high. Thus in the case of Nigeria for instance whereas the effective rate for all industries was 32.4% according to figures provided in the aforementioned study by Altshuler Grubert and Newlon (1998) the effective tax rate for United States manufacturing firms in Nigeria was only 13%. The high apparent tax rates on the oil and mining sectors may also be the product of extensive transfer pricing activity giving a misleading impression of real effective tax rates.

¹⁵ There is an important caveat to be made here. Some important source countries of FDI provide foreign tax credits that can be offset against taxable income. For instance the US government obtains very little corporate tax revenue from the profits of US firms in high-tax countries since the taxable profits in those countries generate foreign tax credits that erase any residual US tax liability. By contrast a large fraction roughly 40% of US revenue from taxing the foreign profits of United States corporations comes from taxing their tax haven profits (Hines and Rice 1994 p.150). Thus tax credit systems can lead to the perverse result of larger tax payments in the investor's home country. Because of this phenomenon in some circles tax holidays have become known as "reverse foreign aid" (Wells and Allen 2002 p.8). It would be interesting to extend our analysis to countries which do not provide extensive tax credits like France – we could expect much higher incentives to switch profits to low tax jurisdictions in these cases.

III

The implications for developing countries

From the point of view of reducing the overall tax take, the repercussions of such “investment wars” are potentially very damaging for developing countries. Tax breaks and holidays are becoming increasingly generous. In some cases, such as Honduras, Jamaica, Namibia and Senegal, firms have been granted permanent tax exemptions. Tax holidays in export processing zones have on occasions been stretched out to as much as 20 years. Yet one of the ironies of offering increasingly generous tax breaks is that the evidence regarding the impact of tax regulations on business location decisions is ambiguous. For instance, a detailed study by Wells and Allen (2002) into the elimination of tax holidays in Indonesia found no detectable impact on the subsequent ability of the country to attract substantial flows of foreign investment. Likewise, in an econometric study of the locational decisions taken by U.S. and Japanese manufacturing firms in 74 host countries, Kumar (1999) finds scant evidence that lower tax rates or tax incentives affect the decision to produce in developing countries. Indeed, the results of some of Kumar’s regressions seem to suggest that higher tax rates were positively related to higher levels of production by foreign subsidiaries.¹⁶ Although there are obviously individual cases where tax rates have affected the final decision, on the whole TNCs seem to take a long-term view of locational decisions, and are more likely to be swayed by factors such as the quality of local infrastructure, the availability of a well-educated workforce and, probably most importantly of all, a dynamic local market.

Findings such as these lead credence to the idea that governments have conceded too much to TNCs in exchange for too little - tax competition is not even a very effective way to attract long-term foreign investment. Indeed, there are other more effective ways of

attracting FDI rather than having to depend on tax breaks. It has been suggested, for example, that a better policy would be to support investment in human capital, education, or local technological capacity (MacEwan, 2001, pp.299-300). That way, if the subsidiary is eventually closed, or lost to a country with a lower tax rate, then at least the government retains the benefits of the initial investment in terms of a better educated workforce or an improved infrastructure. If the only incentive offered is a low tax rate, all is lost if the company finally decides to locate elsewhere.

In addition, despite the great enthusiasm shown by policymakers, for developing countries as a group the potential gains to be reaped by attracting FDI through tax breaks and reductions are probably limited. For instance, it has been estimated that total employment in developing country Export Processing Zones (EPZs) is no more than 4 million (Dicken, 1998, p.131).¹⁷ Jobs in EPZs typically represent no more than 5% of total employment in the manufacturing sector of developing countries: a tiny amount compared with the estimated 300 million people who work in the “informal sectors” (Madeley, 1999, p.113). When one considers that there are an estimated 1,200 million people living on less than US\$1 a day, it is clear that the potential impact of EPZs on poverty reduction is limited.¹⁸ It is also no coincidence that, with the exception of Mexico and China, the developing countries that have made best use of these practices to attract foreign investment tend to be relatively small island States such as Mauritius. In short, as models which other developing countries could follow, their relevance is limited. Reviewing the evidence, one group of IMF economists conceded that “setting-up and/or maintaining export processing zones is rarely advisable” (Zee, Stotsky and Ley, 2002, p.1507). Yet governments of developing countries have allocated substantial amounts of scare funds, and forfeited a considerable

¹⁶ For a recent review of these studies see Morriset and Pirnia (2002). It is true that some more recent studies do find a relationship between fiscal pressure and investment studies: much would seem to depend on how the tax variable is defined in the regression analysis (effective tax rates would seem to have much stronger explanatory power than nominal tax rates). Nonetheless as Hines (1996a p.8) acknowledges even in these studies the impact of tax rates on the location and volume of investment still tends to be relatively small.

¹⁷ Moreover those jobs are highly concentrated geographically. Mexico alone accounts for 600 000 jobs and China too is responsible for a large share of total employment in EPZs. The vast majority of developing countries have an insignificant share in the employment generated by such zones.

¹⁸ There are of course all kinds of potential spillover effects to be gained from the entry of foreign firms. But there is no automatic guarantee that such positive spillovers will be forthcoming.

amount of tax income, to attract companies into EPZs.

Of course, the proposal made in this paper to revive the debate on unitary taxes can do little to avoid tax competition and "investment wars". That is a problem which clearly requires greater coordination between tax authorities. But the transfer pricing problem can indeed be tackled through unitary taxes. Developing countries are particularly susceptible to income shifting of this kind. Much of their investment stock is in primary industries. Sectors like the oil industry are renowned for their ability to move funds in and out of countries. Transfer pricing is facilitated by the large volume of cross-border transactions in the mining and oil sectors. Nor do developing country fiscal authorities have the capacity to control transfer pricing activities to the same extent as the developed countries.

There are a number of other incentives which encourage TNCs to indulge in intensive transfer pricing activity in developing countries. Although in the past profit taxes have tended to be lower than in industrialized countries, the level of ad valorem tariffs on trade is still usually higher in developing countries. By under-invoicing the true cost of intra-firm imports or exports, TNCs often use transfer pricing to minimize payments of trade duties. Similarly, as a way of promoting the reinvestment of earnings in the host economy, developing country governments have traditionally imposed more restrictions on profit repatriation than developed countries. In the face of such restrictions, however, the transfer price mechanism has provided TNCs with an alternative form of shifting income out of a country (Grimwade, 2000, p.149).

To what extent is the potential for manipulation of transfer prices actually used to the detriment of developing countries? Most of the empirical studies on this subject date back to the 1970s and 1980s. But, as Elson (1995, p.305) observes, the few systematic investigations that have been carried out have all shown that transfer prices are used to the detriment of developing countries. For instance, one early study by Vaitos (1977) into the pharmaceutical industry in

Colombia revealed that reported profits accounted for only 3.4% of effective returns; royalties for 14.0%, and over-pricing for 82.6%. The additional cost of pharmaceutical imports alone for the Colombian economy was estimated at US\$20 million a year. In addition, there was a substantial loss of government tax revenue - amounting to US\$10 million a year - where transfer pricing was used to under-report profits. Investigations carried out by Lall and Streeten (1977, p.153) confirmed this pattern of systematic overpricing of imports by the pharmaceutical industry in Colombia: some individual items were found to be overpriced by up to 5,000-6,000%. Such practices were also prevalent in the rubber and electrical industries. More recent studies have tended to focus on comparisons of pre-tax profitability levels as an indirect measure of transfer pricing activity. An extensive study based on 1982 data carried out by Hines and Rice (1994) into the profitability of US affiliates in 59 host countries revealed that on average a 1% higher tax rate reduced the declared before-tax profitability by 2.3%.

It has often been argued that one way of minimizing abusive transfer pricing activity of this kind is to enforce joint ventures; local partners are hardly likely to countenance the massive shifting of income abroad. But the international liberalization of investment codes is making it increasingly difficult to impose joint ventures on TNCs. Moreover, even where local partners exist, they are often kept in the dark regarding the structure of costs. The true level of profitability is thus extremely difficult to gauge. As a former managing director of the Nigerian National Petroleum Corporation, a joint venture with Shell, commented: "proper cost monitoring of their [Shell's] operations has eluded us and one could conclude that what actually keeps these companies in operation is not the theoretical margin but the returns which they build into their costs" (Obi and Soremekun, 1995, cited in Frynas, 1998, p.20).

IV

Unitary taxes as a way of tackling tax evasion

An alternative solution would be to impose taxes on the consolidated results of the TNCs and distribute the tax burden on the basis of some easily quantifiable variable (such as sales, or fixed capital, etc.) instead of on profits. In practice, the most common formula is to allocate a corporation's income on the basis of the country's average share in total sales, fixed capital and labour remuneration. Expressed more formally, if π is a TNC's overall profit, then the profit attributed to country j for tax purposes, π_j , is

$$\pi_j = \left(\alpha_j^P \frac{P_j}{P} + \alpha_j^L \frac{L_j}{L} + \alpha_j^S \frac{S_j}{S} \right) \pi$$

where P is total assets, L is total employment and S is total sales of the TNC, and P_j and L_j and S_j are the assets, employment and sales within the tax jurisdiction of the country in question, while α_j^f is the weight of each factor f in country j in the overall tax. In practice, the most common system of weighting used is a third for each component.

Unitary taxes of this kind would eliminate the incentive to shift profits towards low tax jurisdictions. Needless to say, a proposal of this nature would inevitably provoke an indignant reaction on the part of TNCs - past experience shows that these companies are able to lobby aggressively on any issue that could potentially affect their interests. Apart from political expediency, however, there are few reasons for keeping these issues off the agenda: revenue-creating initiatives like this are essential in order to strengthen the fiscal position of the State in developing countries, and there may also be significant payoffs for the developed countries concerned. On the basis of the financial reports of 46 U.S.-based TNCs, a recent study by Shackelford and Slemrod (1998) estimates that the application of unitary tax in the U.S. would have increased those companies' U.S. tax liabilities by 38% percent, with the percentage increase being much higher (81%) for oil and gas firms.

Moreover, although TNCs may be initially reluctant to admit it, a system of unitary taxes would even hold certain advantages for them. Transfer pricing distorts the ability of the firm to evaluate subsidiary performance - the more the company resorts to transfer

pricing, the more difficult it becomes to determine whether subsidiary profitability is due to the level of productivity, or is simply an artifice of accounting. Thus transfer pricing activity ends up distorting the incentive structure within the firm: a subsidiary told to charge a high transfer price for a good or service supplied to another subsidiary will appear to be doing better than it actually is, while the subsidiary purchasing the good or service will appear to be doing worse. Unless this built-in bias is recognized when performance is being evaluated, serious distortions in management incentive systems can occur (Hill, 2000, p.625). In this sense, TNCs themselves would gain through the greater transparency of a unitary tax system. Unitary taxes would also allow firms to concentrate on strengthening their competitive advantages, instead of wasting valuable managerial time and resources on time-consuming tax avoidance strategies. Because of the simplified nature of the system, unitary taxes also have the potential for substantially reducing accountancy costs. As Phillip Gillett, tax controller at ICI, has commented: "Commercially, transfer pricing makes no sense. It forces us to spend a lot of time doing things that are pointless from a business point of view...Businesses want to organise as if there were a single regional product market. Instead tax is determining how they organise themselves" (*The Economist*, 2000, p.14).

In addition, it is manifestly unfair that differences in company performance should hinge to such a great extent on the ability of company accountants to reduce tax payments. In the aforementioned study by McIntyre and Nguyen (2000), it was revealed that competitors in various industries faced sharply varying effective tax rates. For example, Maytag and General Electric both make kitchen appliances. But whereas Maytag paid 35% of its profits in taxes from 1996 to 1998, GE paid only 8.1%. Likewise, Abbot Laboratories and Pfizer are both in the drug business, but the former paid almost 29% of its profits in taxes from 1996 to 1998, while the latter paid only 3.1%. This amounts to competitive sleight of hand, and is unfair to shareholders. Unitary taxes would provide a more level playing field.

V

Unitary taxes in practice

Tax reforms are never easy: tax systems tend to evolve in a topsy-turvy fashion, and although the outcome often appears irrational and unjust to outsiders, domestic political interests are created which often stop well-intentioned reforms in their tracks. The experience of the economist Nicholas Kaldor is instructive here. Throughout the 1950s and 1960s Kaldor took part in many tax missions to developing countries. Although many of his proposals were based on sound economic principles and would have provided the basis for a more equitable tax system, few countries were willing, or able, to follow his tax prescriptions. In Ghana, for instance, Kaldor was asked by Prime Minister Nkrumah to advise on the budgetary position and tax system during the economic crisis there in 1961. Kaldor wanted to reform company taxation to prevent foreign firms escaping tax through transfer pricing, and to introduce a scheme of compulsory saving to aid the development effort. Politically, however, his proposals were untenable, and they led to political agitation and a workers' strike (Thirlwall, 2003, pp.522-524).

Cautionary tales such as this are no reason for not lobbying for change, however. Unitary taxes are not innovative - they have been tried before - and in this sense important lessons can be drawn from past experience.¹⁹ Indeed, it is one of the ironies of the process of globalization that unitary taxes were first implemented in the single most important source country of FDI in the world - the United States. In fact, no state in the U.S. attempts for tax purposes to measure the within-state profits of multistate enterprises by requiring separate accounting. Instead, all states use some variety of formula to apportion total U.S. (and, in some cases, worldwide) profits among the states (Shackelford and Slemrod, 1998, p.41). In the 1980s twelve U.S. states adopted a worldwide unitary tax.²⁰ State legislators were aware of the ease with which

TNCs could avoid state profit taxes, simply by shifting income towards states with a lower tax burden. Unitary taxes were thus championed by state comptrollers as a way of minimizing tax avoidance through transfer pricing.

The political reaction against these measures was almost immediate. The constitutionality of this method of state taxation was questioned in the courts on numerous occasions. At least twenty nations filed official protests in the United States on behalf of TNCs, complaining that the taxes subjected foreign firms to double taxation, required burdensome accounting procedures, and forced TNCs to write detailed reports on their global operations. As California is one of the favourite locations for gaining a foothold in the United States market, that state's unitary tax legislation provoked a particularly adverse response. As Vernon (1998, p.42) noted, California's initiative to abandon any pretence to value tax liabilities using arms-length prices on intra-firm transfers "horrified the international community, almost as if the misguided state authorities were breaching some infallible religious principle".²¹ Under fierce pressure from TNCs and foreign governments, every state but Alaska ended up repealing unitary tax laws.

Nonetheless, the lesson to be learned from the United States experience is not that unitary taxes are unpractical, nor politically untenable. Rather, the US case demonstrates the need to apply unitary taxes across the board. Because only a small majority of US states imposed unitary taxes, TNCs were able to play off one state against another, simply by threatening to withdraw their investments. In the end, this pressure paid dividends for the foreign TNCs. One of the first states to repent was Oregon, which rescinded its unitary tax in 1984. The incident which provoked a reconsideration of the policy was the loss of an important Japanese investment by automobile manu-

¹⁹ To our knowledge the first author to argue that countries ought to abandon the separate-accounting approach in favour of a formula apportionment approach was Musgrave (1973).

²⁰ Much of this account of the United States experience in the application of unitary taxes is drawn from Glickman and Woodward (1989 pp.210-213). See also Hines (1996b).

²¹ In the event much of the outrage was exaggerated. For instance despite Japanese TNCs' well-known antipathy towards the state's unitary tax law California managed to attract more Japanese investment than any other state. Of 295 new manufacturing plants announced by Japanese companies from the early 1970s up to 1985 109 (37%) went to the Far West with California dominating the picture (Glickman and Woodward 1989 p.210).

facturers Mitsubishi, an investment which finally went to North Carolina.²² The campaign against the unitary taxes reached a showdown in Sacramento, where lobbyists for the TNCs argued that California would lose investment dollars if the method of assessment was not repealed. By the end of 1980s, only Alaska had managed to resist the pressure to capitulate and abandon the unitary tax code.²³

Arguably, however, the scenario would have been very different if worldwide unitary taxes were imposed across the 50 US states simultaneously. The United States is such an important market for foreign companies that a massive withdrawal of foreign investments would have been inconceivable. The same is also true of the European Union (EU) - any single member State acting on its own is likely to have to confront a barrage of complaints and threats from TNCs. But concerted action simultaneously on the part of all fifteen member States would make it very difficult for TNCs to take any evasive action. For instance, the EU currently accounts for around 48% of worldwide sales and 56% of value added produced by United States affiliates abroad.²⁴ It would consti-

tute an important strategic error on the part of most TNCs to withdraw from such a market simply to avoid tax payments.

For developing countries, of course, the situation is obviously more delicate - if they try to impose new tax measures, they are far more likely to suffer the consequences of retaliation on the part of TNCs. Even here, however, experience suggests that the bark of the multinationals is often worse than their bite.²⁵ The number of cases where multinationals have actually pulled out of a country are relatively few. Even when quite draconian measures have been imposed against multinationals in developing countries, most have stayed put.²⁶ Anyhow, it is likely that the firms that might be lost as a result of the change towards a unitary tax system are precisely the firms that developing countries should not be very eager to attract anyway: highly mobile firms that do not care much about the services (education, for example) that exist in their host countries are not firms that are likely to make a big contribution to development.²⁷ In this sense, a unitary tax system could even enhance the quality of foreign investment received.

²² In fact a report prepared for the state administration on the reasons for the loss of the project to North Carolina concluded that ultimately Oregon lost the plant because market proximity was the key factor in the decision process and Mitsubishi wanted to settle close to the East Coast market. The officials also concluded that "while the unitary tax was carefully evaluated by the Japanese it does not appear to have been a critical factor in their decision to build in North Carolina rather than Salem" (cited in Glickman and Woodward 1989 p.212).

²³ California Montana and North Dakota also continue to have worldwide unitary tax systems but in these cases their use is optional for taxpayers (Hines 1996b p.1079).

²⁴ Data taken from US Department of Commerce U.S. Direct Investment Abroad Benchmark Survey 1999 [<http://www.bea.doc.gov/bea/ai/newiid.htm>].

²⁵ For instance in the March 2000 Budget the British government announced the prohibition of using mixer companies which enable British-based transnationals to lower their overall tax liabilities (Grant 2000). The British government estimated that the change would cost the transnationals some £300 million in extra tax payments. But the figure was strongly contested by business lobbies which alleged that the total cost could run into several billion pounds. Even the Financial Times however noted a "whiff of hysteria" surrounding private sector assessments of the impact of the changes. In the event the only concession that the Government offered was a nine-month delay in the implementation of the new measures. This case is especially interesting because it demonstrates the extent to which even a purportedly pro-business government like the Blair administration is capable of making big business back down if it is concerted in its action and is sure that it has got its arguments right.

²⁶ The most commonly cited examples of multinationals pulling out of a developing country are the departure of IBM Coca-Cola and Exxon from India in the 1970s. But that dispute was related to restrictions on majority ownership imposed by the Indian government and was in no way related to taxation issues.

²⁷ I am grateful to Arthur MacEwan for this point.

VI

Conclusions

This paper has argued in favour of a new unitary tax system on the profits of TNCs as a way of helping to finance development-related expenditures on social services and infrastructure. Back-of-the-envelope calculations by Oxfam UK suggest that evasion of tax by these companies is currently costing at least US\$35 billion a year in lost revenues for developing countries. Although not the only mechanism, transfer pricing is one of the principal ways through which TNCs manage to reduce their tax “exposure”. Unitary taxes would eliminate the incentive to carry out this form of pricing.

At the same time, it should be stressed that unitary taxes do not take away the ability of countries or regions to offer lower tax rates. As a part of regional policy, for instance, it might be considered perfectly acceptable to have lower corporate tax rates to avoid an excessive concentration of economic activity and to spread the benefits of economic growth toward less-developed peripheral areas. Likewise, developing countries could continue to offer lower tax rates as a way of attracting internationally mobile investment.

The advantage of the unitary tax system would be its inherent transparency - it would be far more difficult for firms to shirk their fiscal responsibilities. Hopefully, business leaders too could be made to see that a fair tax system in the long term is in their own interests. Not only would a unitary tax system simplify their accountancy practices, and allow them to concentrate valuable managerial time on strengthening their competitive advantages, but they would also benefit in numerous other ways from public expenditures on infrastructure, social programmes, etc. By improving the health and education of their employees, TNCs could also be important beneficiaries of social expenditures through higher productivity. The links are indirect, of course, and the benefits long-term ones, but the preference of direct investors for developed market economies with high levels of social protection surely suggests that responsible companies are aware of these potential benefits, and are usually prepared to make a fair contribution to funding them.

Although coordination would obviously be desirable, it is worth stressing that the imposition of a unitary tax system by any single country or group of countries does not in principle require greater coordination

between tax authorities or exhaustive international negotiations. Consolidated results are always required by company shareholders, no matter where the multinational is registered. Of course, different accounting conventions mean that reported profits will vary depending on where the company is inscribed, and for the efficient working of a unitary system, it would be convenient that all companies followed the same accounting practices. But the failure to have a completely homogeneous accounting system at the international level would not impede the application of a unitary tax by any country or set of countries which wished to apply it (though they might wish to pressure multinationals within their territory to abide by either America’s generally accepted accounting principles (GAAP) or the London-based International Accounting Standards Board (IASB)).²⁸

Fortunately, concerns over tax evasion are common to both developing and industrialized countries. The globalization of markets is giving rise to fears that traditional forms of raising revenues are increasingly threatened. An initiative to resolve these problems is thus far more likely to succeed. Concern about current trends has been expressed even within the IMF: an institution not normally associated with worries over the impact of low taxation rates. One recent paper by Fund economist Vito Tanzi (2000) warns: “while the fiscal house is still standing and looks solid, one can visualize many fiscal termites that are busily gnawing at its foundations”. The ability of TNCs to indulge in illegal transfer pricing activity is undoubtedly one of the fiscal termites to which Tanzi refers.

Of course, whatever its merits, the proposal on unitary taxes would meet with much opposition amongst business lobby groups. However, the arguments in favour of unitary taxes are sufficiently strong to prevent these political pressures from sidetracking a reform along these lines. So far, all efforts to reform tax codes have been directed towards eliminating international double taxation: measures which international

²⁸ Depending on which of these two accounting systems is used discrepancies in the reported profits can often be large. In the aftermath of the Enron and WorldCom scandals the probability of the IASB standards gaining the upper hand has been enhanced considerably. See *The Economist* (2002).

investors have obviously been very keen to support. In view of the evidence regarding the fall in effective tax rates paid by TNCs, this emphasis is manifestly unfair. Against this backdrop, the imposition of unitary taxes would provide an important impetus to reform. International legislation should provide the basis for levelling up of standards, rather than levelling down, as it has tended to do up to now. One possibility to make the proposal politically more palatable may be to lower corporate tax rates through unitary taxes. TNCs might be more prepared to countenance a unitary tax system if the base rates were lower. From the point of view of governments, too, it might be preferable to have a lower rate, but to achieve more efficient revenue collection.

The European Union is in a good position to take action on this issue. Although progress has been slow up until now, there is a growing consensus on the need to take action to prevent tax competition and tax evasion among member States (Radaelli, 1999). The imposition of a Europe-wide unitary tax system would provide a much-needed impetus to tax reform. Action by

the EU along these lines would set a good precedent which other countries could then follow. Bearing in mind the fact that approximately 85% of TNCs are incorporated in OECD countries, the OECD also represents a good forum for proposing a shift towards unitary taxes. So far, attempts to approve an international legal framework for FDI, such as the OECD's ill-fated Multinational Agreement on Investment (MAI), have only contributed to relaxing controls on foreign companies. In this context, a proposal to strengthen the ability of nation States to raise a fair share of taxes on the operations of TNCs might be sufficient to tip the balance in favour of any future agreement: support for the initiative would be broader, and developing countries would feel that they are not merely conceding ground to the TNCs, but also gaining something out of the agreement. Bold initiatives such as this are clearly required to restore greater fairness and equity to the global economic system, and should be part and parcel of any future proposals.

(Original: English)

Annex

World: Effective tax rates on United States majority owned affiliates, 1983 and 1999
(Millions of dollars and percentages)

	1983			1999			% change in effective 1983-1999 tax rate
	Foreign income taxes (1)	Net income (2)	Effective tax rate (1)/[(1)+(2)]	Foreign income taxes (1)	Net income (2)	Effective tax rate (1)/[(1)+(2)]	
<i>All countries</i>	30 122	30 600	49.6	45 791	160 490	22.2	-55.3
Canada	3 700	5 588	39.8	6 676	14 951	30.9	-22.5
<i>Europe</i>	12 075	12 503	49.1	22 464	91 467	19.7	-59.9
Austria	47	80	37.0	259	599	30.2	-18.4
Belgium	265	453	36.9	916	2 570	26.3	-28.8
Denmark	65	175	27.1	234	790	22.9	-15.6
Finland	38	54	41.3	161	282	36.3	-12.0
France	736	666	52.5	2 089	3 610	36.7	-30.2
Germany	1 316	1 766	42.7	3 513	8 375	29.6	-30.8
Greece	13	25	34.2	153	204	42.9	25.3
Ireland	31	1 090	2.8	1 141	13 147	8.0	188.8
Italy	488	744	39.6	1 869	2 235	45.5	15.0
Luxembourg	32	88	26.7	100	3 906	2.5	-90.6
Netherlands	486	494	49.6	1 825	15 669	10.4	-79.0
Norway	2 197	827	72.7	1 022	1 052	49.3	-32.2
Portugal	25	29	46.3	258	939	21.6	-53.4
Spain	137	16	89.5	899	2 439	26.9	-69.9
Sweden	132	169	43.9	424	1 617	20.8	-52.6
Switzerland	233	1 504	13.4	653	10 713	5.7	-57.2
Turkey	26	39	40.0	127	118	51.8	29.6
United Kingdom	5 800	4 197	58.0	6 266	22 602	21.7	-62.6
Others	2 842	2 805	50.3	165	460	26.4	-47.5
<i>Latin America and other western hemisphere countries</i>	2 509	5 129	32.8	4 481	26 000	14.7	-55.2
South America	1 648	1 003	62.2	1 540	3 012	33.8	-45.6
Argentina	47	392	10.7	375	350	51.7	383.1
Brazil	740	268	73.4	553	880	38.6	-47.4
Chile	59	50	54.1	172	586	22.7	-58.1
Colombia	185	125	59.7	227	475	32.3	-45.8
Ecuador	-	61	-	25	27	48.1	-
Peru	125	119	51.2	83	14	85.6	67.0
Venezuela	196	-41	126.5	39	642	5.7	-95.5
Others	-	28	-	66	37	64.1	-
Central America	422	517	44.9	2 297	6 979	24.8	-44.9
Costa Rica	-	-	-	37	40	48.1	-
Honduras	-	-	-	22	26	45.8	-
Mexico	274	-229	608.9	2 179	4 805	31.2	-94.9
Panama	85	648	11.6	10	1 939	0.5	-95.6
Others	62	98	38.8	49	170	22.4	-42.3
Other western hemisphere countries	439	3 610	10.8	644	16 009	3.9	-64.3
Barbados	7	141	4.7	158	1 337	10.6	123.4
Bermuda	36	1 664	2.1	238	8 175	2.8	33.6
Dominican Rep.	9	26	25.7	15	509	2.9	-88.9
Netherlands Ant.	221	1 283	14.7	-	-	-	-

(continuation)

	1983			1999			% change in effective 1983-1999 tax rate
	Foreign income taxes (1)	Net income (2)	Effective tax rate (1)/[(1)+(2)]	Foreign income taxes (1)	Net income (2)	Effective tax rate (1)/[(1)+(2)]	
Trinidad and Tobago	140	100	58.3	-	-	-	-
Common wealth islands of the Caribbean	1	286	0.3	85	4 817	1.7	397.7
Others	27	110	19.7	148	1 171	11.2	-43.1
<i>Africa</i>	4494	724	86.1	2 039	2 242	47.6	-44.7
Egypt	(D)	515		125	461	21.3	-
Nigeria	1 421	357	79.9	1 096	960	53.3	-33.3
South Africa	272	388	41.2	99	169	36.9	-10.4
Others	4 494	724	86.1	720	652	52.5	-39.1
<i>Middle East</i>	2 162	516	80.7	1 022	1 343	43.2	-46.5
Israel	53	90	37.1	110	342	24.3	-34.3
Saudi Arabia	461	104	81.6	29	206	12.3	-84.9
United Arab Emirates	1 618	292	84.7	133	163	44.9	-47.0
Others	29	31	48.3	751	632	54.3	12.3
<i>Asia and Pacific</i>	7 810	9 261	45.8	9 054	24 126	27.3	-40.4
Australia	989	597	62.4	1 020	3 157	24.4	-60.8
China	-	-		249	912	21.4	-
Hong Kong	73	662	9.9	450	4 111	9.9	-0.7
India	32	21	60.4	134	-27	125.2	107.4
Indonesia	2 383	1 779	57.3	1 069	2 249	32.2	-43.7
Japan	764	776	49.6	4 136	4 848	46.0	-7.2
Korea Republic of	31	88	26.1	361	787	31.4	20.7
Malaysia	213	431	33.1	228	1 601	12.5	-62.3
New Zealand	37	74	33.3	78	106	42.4	27.2
Philippines	83	59	58.5	214	724	22.8	-61.0
Singapore	109	631	14.7	524	3 905	11.8	-19.7
Taiwan	43	184	18.9	297	980	23.3	22.8
Thailand	36	40	47.4	218	647	25.2	-46.8
Others	3 017	3 919	43.5	78	127	38.0	-12.5
International	104	384	21.3	55	360	13.3	-37.8
<i>Addenda:</i>							
European Union ^a	9 232	9 698	48.8	20 106	78 984	20.3	-58.4
OPEC ^b	8 342	2 690	75.6	2 996	4 648	39.2	-48.2
Developed countries ^c	17 565	19 538	47.3	34 374	114 529	23.1	-51.2
Developing countries ^d	12 557	11 062	53.2	11 417	45 961	19.9	-62.6

Source: Prepared by the author on the basis of US Department of Commerce data [<http://www.bea.doc.gov/bea/ai/newiid.htm>].

^a Consisted of 10 countries in 1983 and 15 in 1999.

^b Organization of Petroleum Exporting Countries.

^c Developed countries include Europe, Canada, Australia, New Zealand and Japan.

^d Developing countries include the rest of the world.

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Regional integration and macroeconomic coordination in Latin America

Hubert Escaith

The contagion aspects of the financial and exchange-rate crises in recent years demonstrate the need to extend the domain of macroeconomic policy from the national dimension to the regional one. This paper presents the main concepts and challenges behind macroeconomic policy cooperation in Latin America and the Caribbean and evaluates them from a game-theory perspective. Under certain conditions related to the debate on optimal currency areas, entering into a cooperative dynamic will be beneficial for all participants. Moreover, it is shown that because the welfare gains from regional cooperation are endogenous, cooperation will eventually become stable, even in the presence of a Prisoner's Dilemma. Albeit promising at the subregional level, however, the initial conditions observed in Latin America are still far from the conditions of self-sustained dynamics. At the initial stage of coordination, cooperation is unstable, and a formal institutional setting is needed to start and coordinate the cooperative process. In addition, more traditional policies of trade integration should be pursued.

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I

Introduction

The early 1990s opened a new era for the analysis of economic interactions among the Latin American and Caribbean countries. Shocks were transmitted by two channels: real and financial. Intra-regional trade recuperated strongly thanks to the wave of trade liberalization and the resumption of economic growth after the “lost decade” that marked the 1980s. The first years of the 1990s also coincided with the large scale introduction of new financial instruments that allowed operators to trade riskier papers, opening the door to an active market of financial titles issued by the so-called “emerging economies”. As a result of this innovation, the settlement of the old debt problem through the Brady agreement, and an increasing flow of foreign direct investment, the net transfer of resources to the region became once again positive, and growth resumed.

But the resumption of growth was accompanied by higher volatility, due to the nature of the new international financial market, where contagion and herding have become a prominent reality. As a result, shocks initiating in one country will have direct impacts upon trade and other real variables, financial spreads and exchange rates in its neighbouring geographical area, as well as upon the international business climate, if the troubled country is large enough (e.g., Argentina, Brazil or Mexico). This common destiny, in spite of differences in policies or fundamentals from one country to another, is a clear symptom of the emergence of a subregional dimension as a result of trade integration and financial globalization (Studart, 2002)

This paper is based on a number of separate contributions made to a research agenda on regional integration, exchange rate regimes and macroeconomic coordination, implemented in the framework of the ECLAC/European Commission Macroeconomic Dialogue Network (REDIMA). The arguments presented here benefited greatly from the discussions, comments and suggestions of Christian Ghymers, Igor Paunovic and Rogerio Studart, as well as the network participants. Needless to say, I alone am responsible for any remaining errors and analytical gaps.

Because of this common component, national macroeconomic stability (including its real aspects) should now be treated as a regional public good. The existence of such externalities calls for more coordination of national economic policies in the region. Despite these interdependencies, and notwithstanding major initiatives to promote macroeconomic coordination in several subregions of Latin America and the Caribbean, cooperation does not always emerge naturally, even though it would be optimal for it to do so. Reflecting on this situation, Escaith, Ghymers and Studart (2002) state that “it is striking that there is no systematic, operational regional or subregional scheme to deal with these regional or subregional spillovers... Indeed, economic policies are still totally uncoordinated and all the decisions continue to be taken in close-knit national circles without considering any spillovers at all. The clearest symptom of this is the choice of exchange-rate regimes based on strictly national considerations.”

In other words, and considering the macro-economic coordination problem from a game-theory perspective, it is obvious that the dominant “non-coordinated” strategies adopted by the countries of Latin America and the Caribbean do not coincide with the social optimum that could be achieved by incorporating regional cooperation. Ghymers (2001) considers that most institutional failures from a regional coordination perspective can be analyzed from the Prisoner’s Dilemma perspective.

Starting from this premise, the present essay shows that, by incorporating recent conceptual advances in the theory of currency unions, macroeconomic coordination within regional integration schemes provides a feasible and robust solution to the Prisoner’s Dilemma. The criteria for the existence of a solution are then compared with the statistical regularities observed in the region. Finally, section IV describes the institutional settings that would make possible such coordination, and section V synthesizes the main findings.

II

Macroeconomic coordination, the Prisoner's Dilemma, and the problem of inefficient equilibrium

As described in Ghymers (2001), one of the main obstacles to regional cooperation is the belief that there is a conflict between national interest and regional integration. According to this author, although most governments understand that coordinated policies would, in a perfect world, be the most suitable way of dealing with the issues and challenges presented by globalization, practical criteria lead them to implement non-coordinated policies aimed at optimizing purely national and short-sighted objectives. This situation, where individual rationality impedes coordination, is known as the Prisoner's Dilemma.

1. Cooperation and the Prisoner's Dilemma

The so-called Prisoner's Dilemma is an unfortunate social situation where myopic and selfish attitudes dominate, despite the fact that cooperation would be the best policy from a social perspective. In other words, it is a game where each player has an incentive to play in a non-cooperative way, either because playing dirty maximizes one's personal reward if the other party plays fair (i.e., follows a cooperative strategy), or minimizes one's losses if the other party decides to defect from the cooperative agreement and plays dirty himself.

The name comes from a story used by A.W. Tucker. Two suspects are taken into custody, cannot communicate with each other, and have two options: either to confess or not to confess the crime. If both confess, they will receive a jail sentence of five years. If neither confesses, they will probably be convinced of minor offences and receive a one-year sentence each. But if one confesses and the other does not, the suspect who confesses will be set free, while the other will receive a ten-year sentence. In this game, the dominant individual (non-cooperative) strategy is not to trust the other prisoner and confess to avoid the maximum punishment.

Technically, the equilibrium in this game is not a

Pareto optimum: both players would be better off if they opt for not confessing. Table 1 represents symbolically the strategies and outcomes of a 2x2 ordinal game that leads to a Prisoner's Dilemma. Strategies C are for cooperation, and D for defection. R stands for the reward for mutual cooperation, T for the temptation to defect from that approach, P for the punishment in the event of mutual defection, and S for the sucker's payoff to the player who cooperates when the other does not.

TABLE 1

Symbolic representation of a 2x2 Prisoner's Dilemma game

Player A \ B	Cooperate (C)	Defect (D)
Cooperate (C)	(R,R)	(S,T)
Defect (D)	(T,S)	(P,P)

Source: Prepared by the author.

A game is basically defined as a Prisoner's Dilemma when, for both players, $T > R > P > S$.¹ This ranking ensures that each player has a dominant strategy that results in an equilibrium with a Pareto-inferior outcome. In such a situation, players – be they individuals, firms or States – that follow the irrefutable logic of purely rational and selfish strategies may find themselves caught in a sub-optimal situation.

Hence, it is not easy to attain spontaneously a cooperative equilibrium. Unless there is a credible and enforceable commitment on the part of the players, or coordination by an external referee, cooperation will remain elusive, even if the players are allowed to communicate with each other in advance: each player has an incentive to play in a non-cooperative way. When generalized to more than two players, this becomes a version of the so-called "Tragedy of the Commons"

¹ Another condition, applying to repeated games, is that the players cannot get out of their dilemma by taking turns to randomly exploit each other. This means that $R > (T+S)/2$ (Axelrod, 1984).

(Hardin, 1968). Decisions that are rational from the point of view of each individual become defective from the collective point of view.

One way out of the dilemma is to consider that the players have the option of building agreements through communication. Clearly, if the parties are able to negotiate a binding agreement, the dilemma disappears. Penalties may be built in to punish uncooperative behaviour, so that for each player $R > T > P > S$. Obviously, in the case of sovereign countries, which are the actors to be considered in the macroeconomic coordination game, international agreements-cum-penalties (such as the Maastricht Treaty in Europe) are not always legally enforceable, and could be subject to abrogation or renegotiation if one party considers that its "higher" State interests are at stake.

Thus, communication by itself does not solve the dilemma in this context, and the problem of governments is how to make credible commitments. This typical macro-policy problem could also be studied from the game-theory point of view. Indeed, it is still possible to reach a cooperative outcome without a formal binding contract, when games are considered in a dynamic perspective. Time is an important factor in resolving cooperation deficits. The fact that players have to meet again and again paves the way for "nice" strategies to develop, even when players are selfish: cooperation is based upon self-interest, without the aid of central or supra-national authorities. Two key requisites for cooperation to thrive in this context are that the cooperation must be based on reciprocity, and the weight of future outcomes must be important enough to make this reciprocity stable.

Players in real life, be they individuals, firms, or countries, do not play the game just once, but interact over and over again. Thus, each player can develop a reputation and earn credibility² about his behaviour and learn about other players' conduct. The players not only learn about each other's behaviour, but also become capable of rewarding cooperative forms of conduct (strategy C) or punishing uncooperative ones (D).

This strategy is called the Tit-for-Tat strategy: player A starts out cooperating, and continues to do so as long as the other player B cooperates. If B does not

² The concepts of reputation and credibility in game theory are very complex and require assumptions about the degree of rationality of players, asymmetric information, the different characters of the players, and many other ingredients. Since our purpose is only to present basic concepts of game theory, we have tried to make all this as simple as possible.

cooperate and plays the D strategy, there is still time to counter attack with one's own D strategy, and avoid the disastrous CD or DC outcomes. This Tit-for-Tat strategy is the best alternative when games are infinitely repeated or at least repeated with a sufficient number of iterations. When games are finite, however, there is a high probability that the other (perfectly rational) player will use the selfish and uncooperative strategy in the last occurrence of the game, since the other player does not have the possibility to retaliate. Because of the same reasoning, there will be no cooperation at the next-to-last occurrence, and so on.

However, cooperation may prevail, because in real life the hypothesis of pure rationality and pure selfishness is not always representative of the actual behaviour of players. As demonstrated by Axelrod (1984), cooperation can emerge even in a world of unconditional defection, if at least some of the players are willing to initiate the game using a cooperative ("nice") strategy. Cooperation can evolve from small clusters of individuals who base their cooperation on reciprocity and have even a small proportion of their interaction with each other. In the author's words "The most promising finding is that, if the facts of Cooperation Theory are known by the participants with foresight, the evolution of cooperation can be speeded-up." (Axelrod, 1984, p.24).

2. Costs and benefits of coordination

The technical part of the discussion about the benefits and costs associated with macroeconomic coordination is usually analysed from the standpoint of the Optimal Currency Areas criteria (OCA).³ Countries considering whether to adopt the currency of a third country (e.g., dollarization) or to join a currency union (e.g., the European Economic and Monetary Union) weigh the potential benefits against the expected costs. Since Mundell (1961) developed the concept of OCA, the criteria are defined in terms of trade relationship and symmetry or asymmetry of external shocks. The greater the linkage, the more desirable a union; to compensate for imperfections in the first two criteria, two additional ones are considered: degree of labour mobility and/or system of fiscal transfers.

In the Mundell-Fleming model, then, the nature

³ See Escaith and Paunovic (2003) for examples of fiscal cooperation.

of the exchange rate regime determines the degree of freedom for using monetary policy as a response to external (real) shocks. In a pegged regime, a shock would be transmitted directly to the economy through the reduction/increase in international reserves and the resulting reduction/increase in the money supply and hence, given nominal rigidities, in aggregate demand. A flexible exchange rate would permit more flexible use of monetary policy to counteract the external shock and adjust relative prices, at the expense of higher inflation levels.

According to Mundell (1961),⁴ currency area optimality occurs when the benefits of relinquishing the exchange rate as an internal adjustment instrument outweigh the costs of adopting a single currency in a fixed exchange regime. These criteria indicate the specific conditions under which it is advantageous for a group of economies to adopt a single currency, based on an analysis of the (microeconomic) gains of efficiency and the (macroeconomic) costs of the loss of flexibility.

The usefulness/sustainability of an OCA is often determined as a function of labour mobility, economic size and openness, similarity of production structure and the symmetry (or asymmetry) of economic shocks. Deep trade interrelationships, symmetrical exposure to external shocks and synchronization of business cycles increase the expected net benefits of adopting a common currency and a common monetary policy. Indeed, shocks affecting all the countries in a similar fashion, at the same point in their business cycle, do not call for a change in exchange rates. Labour market flexibility and mobility reduce the real adjustment costs when shocks and cycles are not perfectly symmetrical, while the existence of fiscal compensation schemes opens up the possibility of transfers between losers and winners.

Despite their theoretical interest and the qualitative guidance they provide, the practical usefulness of OCA criteria is limited. In particular, they are not fully operational for decision-making purposes, as in practice they cannot be used to quantify a balance of costs and benefits (McCallum, 1999). Moreover, a more recent trend in the literature centres on two empirical questions that reassess the relevance of the above-mentioned OCA criteria.

The first of these questions examines the problem of the balance between costs and benefits by revising

the actual cost for a country of losing the ability to use the exchange rate as a policy instrument and looks at the effectiveness of nominal adjustments of the exchange rate. When an economy suffers a nominal shock, adjusting parities is not an adequate instrument, and a regime with a fixed exchange rate will do better in terms of welfare.⁵ Indeed, the exchange rate is potentially useful as an instrument in situations when shocks are simultaneously country-specific, real and temporary. According to this literature, the probability of such situations is becoming smaller as trade integration reduces the significance of national borders and as stability-oriented policies curtail policy-induced shocks. Furthermore, contemporary advocates of monetary unions think that the pure and perfect exchange-rate flexibility option is not the correct alternative when discussing costs and benefits of OCAs, because modern-day trade and financial interrelationships make pure flexibility a nonviable option (Buti and Sapir, 1998).

The second “revisionist” trend in the OCA literature is of special interest from the point of view of the present essay. Regional trade integration increases business-cycle correlation and promotes new institutional initiatives that will set up a positive feedback loop for intraregional trade itself. Thus, cooperation creates its own conditions of sustainability. In the following section, we will discuss these aspects in greater detail and show how they apply to the Prisoner’s Dilemma issue.

3. Dynamic gains from regional coordination of macroeconomic policies

As already noted, recent developments in the positive theory of OCA and the European Monetary Union (EMU) experience show that the optimality criteria are in fact endogenous. As stated by Frankel and Rose (1996), and as illustrated by the case of the European Union, the suitability of OCA criteria cannot be judged on the basis of historical data, since the structure of the national economies – especially their trade structure – will be affected by the creation of a currency area and is likely to change. In those authors’ words, the OCA criteria are jointly endogenous:

“Countries are likely deliberately to link their currencies to those of some of their most important

⁴ McKinnon (1963) and Kenen (1969) are also important contributors to the standard literature on OCAs.

⁵ See Parrado and Velasco (2002).

trading partners, in order to capture gains associated with greater exchange rate stability. In doing so, they lose the ability to set monetary policy independently of those neighbors. The fact that their monetary policy will be closely tied to that of their neighbors could result in an observed positive association between trade link and income links. In other words, the association could be the result of countries' application of the OCA criterion, rather than an aspect of economic structure that is invariant to the exchange rate regimes." (p. 15).

As a consequence, the authors state in their conclusion (p. 22) that "some countries may appear, on the basis of historical data, to be poor candidates for EMU entry. But EMU entry per se, for whatever reason, may provide a substantial impetus for trade expansion; this in turn may result in more highly correlated business cycles. That is, a country is more likely to satisfy the criteria for entry into a currency union *ex post* than *ex ante*."

In this endogenous framework, regional monetary and exchange rate coordination can be represented by a new kind of a non-zero sum game, where the positive outcome increases when the game is repeated: the more you play, the more you gain. Because of objective reasons, linked to the OCA criteria (weaknesses of trade and financial integration, asymmetry of business cycles), and subjective factors (reduced credibility of regional commitments and weak institutional enforcement procedures), initial gains from consensuating regional policy response to external shocks may be low compared with the outcome of non-cooperative strategies. We recognize here the typical Prisoner's Dilemma problem, where the structure of incentives is perverse. But because of the endogenous nature of the OCA criteria, as time goes by and the more countries interact, the higher is the welfare gain obtained from coordination and the lower the temptation to defect.

If we go back to the formal representation of the

Prisoner's Dilemma (table 1), the gain from cooperation $R(t)$ depends positively on the number of times the game is repeated (t).

$$dR/dt > 0$$

Figure 1 gives a tree representation of this game. The first letter in parentheses denotes the strategy of A, while the second is the strategy of B. For simplicity, let us assume that B applies a tit-for-tat strategy. Both countries cooperate in the initial round and gain R_0 .

- If A defects in the first iteration, he gains T and B suffers the S outcome, but both gain only P in the second round, once B applies the tit-for-tat countermove.
- If A cooperates, both countries gain R_1 , with $R_1 > R_0$.

The same reasoning applies to subsequent moves, with $R_t > R_{(t-1)}$.

Thanks to the endogenous and incremental nature of R_t in this class of games, the gains from cooperation should increase with time such as to reach the situation when $R_{(t^*)} > T$. Remember that a Prisoner's Dilemma exists only when, for both players, $T > R > P > S$ and the dominant strategy dictates that each player should defect and follow a non-cooperative strategy. After repeating the game up to time t^* , welfare gains from cooperation increase to a point where defecting is no longer the dominant strategy (see figure 2 for a graphic representation of the outcome of the cooperative game).

Obviously, the initial stages of the cooperative game are critical for its success, when Rt is lower than T or too close to it, thus making the net gain from cooperation too uncertain. This caveat is particularly important when referring to the Latin American situation, where the initial degree of trade and financial integration is weaker than in the European case.

FIGURE 1

Game tree representation

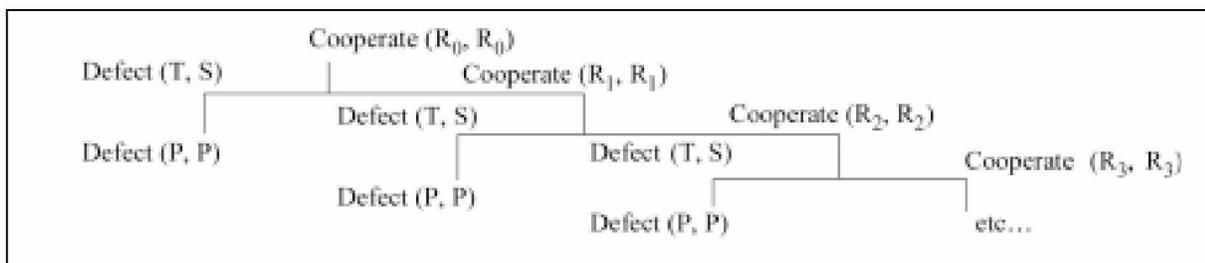
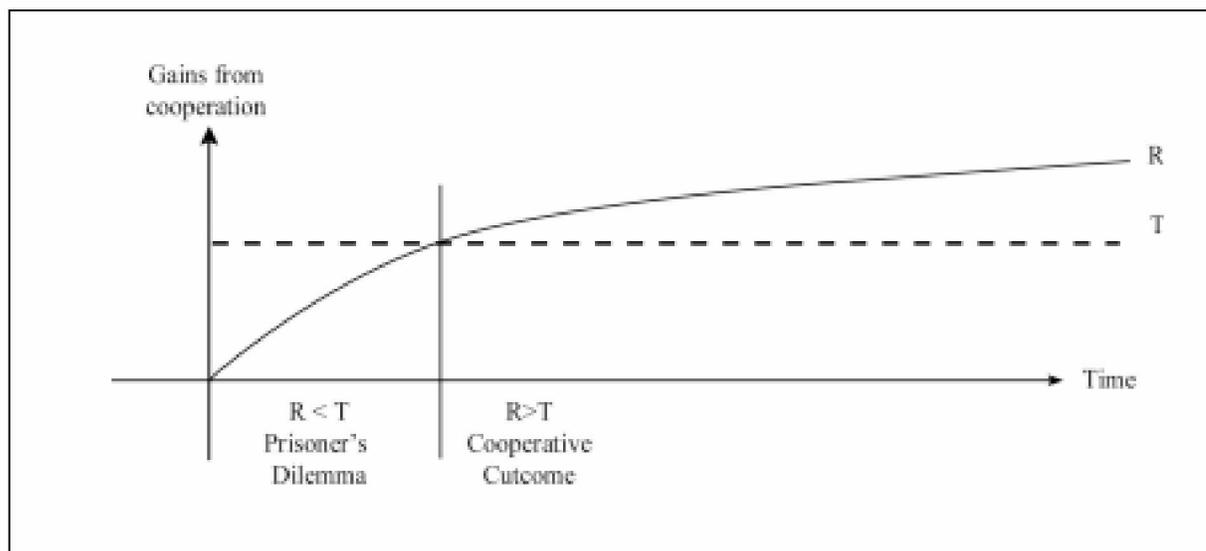


FIGURE 2

Dynamic gains from cooperation and the Prisoner's Dilemma



Source: Escaith and Paunovic (2003).

III

Economic convergence, integration and policy coordination in Latin America

As already noted, despite their limitations OCA criteria are a good starting point to look at the feasibility of initiating a dynamic process of policy coordination in a regional framework. The issue depends not only on national considerations, but also on externalities linked to the regional dimension of the transmission of shocks.

The evolution of the Latin American and Caribbean economies since the mid-1980s shows a convergence in terms of macroeconomic policies and achievements. Confronted with the negative shock of the debt crisis of 1982, the necessary adjustment following the reversal of net financial resource transfers from the rest of the world and episodes of high to hyperinflation, most countries embarked upon stabilization programmes. These programmes shared a nuclear set of common objectives, strategies and instruments. The increased dependence on external finance during the 1990s also led to a reduction in the

freedom of domestic policy makers to diverge from orthodox policies.

The trend not only affected macroeconomic policies *stricto sensu*, but also brought a deeper transformation of the institutional framework via structural reforms. The evolution of reform indexes (ECLAC, 2001) shows that by the end of the 1990s most Latin American and Caribbean countries had achieved convergence in terms of trade, financial and capital liberalization reforms.

As a result of these trends, most of the countries of the region entered the 2000s with many shared characteristics, not only in their way of thinking about making economic policies, but also in the results—both positive and negative—of those policies. Sharing common objectives, institutional frameworks and instruments provides quite fertile ground for macroeconomic policy coordination. Whether it is optimal to integrate this dimension into the national strategies

depends in part on the comparative review of their exposure to external shocks. The first aspect to be analyzed is trade integration.

1. Trade integration

One of the central factors in macroeconomic policy coordination and OCA is the degree of trade interrelationship between potential partner countries throughout the trade sector. This is traditionally analyzed in terms of trade flows and symmetry of external shocks.

a) *Intraregional trade*

Since 1991, with the recovery from the 1982 debt crisis, trade with other Latin American and Caribbean countries, especially within integration subregions (Andean Community, CARICOM, Central American Common Market, Mercosur), has increased much faster than trade with other countries, at least up to 1998. Thus, intraregional trade, which represented 13% of total exports in 1991, rose to 20% in 1998: an implicit growth rate of almost 15% annually in real terms. Due to the crisis in Mercosur and a decline in the Andean group, this share went down to 16% in 2002, reducing the annual growth rate over the 1991-

2002 period to 9% (table 2). This growth is particularly significant from our perspective, because trade has grown much more rapidly than the domestic product, increasing its contribution to the level of economic activity.

TABLE 2

Latin America and the Caribbean: Trends in trade and domestic product, 1991-2002

Latin America and the Caribbean (LAC)	Average annual growth rate ^a	
	1991-1998	1991-2002
Total supply	4.5	3.3
GDP	3.3	2.5
Imports of goods and services	12.0	8.0
Exports of goods and services	8.5	7.3
Exports to other Latin American countries ^b	14.8	9.2

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

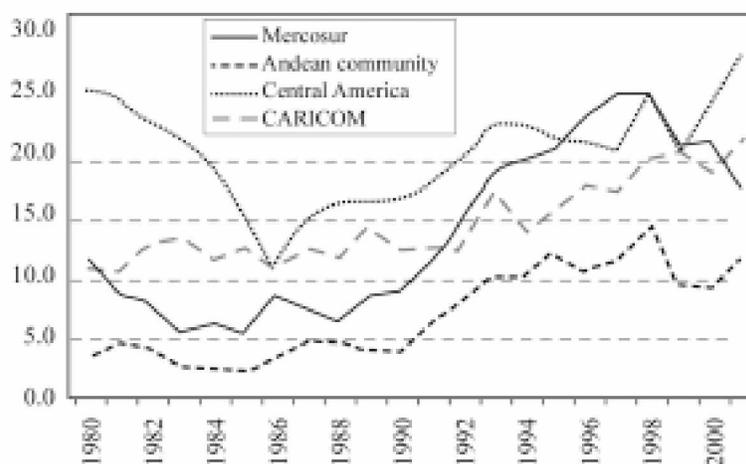
^a Percent, from data at constant 1995 prices

^b Estimated from data at current prices.

Economic transactions within each subregional integration scheme have been taking on an increasingly important role (figure 3), not only in quantitative but also, and especially, in qualitative terms: while trade with countries outside the region is composed of

FIGURE 3

Integration schemes: Trade within subregions, in relation to total exports (Percentages)



Source: ECLAC (2002a).

traditional products (commodities or processed primary products), in South America intraregional trade is based on manufactured products, allowing national economies to diversify their export base (Benavente, 2001). Mexico, Central America and the Caribbean countries, on the other hand, have diversified their exports thanks to their privileged access to the United States market (“*maquiladora*” industries) or their natural advantages in terms of tourism.

This trend has two important (and potentially conflicting) consequences for the purposes of the present paper. First, it increases the transmission of shocks through trade, in the traditional OCA perspective, and thus is a factor of greater interdependence between countries. Second, it increases the potential for conflict between national exchange rate policies, as these exports consist of consumer and intermediary products that are sensitive to relative prices. Thus, devaluation by one of the regional trading partners could have a strong impact on regional trade flows, triggering regional tensions (as occurred in Mercosur after devaluations in Brazil or Argentina) or competitive devaluations (as in Europe in the late 1970s). Obviously, these cross-effects are directly relevant to both the choice of national exchange rate regime and the potential gains from regional coordination.⁶

b) *Terms of trade*

In small open developing economies, terms of trade fluctuations (variations in the prices of a country’s exports relative to those of its imports) are a major source of instability. Structural characteristics make export prices very volatile because of the high proportion of commodities and there is little capacity for substituting imports internally (because of their higher technological content), even when their relative prices increase. Non-transitory shifts in relative prices, as exemplified by structural trends in terms of trade is an issue that has been receiving attention for quite a long time.⁷

Short-term fluctuations in relative prices are perhaps more damaging to investment than long-term trends, as volatility increases systemic uncertainty and diminishes the capacity for sound decision-making. These fluctuations are also more relevant when it comes to macroeconomic policy coordination, especially when the explicit objective of that policy is to stabilize nomi-

nal and real variables, i.e., to smooth out high-frequency fluctuations.

As shown in figure 4, the dynamics of terms of trade has been quite different across countries over the past ten years in terms of trends⁸ and volatility. As an annual average over the 1991-2002 period, six countries out of nineteen suffered negative shocks and eleven had positive ones. This resulted in a small positive annual average of 0.2% for the region as a whole (0.6% as a simple average of individual countries), the extremes ranging from -2.4% (Nicaragua) to 3.7% (Venezuela).

Volatility is very different from country to country, with standard deviations ranging from as low as 2.6 in Mexico, which has the advantage of a diversified export structure, to as high as 21.6 in Venezuela, a mono-exporter of oil. The volatility for consolidated exports is low for the region as a whole (3.4 when all exports are consolidated), but reaches 8.1 if computed as a simple average of the countries.

Looking at the correlation between countries, one notes that most countries in the region share a common positive interdependence, while a small group evidences diverging behaviour. This is best seen from section B of figure 4, which shows the clustering of the Latin American and Caribbean countries according to a breakdown of the principal components of their terms of trade variations. On the first two axes, which jointly explain 65% of total variance, one may note a first cluster of countries in the northwest quadrant, composed of Ecuador, Venezuela, Argentina and, to a lesser degree, Colombia and Mexico. These are oil-exporting countries. Panama is isolated because of its specificity as a processing and transit zone.

Except for Bolivia, all the other countries of the region are clustered into a compact group in the western part of the figure. This cluster includes all the countries in the Central American Common Market and almost all the Mercosur countries except Argentina. This means that the countries from these two integration areas share the same (short-term) trends for terms-of-trade variations, which is an important basis for coordinating a regional response to common external shocks. The situation of the Andean countries is more diversified from this point of view, because of their respective specialization in oil exports (Ecuador and Venezuela, but also Colombia) or in other minerals (Bolivia, Peru).

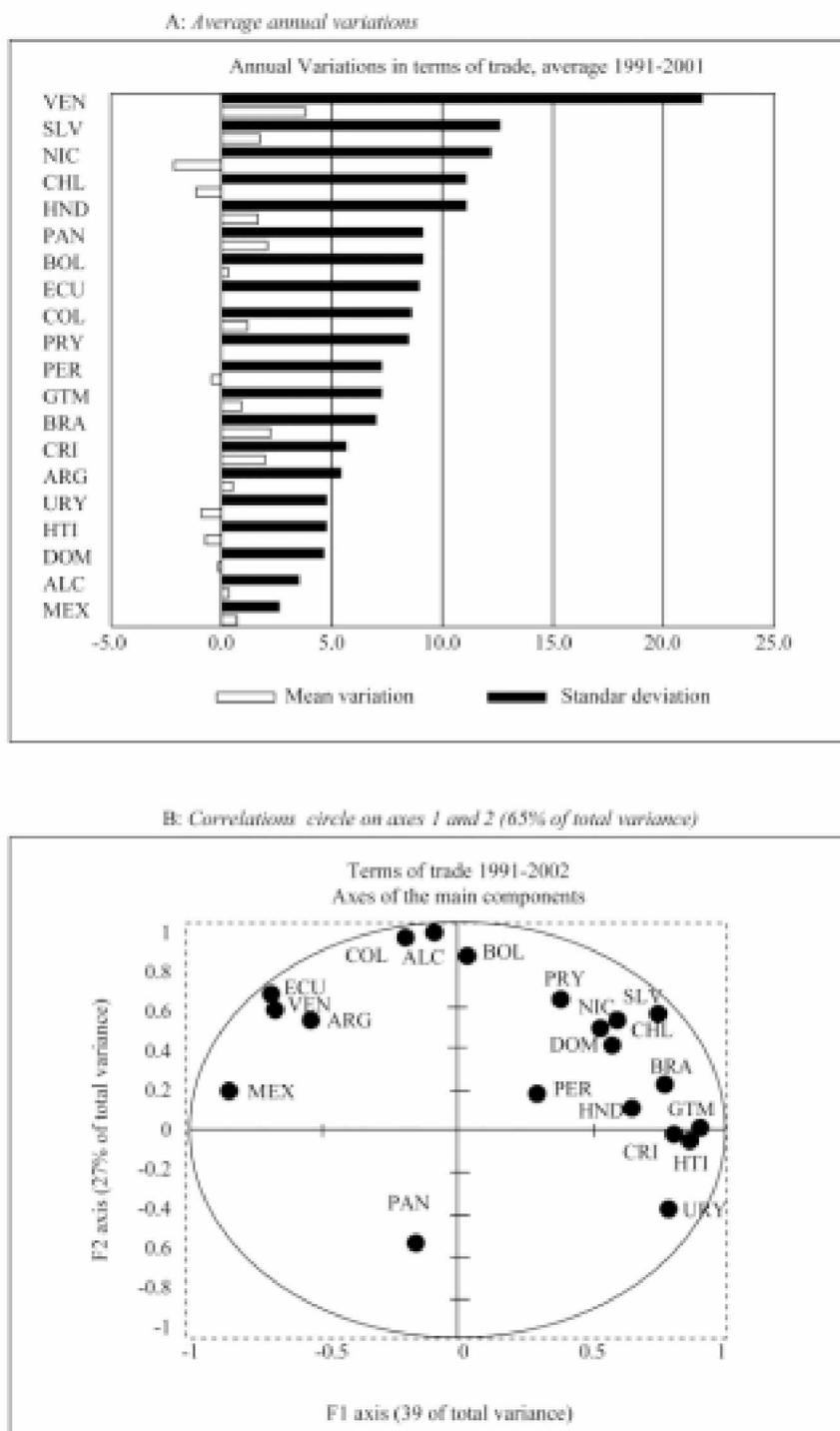
⁶ See CEI (2003) for a review of the cooperation issues from a Mercosur perspective.

⁷ See Ocampo and Parra (2003).

⁸ The term “trends” is used here in the sense of tendency, and does not refer to what statisticians may understand by deterministic trends (e.g., in contrast to random movements).

FIGURE 4

Latin America and the Caribbean: Terms of Trade, 1991-2001



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

c) *Effective exchange rates*

Exposure to common terms-of-trade shocks and stronger intraregional trade should lead to greater co-variation of effective real exchange rates (ERERs). The calculation of these rates takes into account the evolution of the country's bilateral exchange rates in relation to each of its trading partners, correcting for differences in the respective domestic rates of inflation and weighting for the relative importance of the trading partner in a country's total trade.

The ERER is a widely accepted measure of short-term macroeconomic competitiveness. As such, it is an important indicator to monitor in any trade integration scheme: when the ERER rises (or decreases), the country in question gains (or loses) competitiveness with regard to the (weighted) average for its trading partner. Obviously, when regional partners account for a significant share of external trade, variations in neighbouring countries' exchange rates (or internal prices) will greatly affect the overall trade competitiveness of each country.

This merely quantitative and mechanical effect is compounded by the potentially greater price elasticity of intraregional trade. Because intraregional trade in Latin America is more intensive in manufactured goods, demand is potentially more sensitive to changes in relative prices than in the case of the goods exported to the rest of world, which in Latin America (and especially in South America) are mainly primary products, whose prices are set internationally. The firms that participate in intraregional commerce are in general smaller than those trading with the rest of the world and more sensitive to transitory changes in relative prices.

Correlation coefficients between the exchange rates of the Latin American and Caribbean countries were calculated from 1992 up to the first semester of 2003 for the quarterly variations of four categories of real exchange rates: i) the bilateral rate with the United States economy, ii) the effective rate with regional trading partners (a weighted average of the bilateral exchange rate, adjusted by the difference in inflation rates), iii) the effective rate with non-regional trading partners (excluding the United States of America), and iv) the effective exchange rate for all trading partners (regional and non-regional). Contemporary correlation coefficients were calculated, thus capturing only the direct and most observable effects. The trading partners were weighted by their exports to the reporting country.

The correlation coefficients obtained for the ERER with regional partners are the most interesting in the present case, as they reflect the intensity of the shocks passed from one country of the region to the others through the exchange rate, either by trade or by other causes. They are clearly a prime indicator of macroeconomic integration. When there are close trade relationships within a subregional integration scheme, a positive impulse in one country (a gain in exchange rate competitiveness) should result in a negative one in the regional trading partners.

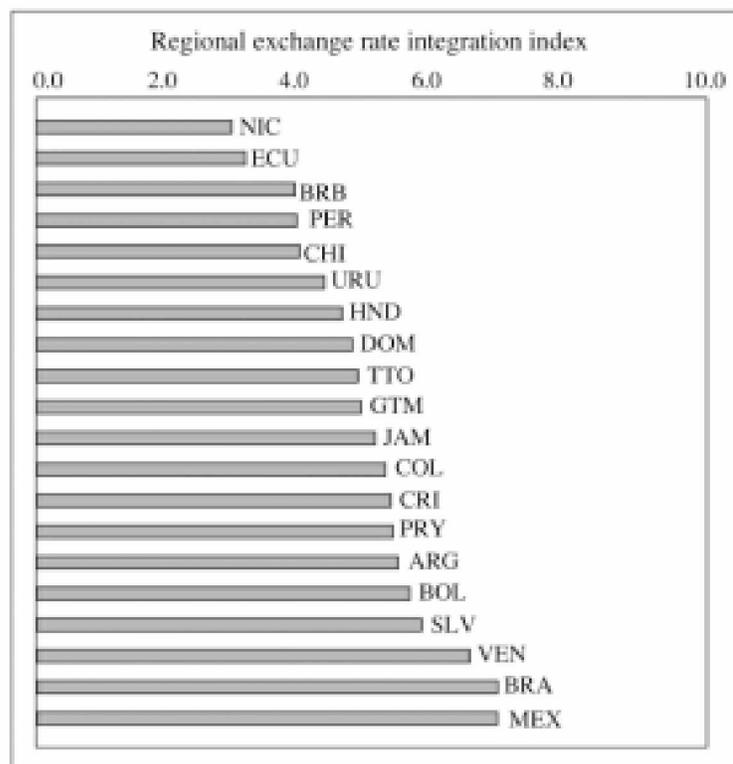
By construction, because of the symmetry of trade relationships, the sum of the correlation coefficients is close to zero when considering all the Latin American and Caribbean countries that enter in the calculation of the regional ERER. The closer the intraregional trade relationship, the higher the positive and negative variations. But part of the interaction analyzed through the behaviour of regional ERERs may be due to a third, external, factor to which all countries in the region react simultaneously (an external shock of large magnitude, such as the Asian and Russian crises of 1997-1998, for example). To filter out this noise, the correlation coefficients obtained for real exchange rates with the US dollar were subtracted from the results obtained with the regional ERER. An index was constructed using the sum of the absolute values of the results obtained for each country, normalized by the total across countries (figure 5).

As expected, the largest countries of the region (Argentina, Brazil and Mexico) are among those showing the greatest interaction with the rest of Latin America and the Caribbean. Great care should be taken not to draw definitive conclusions from this index, however. Despite the filtering process used, the index remains subject to "spurious" correlation effects which affect⁹ the results. Also, the index is better calculated on "normal years", because great asymmetrical shocks affecting a smaller economy may create noise in the indexing procedure. For example, Uruguay has been closely integrated into the Mercosur economy and ranked high in the index calculated from 1992 up to 2001 (6.6). The large devaluation of 2002 had no significant impact on the effective exchange rate of Uruguay's trade partners, due to the small size of its economy, and the resulting effect was a drop of

⁹ For example, higher international oil prices can affect the nominal exchange rate of oil exporting countries, such as Venezuela, and the internal rate of inflation of importers, thus affecting simultaneously the ERER of both exporters and importers, even if they do not have close economic relations.

FIGURE 5

Latin America and the Caribbean: Regional exchange rate integration index



Source: Prepared by the author.

more than two points in its integration index (to 4.4) when the 2002 and 2003 periods are incorporated.

Another conclusion may be drawn when looking at the ERER with non-regional trading partners (excluding the USA). It is striking that i) most elements of the correlation matrix are positive and ii) many have a high value compared with the regional ERER and the bilateral US dollar tables. This intuition is confirmed when principal component analysis is applied to the real exchange rate variations. In this case, the higher the co-movement among the original series, the fewer the common factors needed to “explain” the total variance of the sample. It is clear from table 3 that co-movements are higher when exchange rate variations are considered in relation with “other” trade partners rather than with the USA or regional partners. In the first case, the first factor explains 40% of the variance: i.e., approximately double the value encountered in the two other cases. The same difference persists when considering second and (albeit less so) third factors.

TABLE 3

**Latin America and the Caribbean:
Quarterly real exchange rate variations,
1992-2003: principal component analysis**
(Results obtained for the first four components)

	Factor 1	Factor 2	Factor 3	Factor 4
<i>LAC Partners</i>				
Eigenvalue	4.4	3.5	2.7	2.3
% variance	22.2	17.5	13.4	11.5
% cumulative	22.2	39.8	53.2	64.7
<i>Bilateral with USA</i>				
Eigenvalue	3.9	2.1	2.0	1.8
% variance	19.3	10.5	10.1	8.8
% cumulative	19.3	29.8	40.0	48.7
<i>Other trading partners</i>				
Eigenvalue	8.0	2.6	1.6	1.3
% variance	40.0	12.9	8.0	6.3
% cumulative	40.0	52.9	60.9	67.2

Source: Prepared by the author.

It appears that most of the Latin American and Caribbean countries share a common trend with respect to non-US dollar currencies (basically European and Asian currencies in our sample). This is easily explained considering that de facto or de jure these economies belong to the dollar area, and thus tend to share the same exchange rate fluctuations with other international currencies.

2. Internal economic cycles

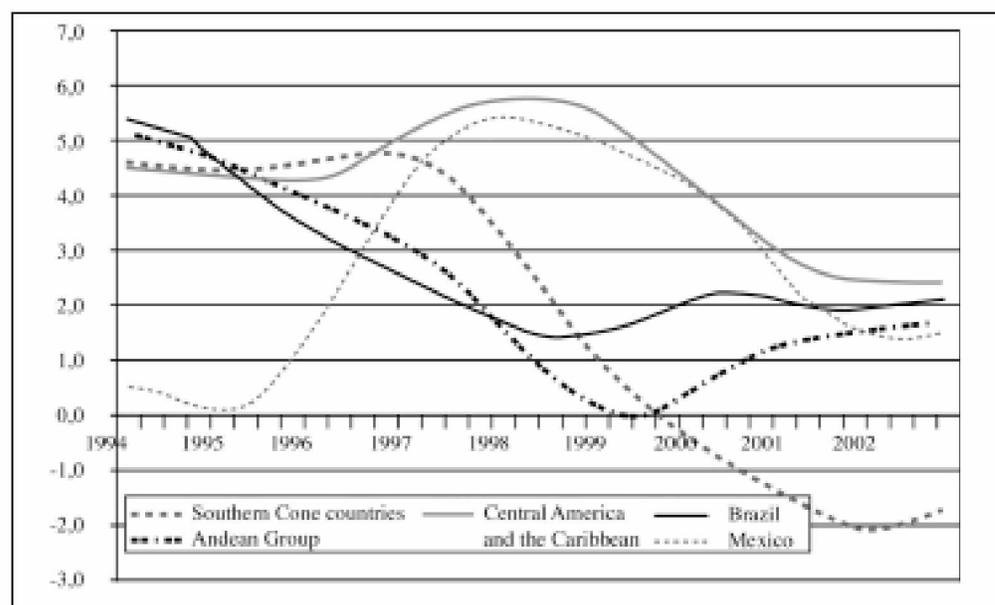
In the previous sections, we looked at the transmission of shocks via terms-of-trade or exchange-rate channels. In view of the high external vulnerability of the region, these shocks would be expected to have an impact on short-term growth dynamics. In the present section, we will look into the coincidence of the “real cycles” within the region.¹⁰

Two set of indicators are used for this purpose, one being the quarter-to-quarter seasonally adjusted GDP growth rate, and the other the size of the output gap. These were calculated by reference to a medium-term tendency obtained by smoothing real GDP time series, applying the widely used Hodrick-Prescott (HP) filter to the data. A standard value of 1600 was utilized to parameterize the filter, and the quarterly series were extrapolated at both ends of the sample, to reduce the well-known end-point sensibility of the HP filter.

Tendencies for GDP growth using the filtered series capture the medium-term trends observed during the 1990s up to 2002. Figure 6 shows two different dynamics at the beginning of the present decade. The low-growth subset was composed of South American countries severely hit by the 1997-1999 crisis that affected many emerging economies. This crisis affected in particular the Southern Cone economies, especially in the context of the Argentine turmoil in 2001-2002. Mexico and the Caribbean and Central American coun-

FIGURE 6

Latin America: Evolution of potential GDP, 1993-2002



Source: Prepared by the author on the basis of data provided by the ECLAC Economic Projections Centre.

¹⁰ In this purely descriptive context, “real cycles” should be understood as GDP fluctuations around an observed trend, and do not refer to the source (monetary or real) of the observed fluctuation.

For a more in-depth study on cycle co-movements in Latin America, see Cerro and Pineda (2002).

tries were able to escape the 1997-1999 turbulence thanks to their closer links to the booming United States economy and lesser dependence on exports based on primary products. When the USA, together with other industrialized economies, eventually went into recession in the second half of 2001, this difference vanished.

Analysis of short-term GDP fluctuations confirms this heterogeneity. The quarterly GDP variations show little correlation across the region as a whole, confirming the results obtained by Cerro and Pineda (2002). An interesting pattern emerges, however, when looking at i) the evolution of the correlation over the 1993-2002 period and ii) the situation within each of the subregions. Not only is the correlation higher when calculated within each subregion, but it also increases over time (table 4).

TABLE 4

**Latin America and the Caribbean:
Quarterly GDP variations, 1993-2002**
(Inter-country correlation coefficients)

Period averages:	Correlation within each subregion			Correlation within
	Average correlation within:			LAC region Average
	Mercosur	Andean Group	Meso-America ^a	
Total 1993-2002	0.15	0.14	0.06	0.11
1993-1997	-0.01	0.07	-0.08	0.05
1998-2002	0.31	0.20	0.19	0.16

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

^aMexico, Central America and Dominican Republic.

Review of the correlation coefficients obtained for the output gaps (percentage difference between potential and observed GDP) shows that the moderate co-variation of economic activity across the region is nevertheless higher than the coincidence observed in

output gaps. This is confirmed by the results of the principal component analysis. As shown in table 5, the first factor has a greater representation power in the case of quarterly variation of total GDP, compared to the output gaps.

These results indicate that although the co-variation of economic activity in the region is still diffuse, it has been increasing over the period studied and in general the Latin American and Caribbean countries have tended to cluster around common subregional patterns. This is quite an interesting feature considering that the correlation of business cycles across countries is an argument in favour of macroeconomic policy coordination and optimum currency areas.¹¹ Nevertheless, the weakness of the linkage indicates that the Latin American region is still far from the self-reinforcing situation corresponding to the right part of figure 2 above ($R > T$). As a consequence, macroeconomic coordination per se is far from being a sufficient condition for closer integration, and more traditional integration policies have to be maintained and deepened.

TABLE 5

**Latin America and the Caribbean: Quarterly
GDP variations and output gaps, 1993-2002**
(principal components)

	Factor1	Factor 2	Factor 3	Factor4
<i>Quarter to quarter variation</i>				
Eigenvalue	4.8	2.5	1.7	1.3
% variance	34.2	17.9	12.5	9.1
% cumulative	34.2	52.2	64.6	73.8
<i>Output Gap</i>				
Eigenvalue	3.6	2.8	2.3	1.4
% variance	25.5	19.7	16.5	10.0
% cumulative	25.5	45.2	61.7	71.7

Source: Prepared by the author.

¹¹ Albeit not a necessary one if one takes into consideration the endogeneity of these OCA criteria, as we already mentioned.

IV

Institutional criteria for initiating and maintaining coordination

In the previous sections, we have seen that the Latin American and Caribbean economies show at least some of the necessary conditions for benefiting from macroeconomic cooperation, and that the expected welfare gains are probably a positive function of time. Despite its potential and increasing benefits, however, initiating a programme of policy coordination is only part of the story, as many other challenges remain.

As analysed by Kronberger (2002), even in the case of the endogeneity of the OCA criteria, there are important difficulties to face, especially in the case of emerging economies. In particular, for the endogenous process to initiate, there is a need for a strong political will and a firm political consensus. The following section identifies and briefly comments on some of these issues.

1. Uncertainty and the size of the “union”

Defining a common strategy for macroeconomic cooperation between sovereign States faces several obstacles in a real life situation. The first of them, obviously, is the uncertainty about the net outcome of cooperation (balance of costs and benefits of cooperation). As we saw, both traditional and endogenous OCA criteria provide a guide to this aspect, and the prospects for Latin America and the Caribbean are positive, at least at the sub-regional level.

Probably the second most important obstacle is the uncertainty concerning the behaviour of other players: an aspect that can be analyzed from the institutional perspective. As we mentioned earlier, this uncertainty, which is prejudicial to a cooperative outcome in a finite game, can be controlled and reduced by the possibility of committing players, through an enforceable agreement, to adopt a cooperative strategy. In our present case, this would be achieved through treaties regulating international relations between countries, but the difficulty of enforcing contracts (i.e., devising penalties) among sovereign States should not be underestimated.

Demopoulos and Yannacopoulos (2001) incorporate this practical aspect by analyzing the costs and benefits of macroeconomic coordination in the context of a currency area, as a function of its size. As a currency area expands, the benefits from adopting a single currency increase, but not as fast as the difficulties of agreeing on a common set of policies and enforcing them as new countries, with macroeconomic problems of their own, join the area. Because transaction costs are assumed to increase faster than benefits, there is an optimum threshold in terms of the number of participating countries.

From this brief summary it may be deduced that, in the presence of the Prisoner's Dilemma, several key points have to be clarified in order to advance the case for regional cooperation on macroeconomic policy.

The first set of critical factors relates to the nature of costs and benefits. Cooperation should not only be beneficial for all participants, but those benefits must also be sufficiently larger than in the case of an alternative, non-cooperative approach. At the same time, they must be easily identifiable and not too uncertain, in order to define a clear incentive to cooperate.

Second, it must be ensured that there are not too many players, and that they can be induced to accept reasonably binding commitments to cooperate. Building an appropriate institutional framework to provide for suitable commitment technology is a key element in this respect.

These two arguments, applied to the Latin American and Caribbean context, point in the direction of a form of cooperation limited –at least initially– to sub-regional partners, and based on a strong regional institutions.

2. Credibility of national and regional macro-policies

This institutional commitment technology needed to increase the credibility of the decision agreed upon is key to understanding the importance of a proper

institutional setting in the design of a sub-regional coordination mechanism. This arrangement, as argued in Escaith, Ghymers and Studart (2002), should include the appropriate monitoring and endorsement/disqualification capacities, and calls for the existence of a formal institutional arrangement at the supra-national level. Such a mechanism must offer national governments a set of positive and negative incentives to cooperate in the coordination of macroeconomic policies, as well as a well-designed negotiation, monitoring and reporting system that creates an effective system of checks and balances.

Also, this institutional commitment must be workable and credible, which means that the conditions and criteria stated earlier regarding the optimal size of an OCA apply also to these aspects. Because the initial benefits R_t may be low and uncertain as long as $t < t^*$, a strategy of defection of one of the players due to the Prisoner's Dilemma situation is a real possibility. Therefore, a proper formal institutional arrangement will be vital in order for a cooperative game to be sustained. Ideally, the institutional setting must incorporate penalties for non-cooperative behaviour, in order to lower T and the temptation to defect, as in the European case.

Once the game has been repeated a sufficient number of times, so that credibility has been established and welfare gains have become clear to all players, they will have an incentive to continue, even when transitory conditions provide an incentive to defect.¹² In addition to the arguments of the endogenous gains from cooperation, one could add that with the passing of time and the building-up of regional institutions, regional integration and policy coordination gain credibility with national and international agents: a key factor in the sustainability of national macroeconomic.

As noted earlier, political economy considerations are taking on an increasing role in the analysis of macroeconomic policymaking. The same trend can be observed in applied development economics, where research brings together the work of economists and political scientists to focus on governance and on the interaction of economic and political factors in the

¹² As recently exemplified by the European case, regional commitments to reduce the fiscal deficit may be counterbalanced by short-term national considerations. Nevertheless, member countries, even the largest ones as in the cases of France and Germany, take the political consequences of a regional sanction very seriously and the prospect, and hence the consequences, of a breach of the regional rules have fuelled a strong debate in Europe.

making and working of actual policy. As often occurs in developing countries, when competing objectives cannot be reached simultaneously with the current set of policy instruments, policymakers are constrained to second-best solutions. In such a situation, competing objectives must be reached sequentially, and short-term deviation from pre-announced policies should not be mistaken for an abandonment of initial goals.

This means that the long-term commitments announced by the policymakers must be credible. When the national situation is less than favourable in that respect, policy-takers may be tempted to interpret short-term deviations from pre-announced targets by policymakers as discretionary shifts in policy, and hedge against this risk (for example by reducing their demand for national currency). Bringing in the supra-national dimension can help to avoid this outcome. Persson and Tabellini (1990) state that the decision to join a supra-national arrangement provides a regional "commitment technology" that gives more credibility to policymakers.

By providing external auditing of the macroeconomic situation, regional monitoring and analysis will help to discriminate between exogenous and endogenous policy shocks when actual inflation deviates from the pre-established target. Provided that regional institutions are sufficiently isolated from national pressures, they would also be instrumental in consolidating the credibility of the national institutions when deviations between ex ante objectives and ex post achievements are unintended and due to external factors. Being regionally negotiated and self-imposed, the ownership factor should help in facilitating the definition of a consensus between policymakers and civil society on the need to respect national commitments, unlike other international monitoring arrangements (e.g., by the International Monetary Fund).

3. The uncertainty of the model

Because the application of economic theory to real-life situations is not always unambiguous, there is always a probability of error when adopting a particular model. Uncertainty about parameters and disagreement among coalition partners about the right economic model to follow pose a real challenge to a cooperative economic policy. Policymakers may have different beliefs about how an economy actually works. Disagreement is obviously not an obstacle to cooperation, but because

of the uncertainty about the “true model”, negotiations may lead to the adoption of a wrong model and result in less welfare than non-cooperation.

Uncertainty may reduce the present value of the expected welfare benefits. Translated into the Prisoner’s Dilemma perspective, a simple tit for tat strategy to achieve cooperation is collectively stable if, and only if, the weight of the future outcome w in today’s decisions is large enough.

On the other hand, –as occurs with the gradual welfare gains from OCAs– part of this uncertainty is endogenously determined and changes with the number of times the “coordination game” is played. In this case, as we shall see, uncertainty is reduced through cooperation (while the expected welfare gains from OCAs are increased). When both policies and models are subject to choice, policymakers have four options: i) they may make no attempt to agree on the appropriate model or to coordinate their policies; ii) they may exchange information or bargain over the model, but make no attempt to choose their policies jointly; iii) they may not discuss which model should be used, but may coordinate their policy choices explicitly (they do not discuss the justification for their policies); and lastly, iv) they may agree both on the choice of the model and on coordination of their policies. Hughes Hallet (1995) shows that disagreement over the model, in a situation of uncertainty, can still be beneficial for policymakers if it leads to an exchange of information, thus reducing with the passing of time the risk of serious losses.

In practice, countries that enter into an active process of macroeconomic coordination do so after an extensive period of dialogue, exchange of information, mutual monitoring and convergence. The European Union is perhaps the best example of this process of

reduction of uncertainty through the sharing of information and mutual monitoring. In the Latin American region, there are several examples of similar processes, and in all subregional integration groups, national decision-makers are actively engaged in a dialogue to reduce uncertainty concerning the key parameters of their respective economies.

Usually, the first step is to establish convergence criteria for key indicators (as in the Macroeconomic Monitoring Group (GMM) in Mercosur, or as these indicators were set in the Andean region, the Caribbean or the Central American Common Market).¹³ This process of defining common concept for the monitoring of the respective economies from a regional perspective is an important step in promoting a regional dialogue on key variables, defining transparent criteria and building mutual trust among regional partners: all aspects whose importance cannot be underestimated.

These processes are still at an initial stage, and more efforts should be made to define more precisely the models underlying the national economies and their interactions. This implies specifying the key parameters of each national economy forming part of the subregional group and modelling the interdependence between them. In addition, unlike the countries of the European Union, those constituting the Latin American and Caribbean region are developing economies, i.e., economies where the key parameters and the systemic response to impulses are prone to rapid and substantial change. Thus, it is even more important in the Latin American context than in the European Union to maintain close monitoring of the key indicators and foster a common programme of analysis of the reaction functions to external and policy impulses.

¹³ See ECLAC (2002a), Chapter V.

V

Conclusions

This article has shown that, despite favourable indications, there is still a large gap between the actual dynamic of shock transmission in the region and the demanding conditions sets by pure OCA criteria, even when considering only the subregional dimension. The recent developments in the positive theory of endogenous OCAs, however, indicate that full observance of the OCA concept is not a necessity for the initiation of mutually beneficial coordination. If the dynamic of the cooperative game works well, then the iteration of the cooperative game should naturally guide the countries out of the Prisoner's Dilemma. In the absence of a leader country, cooperation must begin with a (minimum) consensus of the participating countries: a process that calls for a preliminary phase of confidence-building based on dialogue and exchange of information and culminates in a regional agreement. That agreement should include the necessary commitment technology to initiate and maintain the cooperative game at least in the first phase of implementation, when benefits are still diffuse and temptation to defect is strong. This commitment technology should therefore include features that increase both the immediate benefits of cooperation (such as the Structural Funds in the European Union) and the cost of defection (peer pressure from within the region and loss of reputation on international markets).

In this particular framework, the probability of cooperation is enhanced when there are fewer players, when each player's discounting of the future benefits is sufficiently low (i.e., if players are farsighted), when they are interacting frequently, and when the benefits and costs associated with each strategy are well known. Through dialogue and cooperation, systemic uncertainty will be reduced and welfare gains will increase. In this case, the outcome of the iterated Prisoner's Dilemma game will result in the repeated selection of a cooperative strategy in every repetition of the game. In contrast, cooperation breaks down or never even begins when there are too many parties,

when players are short-sighted, or when benefit conditions and key parameters are rapidly changing.

From the technical standpoint, regional cooperation is the most appropriate forum when the regional partners' economic policies are themselves the source of externalities, as is the case when instability and lack of credibility in one country cause contagion of neighbouring economies. Thus, providing the regional institutional arrangements function well, regional cooperative solutions are at least comparable -if not superior- to individual national solutions on both technical and institutional grounds.

Translating these theoretical conclusions into practical regional economics, this means that countries which have commercial and financial relations, which interact frequently, and which cannot escape from the consequences their decisions have on their partners, have a strong probability of entering into a cooperative dynamic which will be beneficial for all the cooperating participants and will be stable, at least within the original cluster. All these arguments point in the direction of a subregional arrangement, at least in the early phase of policy coordination. From a more political perspective, the commitment-cum-monitoring technology deriving from subregional negotiation among peers is also easier to legitimate than extra-regional supervision. From a broader perspective, regional cooperation in the face of large external financial shocks is also the most appropriate way to face the asymmetries built into the new international financial system, where purely national answers are notably insufficient (Ocampo, 2001). In the present situation, however, the degree of integration is still too weak for macroeconomic coordination to be self-enforcing. Efforts to promote macroeconomic coordination should be complementary to, and not a substitute for, more traditional policies designed to deepen trade relations and strengthen the institutional structure for integration.

(Original: English)

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Import substitution in high-tech industries: Prebisch lives in Asia!

Alice H. Amsden

Prebisch "lives" in Asia because leading Asian governments still actively promote import substitution of high-tech parts and components. But they use promotional measures other than tariff protection to do so. Given performance standards, they have been highly successful. Now Latin America is behind Asian latecomers because it missed becoming a player in the information technology revolution. But Latin America can still learn from Asia rather than the Washington Consensus about how nationally owned enterprises can build mature high-tech industries in fields other than electronics.

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I

Introduction

Raúl Prebisch became associated in the 1950s with Latin America's controversial policies of import substitution and anti-export growth.¹ Despite the rise of basic industry that resulted from that strategy, import substitution was disparaged for its inefficiency and balance-of-payments problems in the mid-1980s, if not earlier. The policies and institutions that had supported it were dismantled amidst a global wave of liberalization, and Latin America's markets were opened to exports from overseas and still greater investments from multinational firms.

Ironically, as Latin America was obliterating its past, Asia was reinventing import substitution for high-tech industries, and was growing faster than Latin America under a liberal regime. A high proportion of the value of many electronics devices (such as notebooks and cell phones) was initially imported. Government policy was oriented towards import substituting the parts and components that made up these products as a way to create high-paid domestic jobs and globally competitive nationally owned enterprises. The import substitution policies to promote high-tech production in China, India, Korea and Taiwan (hereafter referred to as Asia) were less distortionary than those used to promote mid-tech industry, insofar as they did not involve high tariff protection. Nevertheless, the Asian State began to play an extremely activist role in jump-starting the high-tech sector: a role with which Raúl Prebisch would have been familiar. In China, India, Korea and Taiwan, the governments were involved in the smallest details,

such as cherry-picking specific companies for subsidies (in the form of residence in a science park, for example) and spinning off parts of government labs to create new firms.

Asia's promotion of science and technology and regional development deviated from the free market ethos of the Washington Consensus, but such interventionist measures were legal under the World Trade Organization (WTO). WTO members may still promote science and technology at the company level, much as the United States does through its Department of Defense (a staunch supporter of the computer industry) and its National Institute of Health (a champion of bio-tech). WTO members may also promote regional development (by offering subsidies to companies that locate in underdeveloped areas), as countries with North-South income inequalities tend to do in the European Union.

The first part of this paper is designed to convey the sheer extent of government intervention in high-tech industry, using Taiwan as an example.² This discussion should be of interest to economists who are considering how to develop the anaemic high-tech industries of Argentina, Brazil (somewhat less anaemic), Chile and Mexico.³

The last section of the paper speculates on why Latin America's high-tech industries have stalled and what would be necessary to get an Asian-type approach up and running. The emphasis is on national rather than foreign ownership.

This study was prepared originally for the seminar "Development theory at the threshold of the twenty-first century", organized by ECLAC in Santiago, Chile, to mark the centenary of the birth of Raúl Prebisch.

¹ The latter charge is unfair. As early as 1968, Prebisch strongly advised the Argentine government to combine import substitution with export activity (Mallon and Sourrouille, 1975).

² This section is based on Amsden and Chu (2003).

³ Hereinafter, the term "Latin America" will be used to refer to these four countries.

II

National ownership and the high-tech industry

The emergence of high-tech industries in countries of relatively recent industrialization (“latecomers”)—even the mature high-tech industries that constitute most latecomers’ high-tech sector—requires entrepreneurship insofar as it entails the creation of the experienced human resources on which those industries depend. There is a great risk that such resources will exit from the firm that created them. Thus, either skill formation must initially be undertaken by the government, with the objective of diffusing capabilities to the private sector, or private firms must be entrepreneurial enough to grow and diversify sufficiently to retain the resources in which they invested.

As late as 2000, the high-tech sector in latecomer countries entailed mature products; Korea and Taiwan, for example, began to produce notebooks and cell phones only after such products had been produced in large volume in high-wage countries. Product maturity implies a relatively low gross margin that is rapidly falling over time. To reap profits in such an industry, a firm must enter quickly before profitability falls further, and it must produce at a high volume to overcome thin margins. Ramping up fast and adapting products in order to be quick to market involves risk-taking and entrepreneurship, since it requires investing in the creation of a new set of skills, coordinating their formation, raising the funds to finance this, and implementing and monitoring the whole process (Amsden and Chu, 2003).

The requisite skills may be cultivated by either State-owned or privately owned organizations, but nationally owned firms have a greater incentive than foreign-owned organizations to take the lead. National firms enjoy lower opportunity costs, more local knowledge and a higher probability of using the same sunk assets in a related local industry than do their foreign counterparts. The first entrants into a high-tech industry in latecomer countries are therefore likely to be nationally owned (State or private) entities. Multinational companies may once have played a formative role in developing labour-intensive, export-oriented industries in latecomers, and they may enter into high-tech industries and accelerate an existing growth momentum.⁴ However, it may be assumed as a hypothesis that the pioneers of high-tech industry in latecomer countries will be nationally owned firms with either direct or indirect experience in mid-tech sectors or in another type of economic activity, such as marketing foreign products (Amsden and Hikino, 1994).

Table 1 shows the share of high-tech industry in manufacturing value added in selected Latin American and Asian economies for the years 1980 and 1995 (the last year for which comparable data are available). The higher share of high-tech in China, India, Korea and Taiwan compared with Argentina, Chile and Mexico is striking. Only Brazil compares with the Asian countries in the extent to which its manufacturing sector is dominated by high-tech.

⁴ On the sequential timing of foreign direct investment, see Amsden (2001).

TABLE 1

Percentage of manufacturing value added in high-tech industries, 1980 and 1995
(Percentages)

1995	Argentina	Brazil	Chile	China	India	Indonesia	Korea	Malaysia	Mexico
Other chemical products	3.5	10.1	8.0	1.9	7.9	3.6	4.7	2.2	7.2
Non-electrical machinery	3.1	7.5	1.8	11.1	8.3	1.0	8.4	5.0	3.3
Electrical machinery	3.0	8.0	1.5	9.9	8.4	3.1	14.4	27.4	3.2
Transport equipment	7.4	10.4	2.0	6.3	8.5	8.9	10.7	4.7	10.1
Professional and scientific goods	0.4	0.8	0.2	1.1	0.7	0.1	0.8	1.2	1.7
<i>Total</i>	<i>17.4</i>	<i>36.8</i>	<i>13.3</i>	<i>30.2</i>	<i>33.7</i>	<i>16.6</i>	<i>39.1</i>	<i>40.5</i>	<i>25.6</i>
	Taiwan	Thailand	Turkey	Rest (average)		Japan	France	UK	US
Other chemical products	2.7	2.5	4.7	4.9		5.8	6.1	7.0	6.8
Non-electrical machinery	5.2	3.3	4.5	5.2		12.1	7.0	11.3	10.5
Electrical machinery	17.3	5.5	6.0	9.0		14.7	10.0	8.4	9.6
Transport equipment	7.4	5.2	6.7	7.4		10.6	10.9	10.4	11.6
Professional and scientific goods	1.0	0.9	0.3	0.8		1.3	1.5	1.6	5.8
<i>Total</i>	<i>33.6</i>	<i>17.3</i>	<i>22.3</i>	<i>27.2</i>		<i>44.4</i>	<i>35.6</i>	<i>38.8</i>	<i>44.3</i>
1980	Argentina	Brazil	Chile	China	India	Indonesia	Korea	Malaysia	Mexico
Other chemical products	4.9	4.9	6.5	3.3	8.1	7.1	5.2	3.2	5.2
Non-electrical machinery	5.5	10.0	1.9	15.1	8.6	1.6	3.4	3.2	4.8
Electrical machinery	3.7	6.3	1.8	3.6	8.1	5.3	8.1	12.3	4.4
Transport equipment	9.3	7.8	2.5	3.4	8.3	6.4	5.9	4.2	6.9
Professional and scientific goods	0.4	0.6	0.1	9.2	0.7	0.1	1.1	0.7	0.7
<i>Total</i>	<i>23.8</i>	<i>29.8</i>	<i>12.9</i>	<i>34.6</i>	<i>33.9</i>	<i>20.4</i>	<i>23.8</i>	<i>23.6</i>	<i>22.1</i>
	Taiwan	Thailand	Turkey	Rest (average)		Japan	France	UK	US
Other chemical products	1.0	2.7	3.6	4.7		4.6	3.9	4.6	4.6
Non-electrical machinery	1.9	1.9	4.7	5.2		11.6	10.1	13.0	13.3
Electrical machinery	7.0	3.8	4.3	5.7		11.5	8.9	9.3	9.7
Transport equipment	2.5	3.7	5.0	5.5		9.5	11.0	10.7	10.6
Professional and scientific goods	0.9	0.3	0.1	1.2		1.7	1.4	1.3	3.6
<i>Total</i>	<i>13.4</i>	<i>12.4</i>	<i>17.6</i>	<i>22.3</i>		<i>38.7</i>	<i>35.2</i>	<i>38.9</i>	<i>41.9</i>

Source: Amsden (2001).

These differences can be attributed to the ownership of the firms and to government initiative. In turn, the importance of national versus foreign ownership and the activism of the State have deep historical roots involving the nature of prewar manufacturing experience and technology transfer (Amsden, 2001).⁵ Two major types of transfer may be distinguished: emigré and colonial. National ownership and government initiatives to promote high-tech sectors tend to be greater

in countries with colonial—rather than emigré—prewar manufacturing experience.⁶

In the emigré form of experience, technological capabilities and business organizations were transferred by means of foreign individuals (and later companies) that located operations in a latecomer setting. Like the North Americans and Europeans in Latin America and the Chinese in Asia (Malaysia, Indonesia and Thailand), such emigrés are a major source of modern business know-how and skill formation. The boundaries between national ownership and foreign ownership become blurred, and government policy

⁵ This paper does not discuss the cases of Malaysia, Indonesia and Thailand, whose manufacturing sectors are relatively young compared with the four Latin American and four Asian countries discussed. Malaysia's share of high-tech industry is high in terms of manufacturing value added owing to labour-intensive electronics assembly, which is not high-tech in terms of skill content. For a more detailed discussion, see Amsden (2001). Nevertheless, both Thailand and Malaysia have begun to invest heavily in R&D. Investments in technology in Indonesia were never negligible. Over 25 years ago, Indonesia sent a large contingent of engineers to the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology in order to build its aerospace industry.

⁶ The measurement of national versus foreign ownership across countries in any particular industry, or in the manufacturing sector at large, is vexed by different definitions of "foreign"—the percentage of equity in an investment that is foreign owned. The available cross-country data, however, suggest that foreign direct investment (FDI) is much more important in the manufacturing industries of Latin America than in Asia (as defined above); see Amsden (2001).

towards promoting national ownership over foreign ownership is at best ambivalent. In identity politics, it is unclear who is a foreigner and who is a national.

In the colonial type of prewar manufacturing experience, business know-how and foreign skills were transferred by firms that resided in the home country of the colonial ruler. For example, the major nationality of foreign firms in India was British, while in Korea and Taiwan, it was Japanese. This form of technology transfer was favourable to national ownership because colonialism eventually ended in decolonization, which had many positive impacts on countries that had succeeded in acquiring prewar manufacturing experience. Foreign political rule was displaced by national political rule, and colonial firms typically were taken over by nationals. In Indonesia, roughly 400 Dutch-owned companies were left behind—albeit practically gutted—when Dutch domination ended (Lindblad, 1996). In India, British enterprise either sold out to Indian buyers or could not compete against them (Tomlinson, 1981). In Korea and Taiwan, Japanese manufacturing enterprise and banks fell into the hands of national governments (Amsden, 1989; Fields, 1995). In China, foreign-owned firms were appropriated after the Chinese Communist revolution. Decolonization thus cleared the way for nationally owned companies to grow, whereas emigrés tended to crowd out nationally owned firms in industries subject to economies of scale.⁷ In turn, nationally owned firms, especially those originating in mid-tech industry, often became the entrepreneurs behind the rise of high-tech industries and services such as the computer industry, telecommunications, finance and high-speed trains, as in the cases of Korea and Taiwan.⁸

Decolonization also created a culture of nationalism, which gave rise to political demands for land reform and government policies to promote nationally owned firms and the high-tech industry. Economic nationalism took many forms, but all shared the objectives of creating an alternative to multinational enterprise and generating the wherewithal to move up the ladder of comparative advantage, beyond labor-intensive or raw-material-intensive industries. This required, first, government-owned national research and development (R&D) laboratories, such as the

defence-related labs in China and India, which became breeding grounds for private high-tech industries, and second, investments in tertiary education, which tended to be high in Asia.

Finally, nationalism tended to foster an ethos of equality, which was patently absent under colonial rule. All four Asian countries discussed above introduced land reform in varying degrees of radicalism, with the most radical in China and the least in India. Land reform abolished the large estates that had earned Ricardian rents (that is, above normal profits) in prewar years. With such profit-making opportunities gone, the opportunity costs of investing in manufacturing industries were lowered, making manufacturing a more attractive financial venture than it had been when consolidated holdings of land and mining rights characterized the agricultural sector, broadly defined. The reduction of opportunity costs outside manufacturing also made it less costly for the government to subsidize manufacturing activity in order to lure capital and human resources out of agriculture and into new import-substitution manufacturing industries (Amsden, 2001).

The degree of high-tech activity, measured in table 1 as the share of high-tech industry in total manufacturing value added, therefore tends to be higher in Asia than in Latin America. The exception is Brazil, where the State launched a highly nationalistic project to develop local capabilities to manufacture mini-computers. This project was generally unsuccessful, in part because of weaknesses in tertiary education and lack of experience among nationally owned firms, which were stronger in the realm of finance than manufacturing (Evans, 1995; Sridharan, 1996).

The difference in high-tech development in Latin America and Asia can thus be attributed to history, specifically to whether prewar manufacturing experience was acquired through emigration or colonialism.

The question now becomes how and why to promote high-tech industry in emigré-dominated economies. But first the paper examines the case of Taiwan, where both the emigrés (from the Shanghai region of China) and decolonization were critical in moving beyond late development, based on mid-technology industries.

⁷ For the Argentine automobile industry, see Cochran and Reina (1962).

⁸ On Taiwan, see Amsden and Chu (2003).

III

Government leadership in high-tech in Taiwan

The Taiwanese government's role in promoting high-tech was major insofar as it was meant to create the new market segments in which national companies could then compete. Its strategy featured import substitution and the germination of parts suppliers around a lead firm, or "second mover" (the first latecomer firm to enter a mature high-tech industry). Whereas the government had spawned new industries in the old economy using State-owned enterprises and import-substituting policy tools such as tariff protection, local content regulations and development banking, it did so in the new economy using spin-offs from State-owned research institutes and science parks, together with import-substituting policy tools such as subsidies to public and private R&D, tax breaks and financially favourable conditions for residents of science parks.

By 2000, there were more than 15,000 professionals in Taiwan who had at one time or another worked for ITRI, the government's premier research center devoted to high-tech industry.⁹ Of these 15,000 professionals, more than 12,000 had, in fact, gone to work in such industry. Of these 12,000, 5,000 had been employed in Hsinchu Science-Based Industrial Park.¹⁰ ITRI was also responsible for spinning off the two pillars of Taiwan's semiconductor industry, the United Microelectronics Corporation (UMC) and the Taiwan Semiconductor Manufacturing Company (TSMC).

The government sought to break technological bottlenecks to enable nationally owned second movers to compete globally in "new" high-tech subindustries, and then to pass on their know-how to local parts suppliers. By the 1970s, the fast growth of labour-intensive exports had depleted Taiwan's "unlimited" labour reserves, and major projects in heavy industry were already in place. It was thus strongly believed that the next set of growth opportunities had to be created in high-tech industry, and that the government had to play a major role in cultivating them. "To many policy makers in Taiwan, the classical price-mechanism

type of resource allocation was simply too slow a process to promote industrial development. They advocated that more direct industrial policy measures be considered to speed up development of high-tech industry" (San, 1995, p. 35).

The government promoted high-tech industry on several fronts, including fiscal policy, the creation of science parks, and the pro-active investments of public R&D institutes, some of which assumed multiple roles. ITRI, for example, undertook key technology projects to give a head start to pivotal industries, such as semiconductors and personal computers (PCs). Its spin-offs thus became Taiwan's leading firms in integrated circuit design. ITRI also actively initiated projects to explore major areas in which it believed the private sector might profitably invest next. After an industry got started, ITRI would undertake smaller-scale projects to substitute for the importation of key components. The government's objective was always to create local growth opportunities and local value added, besides upgrading the level of local technology. All forms of promotion converged in industries judged to be strategic in terms of their technology intensity, value added, market potential, industrial linkages, energy consumption and pollution content.

The government passed the "Development of Critical Components and Products Act" in 1992 to select 66 inputs for import substitution in an effort to reduce a persistent trade deficit with Japan.¹¹ Despite a bias in favour of imports on the part of domestic users of high-tech components, scarcities of such components promised high prices and high profits for firms that could make them instead of importing them. Users of such inputs had an added incentive to make them in-house in order to stabilize their supply. For its

⁹ ITRI is the Industrial Technology Research Institute.

¹⁰ The ITRI (2001) and Industrial Technology Information Service (ITIS) reports are available at http://www.itri.org.tw/eng/about/annual/annual98/spec_pg3.jsp

¹¹ Taiwan's annual trade deficit with Japan grew in US dollars to about ten billion in 1991 from only two billion or three billion in the first half of the 1980s. Japan was the only trading partner against which Taiwan persistently ran a large trade deficit. Nevertheless, the share of Taiwan's imports from Japan out of total imports was relatively stable in this period; it remained at around 30%. Import dependence on Japan was thus probably a better indicator of Taiwan's technological dependence than its trade imbalance. Arguably, therefore, the passage of the "Development of Critical Components and Products Act" had less to do with trade structure than with industrial upgrading.

part, the government became committed to the substitution of imports of high-tech components to prevent hollowing out, or the movement of manufacturing jobs overseas.

Government leadership in strengthening science

and technology (S&T) is illustrated below using the examples of compact disk-read-only memory devices (CD-ROMs), liquid crystal displays (LCDs) and integrated circuit (IC) design. Key government programmes are then briefly reviewed.

IV

Import substitution cum high-tech promotion

1. CD-ROMs

The CD-ROM, an optical storage device,¹² was chosen by the Taiwan government as a target industry in 1992 after extended discussion among government officials, academics and leading business people. Several related key technologies, such as the optical pick-up head, were also identified for promotion. The Department of Industrial Technology (DoIT) in the Ministry of Economic Affairs (MOEA) handled the so-called supply side: it invited research institutes, mainly ITRI, to submit R&D proposals to develop the selected items. Resources came from the Science and Technology R&D fund in four consecutive years, from 1993 to 1996. By the end of 1996, the total budget was roughly US\$10 million.

The Industrial Development Board of the MOEA handled the so-called demand side by inviting private companies (based on specified criteria) to participate in the development process. The programmes involved were the “Regulations Governing the Development of New Industrial Products by Private Enterprises” and the “Regulations Governing Assistance in the Development of Leading Products.” These two programmes provided R&D grants to private enterprises to engage in new

product development. The grants were to be repaid if and when sales actually materialized.

The CD-ROM project involved 25 firms in joint development and technology transfer.¹³ Four patents were derived for CD-ROMs and 24 for CD-ROM pick-up heads. Ramp-up was astonishingly fast. As indicated in table 2, Taiwan’s share of CD-ROMs in world output rose from 1% in 1994 (218,000 units) to 50% only five years later (48,690,000 units).

TABLE 2

CD-ROM production, 1991-1999^a

Year	Output, thousands of units		B/A	ITRI cooperation (number of firms)
	A. World	B. Taiwan	%	
1991	936			1
1992	1 050			7
1993	6 740			25
1994	17 966	218	1	25
1995	38 572	3 600	9	25
1996	51 000	9 170	18	25
1997	61 000	16 000	26	
1998	89 300	30 780	35	
1999	96 860	48 690	50	

Source: ITRI (1997) and Market Intelligence Center (various years).

^a CD-ROM = compact disk read-only memory.

¹² Information on CD-ROMs is derived from the following sources: Industrial Development Bureau (various years), ITRI (1997), ERSO (1994), Hsiao (1994) and Market Intelligence Center (various, no. 2267).

¹³ Interviewed firms include BTC, Inventec, Acer, U-Max, and Lite-On. BTC and Lite-On were also involved in the project to develop the CD-ROM pick-up head.

TABLE 3

Technological upgrading in the CD-ROM industry, 1994-1999
(Percentage of total output)

Year	CD-ROM read speed												Total		
	2	4	6	8	10-12	16	20	24	32	36	40	44-48		>50	
1994	100														100
1995	40	47	13												100
1996			13	67	20										100
1997 ^a						23	22	55							100
1998 ^b								2	11	27	60				100
1999 ^b										6	31	47	16		100

Source: Market Intelligence Center (various years).

^a = second half; ^b = fourth quarter.

Although the firms that acquired CD-ROM technology from ITRI were able to begin assembly operations at once, and although the CD-ROM at the time was already a mature product, technological change continued to be rapid. As shown in table 3, manufacturers had to upgrade their know-how repeatedly to produce faster CD-ROMs. Moreover, they had to import key components from Japan. Local production of disks and spindles gradually came on line, but the two most critical inputs, the optical pick-up head and the ASIC set, were still being imported after 1996, although ITRI was in the process of developing them.

Taiwanese firms moved ahead of Japan as the major producers of CD-ROMs, but Japanese companies were shifting to other new and improved models, such as the DVD-ROM and the CD-RW. Most Taiwanese firms were reluctant to enter into DVD-ROM production because they considered the royalty fees demanded by Japanese companies prohibitive, but then ITRI transferred DVD-ROM technology to 13 firms in 1997. Around 2000 the price of the DVD-ROM was twice that of the CD-ROM, but replacement of one with the other was expected to be slow.

2. Liquid crystal displays (TFT-LCDs)

Liquid crystal displays¹⁴ were pioneered in the late 1970s and 1980s by Japanese firms, first in their simpler forms (twisted nematic, or TN, and supertwisted nematic, or STN) and then in their more complex form (thin film transistor, or TFT).¹⁵ The latter represented a great

challenge to manufacturers owing to their extremely high financial and processing requirements. Profitability depended on low defect rates and high yields.

By the mid-1990s, some Korean chaebols (such as Samsung, Hyundai and LG), in collaboration with the ministries responsible for promoting technological innovation, had succeeded in entering the TFT-LCD industry and providing a modest challenge to Japanese hegemony. Some Taiwanese firms were competitively producing TN- and STN-LCDs by the early 1990s, but they hesitated to enter the more capital-intensive TFT-LCD market.

Two events probably pushed them into action. Prior to the 1997 Asian financial crisis, Samsung, Hyundai and LG had planned large expansions to catch up with Japanese manufacturers, but the crisis led them to mothball their plans. At the same time, Japanese business groups that were suffering from prolonged recession and overcapacity became unable or unwilling to continue making the huge investments in TFT-LCDs necessary to keep up with the competition. A few, therefore, decided to cooperate with Taiwanese firms by granting them technology licenses and giving them OEM orders.¹⁶ Suddenly, therefore, leading Taiwanese firms announced plans to obtain technology from Japanese partners and make big investments to produce TFT-LCDs.

The entry of Taiwanese firms changed the global distribution of large TFT-LCD capacity. Taiwan's share of global capacity increased from zero percent in 1998, to 2% in 1999, 15% in 2000, and 26% in the first quarter of 2001. With these huge increases in capacity,

¹⁴ Information on the liquid crystal display (LCD) industry is from Wong and Matthews (1998), Linden and others (1998) and ITRI (1999 and 2000b).

¹⁵ An LCD is the best-known example of the type of microelectronic flat panel display which is used in electronic calculators, laptop computers and other applications.

¹⁶ A joint venture between IBM and Toshiba formed in 1989 ceased making LCDs for computers in May 2001. Toshiba will use its Japan facility to make LCDs for cell phones, and IBM will use it for ultra-high-resolution applications such as medical devices (Nikkei Weekly, 2001).

the international price of TFT-LCDs fell sharply, and the price of a 14.1-inch TFT notebook panel dropped from US\$1100 in the third quarter of 1997 to a little over US\$600 in the fourth quarter of 2000. With large investments and falling prices, mergers and acquisitions came onto the agenda of the firms in this sector.

ITRI had initiated an R&D project on TFT-LCDs in 1988, but no Taiwanese firm relied on ITRI's technology when the time came to invest in TFT-LCD capacity. In this respect, ITRI's efforts were a failure. Nevertheless, the competitiveness of the high-tech groups that entered into TFT-LCD production in Taiwan depended on further technological development, and it was expected that ITRI would play a leading role at this higher stage. Indeed, it established Taiwan's first low-temperature polysilicone (LTPS) TFT-LCD laboratory in 2000 and has developed some key components for more advanced types of panel display.

3. Integrated circuit (IC) design

The basis of a networked semiconductor industry stemmed from the Taiwanese government's creation of two world-class semiconductor manufacturers: United Microelectronics Corporation (UMC) in 1980, which is still government-owned, and the larger Taiwan Semiconductor Manufacturing Company (TSMC) in 1987. Both were spin-offs from experimental IC factories set up by the government-owned Electronics Research and Service Organization (ERSO), although they emerged at different stages and from different projects.¹⁷ TSMC was also a "foundry" that specialized only in wafer production, eschewing investment in auxiliary operations, unlike the vertically integrated device manufacturers (IDMs) that dominated the semiconductor industry worldwide.¹⁸ The specialization strategy was the outcome of a deliberate government decision influenced by a prominent State official, K. T. Li, and Morris Chang, who came to Taiwan at the government's invitation in 1985 to head ITRI and later TSMC.¹⁹ Chang was a former senior vice president at

Texas Instruments and had been the highest ranking Chinese-American in the United States high-tech industry.

Three IC design companies (Quasel, Mosel and Vitelic) were established in Taiwan with government support by returnees (Taiwanese living abroad who return to live and work in Taiwan) from the United States. In 1985, all three were in financial trouble, and they again requested government help.²⁰ They wanted a local specialized foundry that could provide them with much faster and better service than large-scale foreign integrated device manufacturers, who regarded their orders as peripheral to their main business. The intellectual property of a design was also better protected by a foundry than an IDM.

Taiwan's IC design industry leapt from eight houses in 1985 to fifty houses in 1988. Sales grew 175% in 1988 and 143% in 1989. This was "partly due to the growth of the domestic market and partly due to the establishment of TSMC".²¹ In 1999, 91% of the fabrication work demanded by Taiwan's IC design houses was done locally. The top seven IC design houses are estimated to have accounted for 60% to 70% of total IC design revenue. In the same year, 62% of semiconductor output was sold locally.²²

Taiwan's IC design companies benefited from local supporting industries other than foundries. The IC mask industry, like the foundry industry, was set up by the government. ERSO transferred mask technology from two American companies —IMR in 1977 and Electromask in 1980— and began providing commercial masking services to local IC producers. The responsible division was then spun off as the Taiwan Mask Corporation in 1989.²³ Having a domestic masking service is estimated to have saved local firms 20 days or more in the complete IC production cycle (Lin, 1987).

Some United States electronics firms had moved into southern Taiwan's export processing zone in the 1960s to do packaging, testing and assembly (such as

¹⁷ ERSO is part of ITRI.

¹⁸ The stages involved in the production of an integrated circuit are design, manufacturing, masking (or sealing), packaging and testing.

¹⁹ UMC ultimately adopted TSMC's strategy and became less vertically integrated, assuming the structure of a foundry.

²⁰ ERSO started a multi-project chip programme with the National Science Council in 1983 to help build up IC design capabilities in Taiwan's universities (Chen and Sewell, 1996). Mosel and Vitelic merged in December 1991 and now manufacture and market worldwide dynamic random access memory (DRAM) chips and other products. Revenues were US\$880 million in 2000. Quasel is no longer in business.

²¹ Market Intelligence Center (1989, p. 390); see also Lin (1987) and Chiang and Tsai (2000).

²² Ministry of Finance website (www.mof.gov.tw/taiwan-website/5-gp/eu/tables.htm).

²³ See ERSO, 1994.

General Instrument, Motorola, Microchip and Texas Instruments). These industries were gradually localized; both Motorola and Microchip, for example, sold their packaging capacity to nationally owned firms in 1999. In that year Taiwan's packaging capacity ranked first in the world: 99% of domestic packaging demand was supplied locally, and local packagers got half their business from domestic firms (ITRI, 2000a).

The human resources involved in the IC design industry, like the IC industry as a whole, came largely from ERSO and other government institutions or programmes and, to a lesser extent, from abroad. Most of the early IC design houses, such as Syntek (1982),

Holtek (1983), and PTD (1986) were either ERSO spin-offs or were set up by former ERSO staff. These firms, in turn, had unintended spin-offs of their own, such as Chip Design Technology (1985) and Tontek (1986), which spun off from Syntek. When foreign design firms, such as Motorola and Philips, set up IC design facilities in Taiwan in the late 1980s, they either recruited from ERSO or asked ERSO to conduct their training courses (Lin, 1987). Returnees became important only in the 1990s. Of the top ten IC design houses in Taiwan, it is estimated that two were run by returnees in 1989, but that number had increased to five by 1995 (Hsu, 1997).

V

Start-ups: firm-level targeting

Taiwan was one of the first latecomer countries in which venture capitalism flourished, playing a major role in supporting Taiwan's high-tech industry.²⁴ The government was the catalyst: it began promoting private venture capital funds to finance start-ups in 1983, and it also founded its own venture capital firm around the same time.²⁵

Nevertheless, venture capitalism cannot be credited with Taiwan's large (although steeply declining) number of start-ups. According to venture capital data for 1995-2000, start-ups received only a minor share of funds. Of the five stages of a firm's life cycle (seeding, start-up, ramp-up, maturity and restructuring), start-up

received only 13.3% of total venture capital funding in 1995.²⁶ Assuming the available data are accurate, the lion's share of funding went to ramp-up and maturity (the former included the transformation of privately held companies into publicly held companies through initial public offerings, or IPOs)²⁷ By 2000, the share of total venture capital allocated to start-ups had risen to 32.8%, but this was still below the share allotted to expansion and maturity.

In cases in which an outside agent incubated a start-up, that agent was typically the government rather than a private venture capitalist. The government sometimes nurtured a start-up directly, as in its founding of Taiwan's two world-class State-owned semiconductor foundries, UMC and TSMC. Usually, however, the government nurtured start-ups indirectly by providing them with the finance, facilities and access to bottleneck technologies that were necessary for them to grow.

A major form of incubation in Taiwan was the science park, with the first located south of Taipei in

²⁴ "Seventy percent of VC [venture capital] investments have been in computer-related and electronics sectors. The rest occurs in communications, industrial products, and medical/biotechnology. The concentration by Taiwan's VC on technological rather than traditional industries, which is similar to the case of Singapore and South Korea, can be explained by the tax incentives which channel VC towards technological enterprise investments" (Wang, 1995, p. 86).

²⁵ In 1983 the Ministry of Finance introduced a statute ("Regulations Governing Venture Capital Investment Enterprises") that laid down guidelines for the organization of venture capital firms, their minimum capital requirements, and rules for the management and supervision of their funds. The first venture capital company to be created was Multiventure Capital Corp. (1984), a joint venture between Acer and Continental Construction. A second joint venture was founded in 1986 between an American venture capital firm (Hambrest & Quest) and various government agencies, in which 49% of the firms' minimum capital requirements came from the government's development fund (the Executive Yuan) and a quasi-development bank (Chiao-Tung). See Tzeng (1991) and Taiwan Venture Capital Association (www.tvca.org.tw/indexe.htm).

²⁶ The funding of start-ups by the venture capital industry may have been more important in the 1980s than in the 1990s. It has been estimated that of the 80 firms operating in Hsinchu Science Park in 1987, as many as 43 were financed by venture capitalists (Liu and others, 1989).

²⁷ "The achievements of VCs in directing technological enterprises about how to go public with their stock are considerable" (Wang, 1995, p. 90). Public offerings were the major exit strategy of venture capital investors.

Hsinchu and the second in Tainan in southern Taiwan. Start-ups were cherry-picked by the government for residence in these parks. Park residents received a set of comprehensive and generous subsidies that included tax and import duty exemptions, grants and subsidized credit, below-market rents for high-quality factory buildings or sites, living amenities for high-calibre researchers (including bilingual language instruction for expatriates' children), and access to government and university research facilities. "The engine of economic growth in the 1980s in Taiwan [was] the information industry, while the science-based industri-

al park [was] the driver of that engine" (Liu and others, 1989, p. 35).²⁸ Hsinchu Science-Based Industrial Park accounted for a large and increasing share of Taiwan's total R&D spending—as much as 18% in 1998—although it accounted for less than 1% of total output (sales as a share of gross national product). Finally, while the number of Ph.D.s in Taiwan grew from 6,000 in 1990 to roughly 16,000 in 1998, the share employed by firms in Hsinchu Science-Based Industrial Park rose just as sharply, from 2% to over 6% in the same period.

VI

Performance standards

Thus, despite the government's lip-service to liberalization and despite its opening of markets to greater foreign competition, industrial policy continued to play an important role in Taiwan's high-tech industries. The general success of industrial policy (as measured by global market share in information technology) stemmed from the maturity of the technology Taiwan was acquiring and to the performance standards observed.

The high-tech products that Taiwan targeted for import substitution were already mature by world standards, in that sales had already reached a high level before the products were manufactured in Taiwan. Thus, the government's targeting was not a shot in the dark: national enterprises had to face economic uncertainty, but they were not also confronting the technological unknown. Still, the potential margin of error on the government's part was large because technological uncertainty was not necessarily trivial even among mature products. For example, the government made the right choice, among several possibilities, in the case of information technology. Its "decision to bet on CMOS proved critical for Taiwan's ability to synchronize the development of semiconductor technology and its PC-based information technology so as to achieve a high synergy effect" (Chang and Tsai, 2000, p. 187)²⁹

The government's choices were based on careful and concerted studies of technological developments and trends by committees of government, business and university experts. In addition, the allocation of subsidies generally succeeded because, as in the past, the government tied the support to concrete, measurable and monitorable performance standards.³⁰ What was different in the high-tech stage of upgrading was that these standards tended to emphasize investment in assets that were knowledge-based.

Performance standards functioned in Taiwan's high-tech industries on two dimensions: as criteria that firms had to meet to be eligible for government subsidies, and as a condition for continuing to receive the incentives granted. The government had to be selective because the demand for subsidies by firms and research institutes exceeded supply. Conditionality itself worked because Taiwan's manufacturing sector—as evidenced by interviews with firms—had accumulated enough experience and skills to potentially produce high-tech products profitably. As projects became profitable, they generated the revenue for beneficiaries to repay their loans and to meet government R&D requirements—the programme's cardinal condition. Successful projects, in turn, reinforced the government's commitment to promotion.

²⁸ See also Chang (1992), Yang (1998) and Hsinchu Science-Based Industrial Park (2000), publication no. 2309.

²⁹ CMOS stands for complementary metal-oxide semiconductor. For more about this decision, see Chang and others (1994).

³⁰ For a general discussion of performance standards in the success of government intervention in late industrialization, see Amsden (2001).

The conditions for admission into Hsinchu Science-Based Industrial Park (*circa* 1980) were as follows:

- i) A firm had to have the ability to design products for manufacturing according to a business plan;
- ii) It had to have produced products that had undergone initial R&D that was still in process;
- iii) It had to have manufactured products with a potential for development and innovation;
- iv) It had to have experience in high-level innovation and R&D in a research department that conformed with a minimum specified size;
- v) It had to have adopted production processes that required either training in advanced technology or the spending of fairly large sums on R&D;
- vi) It was required, within three years after marketing a product or service, to employ a staff with no less than 50 % local technical personnel; and
- vii) Its operations had to contribute significantly to Taiwan's economic reconstruction and national defence (Liu and others, 1989).

Winners were selected by a tripartite committee of experts drawn from private industry, government and academic circles, as in other government programmes.

To qualify for government funds for strategic products or industries (such as CD-ROMs or TFT-LCDs), the following standards had to be met:

- i) Firms had to demonstrate their financial soundness and economic capabilities;
- ii) They had to prove that they operated a research department; and
- iii) They had to demonstrate substantial past R&D achievements.

Once a product receiving government promotion was successfully developed, intellectual property rights were handled as follows:

- i) Ownership was shared equally, as jointly owned property, by the Ministry of Economic Affairs (MOEA) and the firm that had developed the product, since the government had invested 50 % of total development costs;
- ii) If the MOEA wished to sell part of its intellectual property rights, the firm that shared these rights with the government had the right of first refusal; and
- iii) In the event that the firm failed to engage in production or to initiate sales of the targeted leading product within three years after the completion of the development plan (for reasons such as bankruptcy, marketing strategy or operational difficulties), the firm not only lost its intellectual property rights entirely, but also had to repay in installments the money the government had invested.

To receive subsidies for R&D, firms in strategic industries had to commit to spending a certain fraction of their own revenues on additional R&D. The fraction partially depended on firm size: the larger the firm, the greater the fraction. If the amount spent was below the prescribed ratio, then the firm had to contribute the balance to a research and development fund designated by the government.

All told, the government pro-actively promoted the accumulation of knowledge-based assets in strategic industries to maintain Taiwan's standing as a production base. The performance standards it exacted for its subsidies further promoted high value added.

VII

High-tech industry in Latin America

A high-tech industry is one whose technology is still tacit rather than explicit owing to firm-specific, proprietary capabilities that create novel products and earn above-normal rents. High-tech industries are thus desirable for a country because they require high-wage, skilled workers and offer opportunities for entrepreneurs to earn technological profits. By definition, the rate of return of a high-tech product is still above normal for a latecomer even when technology is mature by advanced-country standards.

The domination of the United States and Asia in electronics makes it very difficult for newcomers to enter this field. In the case of Asia, not only is the region the low-cost manufacturer of virtually all mature electronics products owing to well-developed private firms and national innovation systems, but Asian producers also benefit from national and regional external economies (Fujita and others, 2000).

Latin America has two possibilities to create high-tech industry and, concomitantly, the firms and skilled workers necessary for such industry to thrive. First, it can "induce" foreign-owned firms that dominate industries such as automobiles to do more R&D locally. As evident from table 1, a broad definition of high-tech includes industries that are not especially R&D-intensive, such as transportation equipment, alongside electronics and chemicals, for example, which are the two most R&D-intensive industries. Nevertheless, leading producers of automobiles, such as Volkswagen and General Motors, have large corporate laboratories at home. They have an incentive to transfer R&D activity to latecomers owing to lower engineering costs. They also have a disincentive to do so, however, given the shortage of experienced skilled workers, uncertain property rights, and an unwillingness on the part of scientists at corporate labs to relinquish control over the most interesting research projects. Top management wants to keep these projects at home, under surveillance.

The Singapore government was able to overcome these resistances on the part of foreign firms, which accounted for about 80% of the country's total manufacturing value added, by systematically and deliberately creating a system of incentives and a set of institutions to make foreign firms do more local R&D

(Amsden and others, 2001). In fact, the most advanced and promising R&D in terms of skill formation and new product development was undertaken by government-owned labs, acting independently. Such labs also worked with foreign companies to help them solve their production problems and, later, problems related to more advanced research. In addition, the government was scrupulous in protecting intellectual property and in subsidizing research and training by the private sector. This contributed to an increasing effort on the part of foreign firms to undertake R&D in Singapore. A similar scenario could be imagined for Latin America.

Second, Latin America has excelled in the production of petrochemicals. Some countries, especially Brazil and at one time Argentina, were also good at pharmaceuticals. These two industries, combined with bio-tech, comprise a large sector with diverse opportunities for new, high-tech products.

TABLE 4

Research and development expenditure , 1985 & 1995 (As a percentage of gross national product)

	1985 ^a	1995 ^b
Korea	1.8	2.8
Taiwan	1.2	1.8
India	0.9	0.8
Chile	0.5	0.7
Brazil	0.7	0.6
Turkey	0.6	0.6
China	...	0.5
Argentina	0.4	0.4
Malaysia	...	0.4
Indonesia	0.3	0.1
Thailand	0.3	0.1
Mexico	0.2	0.0

Source: All countries except Taiwan: UNESCO, various years; Taiwan: Taiwan National Science Council, 1996.

^a The data are for the following years: India and Indonesia, 1986; Brazil, Korea, Mexico and Turkey, 1987; Chile and Taiwan, 1988.

^b The data are for the following years: Malaysia, 1992; Mexico, 1993; India and Korea, 1994.

Whatever the potential, R&D for all industries to date accounts for a much lower share of gross national product (GNP) in Latin America than in Asia

(table 4). Very few Latin American firms are active in R&D, including firms in Brazil (Alcorta and Peres, 1998). The education system is not oriented towards research that has industrial applications, and government laboratories have been neglected in the liberal spirit of cutting back public expenditures. Latin America must therefore undertake substantial policy making and institution building if it is to promote high-tech industry. The problem is not the rules of the WTO (although these generally don't help), but rather the inappropriate technology-related institutions that exist as a result of the Washington Consensus.

Institution building in favour of high-tech growth was a major part of Taiwan's success, as seen above in

the case of the CD-ROM, TFT-LCD and IC design industries. These institutions, which involved a large but disciplined role for the government, were of the type that motivated Raúl Prebisch's writings on economic development. Hence, it is true to say that Raúl Prebisch lives in Asia.

Clearly, most investments in new technology, whether private or public, fail. If countries do not invest in technology, however, their economies will almost certainly fail too. Will Latin America open the door again to neo-Prebisch policies, this time aimed at building industries that are high tech?

(Original: English)

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Industrial competitiveness in Brazil ten years after economic liberalization

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This article examines the nature and extent of the changes in Brazilian industry after ten years of economic liberalization. The article demonstrates that most structural features of Brazilian industry remain unchanged except in the management of production processes and in the ownership structure of firms, as rationalization and inward internationalization became generalized processes. Brazil may face a development paradox in the years to come. History suggests that local capital and innovation capabilities have been outstanding features of countries successful in achieving sustained economic development. If internationalization of ownership is to remain and local innovation capabilities are to be pursued, then Brazilian private and public policy makers must depart from established policy practices and seek new ways of regulating and inducing firms towards local value creation.

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I

Introduction

In 1996, we published, in *CEPAL Review* and in a book with Lia Haguenaer,¹ an in-depth analysis of the competitiveness of Brazilian industry (Ferraz, Kupfer and Haguenaer, 1996a and 1996b). The present article² updates that analysis by examining the nature and extent of changes in Brazilian industry between 1990 and 2002, a period of significant institutional and economic transformation. Economic liberalization became the central feature of the national regime of incentives and regulations and, after decades of high inflation, price stabilization was achieved, becoming thereafter a major target of macroeconomic policies. But, during the same period, low rates of growth, with frequent annual oscillations, prevailed.

Elsewhere, in most developed and developing countries, economic liberalization also became the prevalent regime of incentives and regulations, while international flows of capital, goods and services and the diffusion of information technologies were accelerating. In Latin America, within the context of the North American Free Trade Agreement (NAFTA), Mexico became a specialized supplier to the United States in the assembly of electronic goods and other labour-intensive industries. Chile modified its industrial matrix, shifting towards exploiting and transforming its natural resource base to generate products for export, supported by sophisticated logistics. Argentina changed its strategy several times; for some time it seemed that the country would constitute an important specialized industrial base for the Mercosur market, but the negative consequences of the Argentine convertibility plan resulted in the dismantling of a significant portion of its industrial base.

What happened in Brazil? To what extent did institutional reform induce changes in industry? Did investment rates increase, incorporating new activities? Which ones ceased to exist? Are firms relying on those capabilities – for example in the field of innovation that are widely known as conforming the basis for sustained or expanded market shares?

It was these questions which guided us in this article. In section II we will update the 1996 discussion on patterns of competition and competitiveness. Section III provides an account of the most important institutional changes and an overview of the evolution of industry between 1990 and 2002. Sections IV to VII are focused on the analysis of competitiveness of four industrial sectors: commodities, durable goods, traditional industries and innovation carrier industries. Finally, section VIII gives an overall balance, indicating the common features and differences between these sectors.

Our 1996 contribution was based on extensive research carried out in the early 1990s (Coutinho and Ferraz, 1994). Since then, no other comprehensive work has been undertaken which would allow a systematic update on industrial competitiveness. The most important research has been the “*Estudo da Competitividade de Cadeias Integradas no Brasil*” made by the Ministry of Development, Industry and External Trade (MDIC) (www.mdic.gov.br), covering 20 industrial sectors, which constituted the informational basis for this article.

¹ This article is dedicated to Lia Haguenaer. We will always miss her companionship, professionalism and personal integrity. Our writings will never again be so sharp and clear.

² Sectoral information is derived from “*Estudo da Competitividade de Cadeias Integradas no Brasil*” (www.mdic.gov.br), a research project contracted by the Brazilian government to the State University at Campinas (UNICAMP) and coordinated by Luciano Coutinho, Mariano Laplane, David Kupfer and Elizabeth Farina. We are in debt with them and also with Achyles Barcelos da Costa, Fábio Erber, Fernando Sarti, Germano Mendes de Paula, José Rubens Dória Porto, Márcia Azanha Ferraz Dias de Moraes,

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II

Competitiveness and patterns of competition

In this article, competitive firms are considered to be those capable of formulating and implementing strategies leading to sustained or expanded market position in the segment of industry where they operate. To be competitive, a firm's strategies, capabilities and performance must be coherent with the pattern of competition (PoC) prevalent in the activity in which it operates. Patterns of competition are defined as the collection of competitive driving factors required for success in an industry. As competitiveness is defined at the firm level, it is possible to consider, by aggregation, that a sector is competitive if a large proportion of sectoral production value originates from competitive firms at a given moment of time.

Competitiveness must be viewed as a dynamic concept for two reasons. Firstly, it is associated with previously accumulated capabilities of firms. Thus, present capacity results from past strategic decisions on where economic resources should be allocated. Revealed market position or productive performance indicate whether past strategies and capabilities were adequate or not. In this sense, present capabilities or market position do not necessarily ensure future competitiveness. Secondly, important competitive driving factors conforming the PoC may change due to strategies pursued by innovative firms. Thus competitiveness must be evaluated against the expected, not necessarily the current, pattern of competition at a given moment of time.

Given the large number of possible factors intervening in the PoC, it is necessary to organize them according to some type of criterion. A simple and workable criterion is one in which the factors are organized according to the capacity of a firm to influence their direction and evolution.

Some key factors (internal factors) lie within the boundaries of the firm, where it has complete control. Others (structural factors) are industry-specific and have an equal level of importance for all firms operating in similar market segments. In general, individual firms have only limited and indirect control over structural factors. Finally, there is a collection of drivers (macro factors) which are associated with generic framework conditions surrounding a firm and are

beyond its capacity to exert direct influence. Thus, a competitive process has a systemic character, determined not only by the individual firm's efforts, but also by the nature of the industry in which it operates and by economic and institutional aspects.

Sectoral analyses of competition are usually based on structural or behavioural taxonomies. In this article, drawing on the classical works of Steindl, Labini, Scherer, Porter and Pavitt, we propose the existence of four industrial groups - commodity industries; durable goods industries; traditional industries and innovation carrier industries, each comprising industrial sectors possessing similar competitive drivers at the firm and structural levels.

Firms can be successful by offering: i) cost advantages, ii) product differentiation, iii) responsiveness, or iv) technologically sophisticated products. Very few firms can achieve excellence simultaneously in every source of competitive advantage. Competitive firms are those that focus on and develop coherent strategies, capabilities and performance in the factors making up the dominant pattern of competition in the specific industry in which they operate.

Cost competition prevails in the commodity sector. Products are intrinsically undifferentiated, and competitive firms are those capable of achieving the lowest unit costs and the highest production volumes possible, as well as having control over access to inputs and efficient logistics systems, thus reducing input and distribution costs.

Product differentiation is important in the durable goods industries. Most advanced firms try to concentrate their capabilities in design and marketing functions, while production may be extensively sub-contracted. The mobilization and supervision of partners is an essential source of competitive advantage.

Responsiveness is a priority for traditional industries. Firms target market niches aiming at specific consumers, stratified by income, age, etc. Business capacity requirements³ are less strict than in other industrial groups, but management and supervisory skills are vital for success.

³ Understood as the overall set of skills, technical knowledge, capabilities and experience of the firm.

Innovation carriers operate in specific market segments. These firms must have strong technological

capabilities and access to updated science and technology laboratories.

III

Institutional change and industrial performance

1. Economic liberalization

Economic liberalization, acceleration of trade and cross-border capital flows and the diffusion of information technologies delineated the international context of the 1990s. In Brazil, industry faced two consecutive local competitive shocks – economic liberalization and monetary stabilization. Reforms were aimed at: i) economic deregulation, including the end of price control mechanisms for goods and services and the elimination of protected markets and other regulatory constraints on foreign investment; ii) liberalization of the external sector, including the reduction of trade tariffs and non-tariff barriers and deregulation of the capital account, and iii) privatization of manufacturing industries and public utility services.

Macroeconomic changes were equally important. They were closely associated with the monetary reform implemented under the Plano Real in 1994 and with the subsequent return of capital inflows due to increasing international liquidity and higher local interest rates when compared to other national markets. The Plano Real successfully reduced the inflationary spiral,⁴ resulting in the short term in growth of real wages. That, associated with the resurgence of credit lines for consumption, implied significant increases in aggregate demand. The return of capital inflows —direct investment rose from US\$ 600 million in 1993 to US\$ 29.1 billion in 1998— was very important for financing current account deficits, mergers and acquisitions and capital investment. Overvaluation of the national currency followed, and it was pushed even further by a set of specific policies defined by the Central Bank between 1994 and 1999.

⁴ Inflation rates went down from more than 1,000% in 1993 to 20% in 1995 and 5% in 1997.

The appreciation in the exchange rate and the high interest rates, together with low tariffs and lower barriers to the entry of foreign firms, imposed a new competitive environment on industry. The immediate result was a rapid deterioration in the trade balance. Foreign capital inflows financed trade deficits but, at the same time, the vulnerability of the country's external accounts increased to levels not compatible with macroeconomic stability. Consequently, the negative impacts of external financial dependence were revealed not only in the weak growth of expansion-related investments, but also in insufficient GDP growth during the 1990s.

2. Industrial performance

a) *The same structure of production, but with many fewer workers*

The share of Brazilian industry in the economy did not change throughout the 1990s (Rocha and Kupfer, 2002). Among the different industrial groups (table 1), industrial commodities, durable goods and food and beverages showed a better performance due to the income effect generated by the Plano Real (in the case of durable goods and food and beverages) and/or better terms of trade and export performance (industrial commodities and durable goods). The performance of the innovation carriers was notably good around 1995, as a result of better prospects created by the success of the Plano Real, but this was followed by a return of slow growth, as imports expanded significantly and expectations of a better future were not fulfilled.

TABLE 1

	Brazil: Output in different industries, selected years (1991=100)			
	1991	1995	1998	2000
Industrial commodities	100.0	109.6	126.8	138.2
Agriculture commodities	100.0	97.2	101.2	98.9
Traditional industry, except food and beverages	100.0	104.8	101.3	104.3
Food and beverages	100.0	121.6	128.9	130.5
Innovation carriers	100.0	120.0	105.6	108.2
Durable goods	100.0	147.6	133.9	148.6
Manufacturing	100.0	113.4	117.4	124.2

Source: Monthly Industrial Survey of the Brazilian Institute of Geography and Statistics (IBGE).

FIGURE 1

Output and employment in Brazilian manufacturing industry, 1985-1999



Source: Monthly Industrial Survey and Monthly Employment Survey of the Brazilian Institute of Geography and Statistics (IBGE).

During the 1980s, employment levels fluctuated, but closely followed the erratic evolution of production. However, as shown in figure 1, since the early 1990s, the growth rates of production and employment started to diverge, particularly after 1993. That was a very important change of trajectory, resulting in the doubling of the output-to-labour ratio and higher production efficiency between 1990 and 1999.⁵

⁵ Most available evidence in Brazil is based on series of production value, not on (ideal) series of value added.

Many economists identify the beginning of the 1990s as the break point in the relation between production and employment. For Gonzaga (1996), Amadeo and Soares (1996) and Bonelli (1996), this increasing divergence indicates significant technological change in the economy in terms of production processes and/or organization. This explanation places emphasis on intra- and inter-firm transformations, due to stabilization, trade liberalization and economic deregulation that defined new efficiency parameters for the strategic behaviour of corporations. In reality, as the analysis ahead will show, in most sectors a large proportion of firms did indeed go through a significant modernization process, strongly biased towards cost rationalization. This rationalization included the adoption of improved organizational techniques; the introduction of information technologies and equipment in administration and production; changes in the product portfolio in the direction of greater specialization; subcontracting, de-verticalization, and increased use of imported components. These changes directly implied a lower demand for industrial employment, for the same level of production. It is an open question whether employment rates will ever catch up with past losses.

b) Unchanged trade specialization

Foreign trade expanded significantly during the 1990s, from US\$ 50 billion in 1990 to US\$ 107 billion in 2002. Between 1990 and 1993 trade levels and the trade balance remained unchanged, suggesting that, per se, tariff reform had only a minor impact on the international insertion of industry. After stabilization cum currency overvaluation and further tariff reductions, foreign trade expanded steadily up to 1997, especially in the case of imports. Thus, while exports rose at a moderate rate, imports trebled between 1990 and 1997. As a result, the trade balance deteriorated and, after 14 years of surpluses, in 1997 the trade deficit reached US\$ 8.2 billion. Regardless of this expansion, however, Brazil's share in world trade has declined from 1.4% in the mid-1980s to 0.75% in 2001.

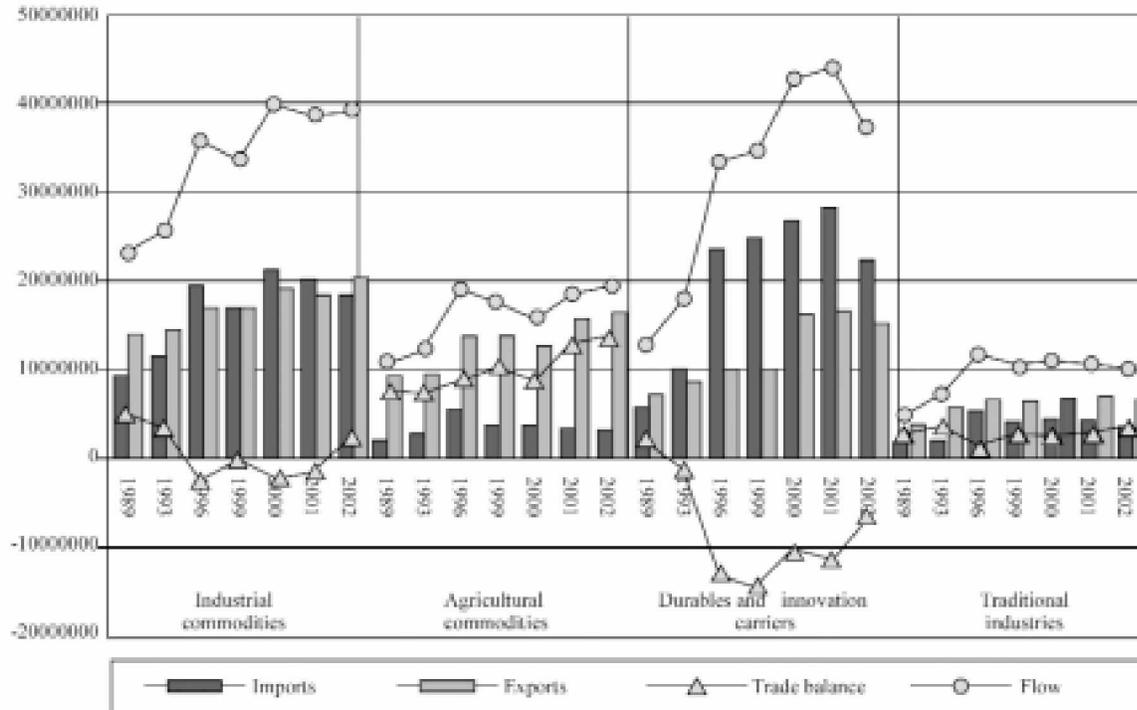
The 1997 Asian crisis triggered off a period of uncertainty in Brazil. International liquidity and trade receded and external vulnerability increased, leading to an exchange crisis that resulted in the depreciation of the Real and the introduction of a floating system in January 1999. From then onwards imports declined, but never below US\$ 40 billion, while exports increased steadily, resulting in trade surpluses in 2001

and 2002. Concurrently with the expansion of total Brazilian foreign trade, the ratios of exports and imports to domestic production in manufacturing increased steadily. Thus, between 1990 and 2001 the export ratio increased from 8.0% to 14.9% while the import ratio trebled, from 4.3% to 14.8%.

Figure 2 shows the imports and exports of four industrial groups, reflecting the above-mentioned substantial expansion of Brazilian foreign trade and, most important, the existence of sharp differences in the nature of Brazilian imports and exports.⁶

FIGURE 2

Brazil: Foreign trade, by industrial groups, 1989-2002



Source: GIC-IE data bank of the Federal University of Rio de Janeiro, based on information from Alice Data Bank.

Firstly, industrial commodities, together with durables and products of innovation carriers, were responsible for 72% of the US\$ 107 billion total trade in 2002. Secondly, in industrial commodities, trade has been expanding steadily but imports and exports are quite balanced. Contrary to what might be expected, imports of industrial commodities are quite large, especially of chemicals. Thirdly, the pattern of foreign trade in durables and products of innovation carriers is quite different. Most Brazilian trade deficits are to be found in these industrial groups. Between 1996 and 2001, annual deficits remained above US\$ 10 billion. Imports increased steadily, receding only in 2002, concurrently with the acceleration of devaluation of the

Real. Exports reacted positively only after 2000. Fourthly, agricultural commodities are responsible for an important trade surplus, reaching US 20 billion in 2002; exports have been increasing steadily while imports are not significant. Finally, trade flows in the traditional industrial group were relatively stable, at around US\$ 10 billion for most of the decade. In short, foreign trade expanded substantially but the nature of the international insertion of Brazilian industry remained unchanged

⁶ Commodities were divided into industrial and agricultural, while durables and innovation carriers were merged together, due to statistical constraints.

c) *Ownership change, stagnation of capital and R&D investment*

Unlike what occurred in the structure of production, changes in the ownership structure of industry were very pronounced. As shown in table 2, privatization and mergers and acquisitions amounted to US\$ 128 billion between 1990 and 1999. As might be expected, the value per transaction in privatization was much higher than in mergers and acquisitions. The first phase of privatization (1991-1995) involved steelworks, mining and petrochemicals. In the second half of the 1990s electrical power, financial services and telecommunications were privatized. This last sector alone was responsible for US\$ 30 billion in government revenue. Foreign investors were responsible for 76.9% of the privatization operations and 71.4% of the mergers and acquisitions.

According to Rocha and Kupfer (2002), among the 300 largest corporations in Brazil, State-owned firms reduced their market share (sales revenue) from 44.6% in 1991 to 24.3% in 1999; multinationals expanded from 14.8% to 36.4%, while local capital maintained its position. The authors suggest that ownership change among leading firms occurred in two phases. Between 1991 and 1996, the share of State-owned firms was transferred to private firms, regard-

less of their nationality, as a result of privatization of industrial firms. Between 1996 and 1999 revenue was transferred from national firms (State or privately owned) to multinational firms.

Asset acquisition and transfers reshaped the country's ownership landscape but did not lead to further increases in capital investment. In Brazil, the 1990s was marked by only a modest expansion of gross fixed capital. According to Bielschowsky (1998), the share of industrial investment as a proportion of GDP amounted to 2.2% in the period from 1988 to 1993, compared with 4.5% during the 1970s. Between 1995 and 1997 investment rates increased to 3.2%, mostly associated with localized equipment renovation.

In fact, as shown in table 3, out of an universe of 72,000 industrial firms, with total sales of R\$ 582 billion in 2000, 19,000 firms spent R\$ 22 billion (or 3.8% of sales revenue) on activities associated with modernization and innovation, ranging from training to R&D. Of these 19,000, 15,500 firms focused their expenditure on machinery acquisition. A smaller group of firms (10% of total industrial firms) invested 0.64% of sales in R&D activities, but within this select group there were large differences: the bigger the firm, the greater its commitment to R&D.

TABLE 2

Brazil: Privatization, mergers and acquisitions, 1990-1999
(Value in millions of dollars)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
Privatization (value)	0	2 096	2 447	3 026	620	1 123	4 829	16 087	27 540	3 797	61 564
Privatization (number of transactions)	0	4	14	6	9	7	13	20	31	9	113
Mergers and acquisitions (value) ^a	639	274	359	3 329	1 146	4 734	6 059	9 899	26 292	15 161	67 893
Mergers and acquisitions (number of transactions)	13	20	27	49	55	90	129	154	264	254	1 055

Source: GIC-IE databank of the Federal University of Rio de Janeiro, based on information from Thomson Financial Securities.

^a According to declared value of transactions.

TABLE 3

Brazil: Net revenue of firms and expenditure on innovation activities, 2000

Number of firms	Net revenue (R\$ million)	Expenditure on innovation activities					
		Total		Machinery acquisition		Internal R&D	
		Number of firms (R\$ million)	Value (R\$ million)	Number of firms	Value (R\$ million)	Number of firms	Value
72 005	582 406.1	19 165	22 343.8	15 540	11 667.3	7 412	3 741.6

Source: Industrial Survey on Technological Innovation (IBGE, 2000).

IV

Industrial commodities: Low cost for exports, differentiation for the local market

1. Pattern of competition then and now: widening and deepening the search for lower costs

Commodity-related industries are engaged in the production of intermediate inputs for industrial or final consumption through large-scale production processes, and cost reduction is the driving factor in competition. Due to increasing competitive pressures from developing countries, markets of developed countries are being defended in favour of local firms by means of explicit protectionist measures (see first two columns of table 4).

Commodities are intrinsically undifferentiated, and production efficiency and economies of scale are ensured by three complementary means: highly capital-intensive plants, preferential access to inputs (raw materials and energy sources) and transport logistics. In such a context, large, multi-plant companies, operating internationally are capable of expanding the frontiers of the important competitive driving factors. During the last decade, local leading international firms have become larger and more internationalized through mergers and acquisitions.

At the level of the firm, core competences are related to five sources of competitive advantages: management, acquisition of or access to process technology, inputs, transport, and distribution networks and preferential clients. The diffusion of information systems based on microelectronics technologies has provided the technical base for co-ordinating large-scale operations and logistics.

The pattern of competition among firms has remained closely associated with what is known as homogeneous oligopoly. Competing firms try to gain knowledge of market perspectives and behaviour of

rivals, on a global basis. Thus, for competitive success, it is of fundamental importance to correctly anticipate demand growth and/or effectively respond to changes in price and quantity demanded by local and international markets.

Aggressive firms are those implementing merger/acquisition-based investment strategies and expanding capacity ahead of the growth in demand for current products. Revenue possibilities have expanded significantly in the past ten years, by means of widening product portfolio, exploring transportation assets for third parties or selling-off surplus energy. Preferential access to capital markets is of vital importance. In this respect, large and internationalized companies have considerable advantages over firms operating single plants or in a limited number of national markets.

International competition in a context of liberalized national economies has strengthened a historical trend: although prices of most commodities fluctuate in line with world economic cycles, relative prices have shown a declining trend, raising serious terms of trade problems for commodity-dependent exporting nations.

Steel, pulp and paper and concentrated orange juice, along with other commodity industries like soybeans and iron ore, are considered to be pillars of Brazilian international competitiveness. In these industries, in 2002, Brazil had a significant share of international export markets: 80% in concentrated orange juice, 37% in sugar, 34% in soybeans, 32% in coffee and 16% in the meat industry. In 1990, the relatively small size of leading companies and the low levels of product value-added were the main competitive challenges facing Brazilian commodity producers. Since then these challenges have been only partially addressed, while other sources of competitiveness have been enhanced (see last two columns of table 4).

TABLE 4

Brazil: Patterns of competition and competitiveness in commodities: then and now

Sources of competitive advantages	Cost-based POC Main factors of competitiveness, 1990	Cost-based POC Main factors of competitiveness, 2002	Brazilian competitiveness, 1990	Brazilian competitiveness, 2002
<i>Internal factors</i>				
Management	Process control		Efficient	More efficient
Production	Mass flow and energy efficiency	No change	Efficient	More efforts in energy control
Sales	Access to distribution channels		Efficient	More efficient
Innovation	Process technology		Incipient local efforts	Incipient local efforts
<i>Structural factors</i>				
Market	Standardization		Prominence in low value added segments	Low unit value for exports and higher unit value for local markets
	Price, technical conformity	No change		
	Access to international trade		Low growth of demand	Cyclical with changing terms of trade
Configuration of industry	Company and plant level economies of scale		Efficient plant size but low size of companies; prominence of State-owned enterprises; low investments abroad	Increased size but still below international benchmarks
	Access to raw materials and transport logistics	No change	Good access to inputs and deficiencies in logistics	More efficient
	Specialized technical services	Reasonable efforts	Reasonable efforts	
Regulation and incentives regime	Anti-dumping and trade policy	Increased importance	Trade restrictions	Stronger restrictions
	Environmental protection	Increased importance	Some restrictions High	Stronger restrictions Still high
	Cost of capital	No change	Tax distortions Risk of cartelization, incipient privatization	No change Privatization completed but ownership not consolidated

Source: Prepared by the authors.

2. Competitiveness in 2002: Ownership consolidation and product upgrading must continue

a) Increasing size of firms

Privatization of the steel industry and mergers and acquisitions in pulp and paper have changed the ownership landscape of the commodities industrial group. Even so, when compared to their international counterparts, Brazilian firms remain relatively small and oriented towards the local market. Further

changes may occur, leading to greater concentration of market structures and, perhaps, acquisitions by Brazilian firms of other corporations abroad.

In the steel industry, two outstanding processes have taken place: the privatization process initiated in the late 1980s, and a substantial investment drive in stages of the production process associated with the generation of new, higher unit value products to be sold on the local market.

Six large steel companies and six small ones were privatized in Brazil, for a total of US\$ 5.7 billion.

Local capital predominated in the privatization process. Financial institutions accounted for 33.6%, pension funds for 15% and industrial corporations for 21.8% of the total value of privatization. Due largely to the privatization technique used (i.e., auctions), an outstanding feature of the second half of the 1990s was ownership instability and further asset transactions. After privatization was completed 20 private merger and acquisition transactions were carried out. Between 1990 and 2000, only 17% of the production units (measured in terms of physical capacity) had not undergone at least one change in ownership. Besides ownership changes, between 1994 and 2000 the industry invested an average of US\$ 1.4 billion. This was rather unexpected, given the country's macroeconomic uncertainties and those arising from the privatization process itself. Most investments were focused in

the rolling area, enabling product upgrading.

In pulp and paper, at the end of the twentieth century, there were 220 companies. In 2000, total sales reached US\$ 7.5 billion; the largest 11 integrated companies were responsible for two-thirds of this total, showing the importance of plant- and company-level economies of scale for this industry. During that year, the four largest producers of pulp accounted for 70% of total production. In the paper segment, concentration levels are lower, but they have been increasing since 1990. In that year, the five largest producers were responsible for 39.5% of total production; ten years later that share had increased to 51.4%. Ownership concentration levels were increased through a very active process of mergers and acquisitions, as shown in table 5.

TABLE 5

Brazil: Main mergers and acquisitions in the pulp and paper sector, 1992-2001

Company sold	Controlling company	Date	Share	Product
Simão	Votorantim	1992	100%	Printing paper
Mad. Saguário	Orsa	1996	100%	Wrapping paper
Nicolaus Papeis	Md Papeis	1997	100%	Special paper + cardboard
Klabin Tissue	Kimberly Klabin	1998	50%	Tissue
Inpacel	Champion / International Paper	1998	100%	Lightweight coated paper
Celpav	Votorantim	1988	100%	Printing paper
Igaras	Klabin/Riverwood	2000	100%	Pulp / kraftliner
Klabin	Joint Venture until 2002 Norske Skog	2000	50+50%	Newsprint
Jarcel	Orsa	2000	100%	Pulp
Pisa	Norske Skog	2000	100%	PAR + newsprint
Champion L.	International Paper	2000	100%	Pulp + printing paper.
Bahia Sul	Suzano	2001	100%	Pulp + paper
Cenibra	JBP	2001	100%	Pulp
Portucel	Suzano + Sonae	2001	28%	Pulp + paper
Aracruz	Votorantim	2001	26%	Pulp

Source: Fonseca (2002).

TABLE 6

Brazil: Verticalization and supply contracts in the pasteurized orange juice production chain

Selling company (1)	Distribution company (2)	Relation between (1) and (2)	Packaging company (3)	Relation between (2) and (3)	Processing company (4)	Relation between (3) and (4)
Nestle	Nestle	Vertical	Cargill	Contract	Cargill	Vertical
Dan' Fresh	Danone	Vertical	Citrovita	Contract	Citrovita	Vertical
Leco	Leco	Vertical	Citrovita	Contract	Citrovita	Vertical
Yes	Paulista	Contract	Cargill	Contract	Cargill	Vertical
Parmalat	Parmalat	Vertical	Parmalat	Vertical	Parmalat	Vertical
Carrefour	Carrefour	Vertical	Cargill	Contract	Cargill	Vertical
Sendas	Sendas	Vertical	Nova América	Contract	Nova América	Vertical

Source: Compiled from Neves and Marino (2002).

In the citrus industry there are two segments. In the frozen concentrated orange juice segment, firms control the processing stage and co-ordinate the associated logistics (from orange plantations to packaging). Most active firms have moved to the south of the USA, acquiring or investing in new processing units and even some plantations. Co-ordination capabilities have been developed and important clients, like Coca-Cola, have transferred the management of their production units in the United States to a Brazilian company. This is an important change from the early 1990s, due to the need to sidestep import restrictions. The industry has also become more concentrated: the export share of the four largest producers increased from 70% to 90% between 1997 and 2001. But these firms still remain distant from final consumers: they are typical commodity producers, relying for competitiveness on the low cost of their undifferentiated product.

In the pasteurized orange juice segment, which has been expanding rapidly in Brazil, the market structure is different. As shown in table 6, in their search for economies of scale firms have followed different verticalization strategies. At one extreme, close to the resource base, processing firms have verticalized into packaging operations. At the other extreme, close to the final consumer, companies have incorporated distribution activities. In most cases, economic relations between these two extremes involve supply contracts between different companies.

b) *Low unit value for exports, high unit value for the local market*

Brazilian commodity producers supply international markets predominantly with low unit value products. Since the early 1990s they have consolidated their competitive position by investing in distribution networks and closer relations with large clients. For the Brazilian market, however, firms have evolved towards widening and upgrading their product portfolio. Compared with exports, sales to the local market have higher unit value. This dual track strategy has been consolidated throughout the years. It remains to be seen whether the experience gained in the local market may prove useful for conquering new and more valuable segments in international markets in the years to come.

In 1999, in value terms, the world share of Brazilian steel semi-finished products was 14.1%, but in galvanized sheets it was only 0.4%, while the share of semi-finished products in total Brazilian steel exports increased from 39.2% in 1990 to 68.4% in 2001, in terms of physical production. This expansion was attained in spite of the context of increasing protectionist barriers. In the local market, however, total steel consumption increased 89% between 1992 and 2001, while the growth in galvanized sheets reached 402%. Over 50% of total demand came from the automotive and civil construction sectors.

TABLE 7

Brazil and other selected countries: Production costs of cold rolled sheet steel, April 2001
(US\$/dispatched ton)

	United States	Japan	Germany	United Kingdom	S. Korea	China	Brazil
Raw materials	115	106	109	105	112	118	103
Coal	27	27	26	24	28	28	37
Iron ore	55	56	62	58	59	75	40
Scrap / Direct reduction iron	33	26	21	23	25	15	26
Other raw materials	172	150	148	153	134	152	135
Labour costs ^a	154	142	136	113	62	26	57
Hourly wage	38	36	34	27.6	13	1.25	10.5
Total operational costs	441	398	392	371	308	297	295
Financial costs	39	60	40	46	42	50	67
Depreciation	29	40	30	26	30	30	32
Interest	10	20	10	20	12	20	35
Total cost	480	458	432	417	350	347	362

Source: Paula (2002)

^a In man-hours per ton.

The high level of competitiveness in low value added products is also reflected in the industry's cost structure. As may be seen from table 7, the competitiveness of the Brazilian steel industry stems from the low level of labour and iron ore costs. Financial costs and the cost of coal have long been the basic source of competitive disadvantage.

Cost advantages in pulp production are quite similar. In 2001, Brazilian industry led in the production of short fibre pulp, with a 19.4% share of total world supply, a 7-point increase over the 1990 market share. Between 1990 and 2001 this branch expanded by 9.5% annually, surpassed only by the expansion of Indonesia, a latecomer to the industry. In value terms, exports increased from US\$ 556 million in the early 1990s to US\$ 1.3 billion in 2000.

In paper production the picture is very different, both in terms of volume of production and share in world markets. In 2000, Brazil produced 7,188 tons of paper, while international production reached 323,295 tons. Although the Brazilian industry grew by 4.3% during the 1990s, its international market share for all types of papers is very small and has remained unchanged: 2.0% in 1991 and 2.2% in 2000.

Five types of papers accounted for more than 50% of exports in 2000 – printing/writing, non-coated paper, toilet paper, cardboard and kraft liner. Ten years before, the proportion was higher, at 70%. Since 1990, however, in value terms paper exports have remained below US\$ 1 billion in most years. Thus, in 2000, 62% of total paper production was sold in the local market; 22% represented self-consumption by the producers and only 15% was exported.

The citrus industry follows a similar dual track strategy. In the frozen concentrated orange juice (FCOJ) segment, Brazil is an international leader; in the pasteurized orange juice (POJ) segment sales are directed to the local market. The latter requires more sophisticated industrial operations and is very close to the final consumer market, requiring significant marketing efforts.

During the 1990s 50% of total world orange juice and 80% of FCOJ were produced in Brazil, generating, on average, US\$ 1 billion in foreign exchange. Like other commodity producers, Brazil is very dependent on the fluctuations of international prices. While total exports of FCOJ expanded from 785 million tons in 1990 to 1,234 million in 2000, export revenues reached a peak of US\$ 1.3 billion in 1995, decreasing to US\$ 800 million in 2001.

Most developed markets for FCOJ are stagnating, while developing regions are expanding their consumption. It is estimated that West Europeans consume 24 litres of fruit juice per year, while East Europeans consume 5 litres per year, having increased their consumption 80% between 1995 and 2000. This context has led to reactions from important consumer/producer countries through the imposition of trade barriers, like the 56% ad valorem tariff imposed by the United States. In the POJ segment market perspectives are positive. While annual consumption levels of POJ in the USA reach 40 litres, in Brazil total orange juice consumption is around 20 litres/year. Of that, only 1 litre is POJ, but annual rates of growth in this segment are very high, at around 30%.

c) *Cost control*

Throughout the 1990s, companies placed considerable emphasis on actions closely associated with the reduction of direct costs, especially raw materials and transport. Lowering energy costs was an important investment item, given its high weight in total costs and the supply crisis the country faced in 2001. Companies also consolidated their capabilities to operate technically updated plants efficiently, but they still relied on capital goods suppliers to define the technological possibilities of improving processes.

The investment drive in the steel industry had a direct impact on efficiency levels. Even though output levels remained around 25 million tons per year, modernization of installations and sharp cuts in employment levels – at an annual average rate of 7.6% between 1989 and 2000 – resulted in corresponding marked improvements in productivity levels, from 11 to 5.4 man-hours per ton, between 1991 and 2000 (see figure 3).

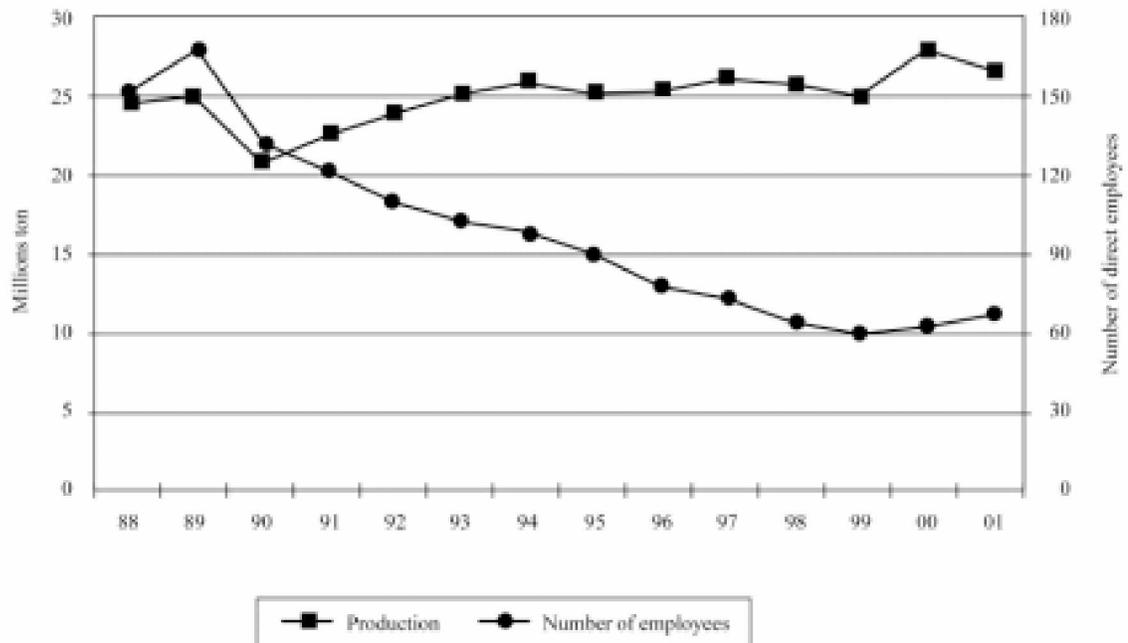
Investments in pulp and paper were not as pronounced as in steel, but in order to maintain their competitiveness firms expanded backward integration towards rationalized eucalyptus forests. In 1990, out of 64 million hectares planted by the industry, eucalyptus forests occupied 42 million and pine forests 20 million. Ten years later, the area of pine plantations remained constant while 100 million hectares of eucalyptus forests were planted.

The competitiveness of the citrus sector also lies in its privileged access to inputs. There have been considerable technological efforts to improve the productivity of the agricultural base of the industry. The most significant achievement was the 2002 DNA

sequencing of the genome of the bacteria *Xylella Fastidiosa*, which causes diseases in the crops. According to Neves and Marino (2002), productivity

has expanded due to increasingly intensive plantation management and greater use of fertilizers, while the total area planted has decreased.

FIGURE 3

Brazil: Output and employment in the steel industry, 1988-2001

Source: Paula, 2002

V

Durable goods: Inward internationalization and catching up in middle income segments

1. The pattern of competition then and now: internationalization and differentiation

The market structure of durable industries, like the consumer electronics and automobile industries, is characterized by differentiated and concentrated oligopolies, with just a few firms operating in global markets. Leading firms are those capable of successfully exploiting economies of scale and scope. The 1990 international competitive drivers have been further stressed (see first two columns of table 8). For

competitive firms, differentiation requires constant introduction of products with new sets of attributes. For this purpose, firms invest in product development, marketing, and after-sales service through an authorized retailers' network. Firms are constantly trying to create or expand market segments, in order to pay off the investments costs associated with product development and new or renewed installations.

To be competitive it is mandatory to operate under strict minimum requirements of technical and management economies of scale. Scale is therefore a significant barrier to entry, and firms must implement

investment strategies that anticipate market growth. It is also important to operate production systems with increasing levels of technical efficiency, quality and flexibility. These needs imply the intensive use of microelectronics-based automation and organizational techniques oriented towards continuous improvement of production processes.

Due to the heavy weight of components in total production cost, vertical disintegration has increased, combined with new forms of linkages between assemblers and suppliers. In relation to suppliers, essential competitive factors are: delivery times; price; technical conformity; stable industrial contracts incorporating the transfer of inventory administration costs to

suppliers; and joint development of components. The prevailing international context of trade liberalization has induced firms to develop global sourcing systems. For some lines of electronics-based consumer goods, there has also been an important trend towards subcontracting the production of final goods to specialized contract manufacturing firms in developing countries like Mexico and China.

Investments made in these sectors normally induce dynamic effects in a host economy, directly or indirectly, including changing and upgrading the nature of employment of a region. This is why local authorities offer generous fiscal incentives to attract these sets of activities.

TABLE 8

Brazil: Patterns of competition (POC) and competitiveness in durables, then and now

Sources of competitive advantages	POC based on differentiation Main driving factors in 1990	POC based on differentiation Main driving factors in 2002	Brazilian competitiveness in 1990	Brazilian competitiveness in 2002
<i>Internal factors</i>				
Management	Co-ordination capabilities	No change, with increasing importance of information technologies	Lack of capabilities	Closing gap
Production	Organizational flexibility		Organizational rigidity	Closing gap
Sales	Brand image		Brand image	Closing gap
Innovation	Product and component design		Local design capabilities but outdated products sourcing of updated	Demobilization of local capabilities and out products
<i>Structural factors</i>				
Market	Segmentation by quality and marketing	Increased	Low segmentation	Specialization in middle range segments
	Price, brand, technological content, technical assistance	Increased	High price, low technological content	Closing gap
	Regional and global trade	Increased	Distant from international networks	Increased exports; resistance to imports
Configuration of industry	Firm and plant level economies of scale and scope	Increased	Scale deficiencies in most product lines	Optimization through specialization
	Assembler-supplier linkage, distribution	Increased	Incipient linkages	Closer relations with suppliers; increasing reliance on global supply chains
Regulation and incentives regime	Metrology and standardization	No change	Adequate	Adequate
	Property rights	No change	Low levels of compliance	Enforcement of property rights
	Consumer protection	No change	Incipient legislation	Stricter legislation
	Consumer credit	No change	Non-existent	Variation according to macroeconomic conditions
	Fiscal incentives	No change	Non-existent	Extensive use of local incentives

Source: Prepared by the authors.

In Brazil, the consumer electronics and automotive industries were strongly impacted by the Plano Real and trade liberalization. On the one hand, an “income effect” sharply expanded demand levels; on the other hand, trade liberalization imposed new and more rigid benchmarks for product attributes, such as price and technical specifications.

During the 1990s, firms in Brazil not only demonstrated the capacity to resist international competition but also to implement pro-active strategies to exploit the expansion in demand through investment in new production capacity and higher levels of imports of parts and components (see the last two columns of table 8). New entries took the form of green field investment, especially in automobile assembly, and acquisition of existing auto parts businesses. New entrants in consumer electronics combined both investment modes. By 2002, the internationalization of ownership, already a structural feature in these industries, was practically complete. Representatives of most international leading players are currently operating in Brazil. As a result, Brazil has become an important production platform for middle-range products, such as sub-compact cars, on the international scene. Given the oscillating, low-growth trends of the Brazilian economy throughout the decade, however, most firms have yet to make full use of the new installations.

2. Competitiveness in 2002: successful catching up, but demand constraints still impose limits on further growth

a) Capacity expansion and internationalization

In consumer electronics, the market expansion of the first half of the 1990s induced the entry of new players and the growth of existing competitors. New investments (and entrants) were observed in the television and video segment, while mergers and acquisitions were more pronounced in the freezers, refrigerators, cookers and washing machines segments.

The industry went through two different phases. After the period of recession in the early 1990s, manufacturers of audio and video products improved performance due to significant increases in consumption levels, mostly among lower social classes. For instance, sales of TV sets, which were about 2 million units in 1990, increased to the unprecedented level of 8.5 million units by 1996. But, just as production expanded in that period, it quickly contracted during the second half of the 1990s, falling to nearly half the 1996 volume by the end of the decade (Sá, 2002).

The high levels of credit default among low-budget consumers damaged the sales of major shopping outlets, leading to the bankruptcy of some leading chains and thus reducing the sales revenue of most

TABLE 9

Brazil: New assembly plants in the automotive sector, 1996-2001

Firm	Type of product	Location	Year
Volkswagen	Engines	São Carlos-SP	1996
Volkswagen	Lorries and buses	Resende-RJ	1996
Honda	Cars	Sumaré-SP	1997
Mitsubishi	Light commercial vehicles	Catalão-GO	1998
Renault	Cars and engines	São José dos Pinhais-PR	1998
Toyota	Cars	Indaiatuba-SP	1998
Daimler Chrysler	Cars	Campo Largo- PR	1999
GM	Components	Mogi das Cruzes-SP	1999
Volkswagen-Audi	Cars	São José dos Pinhais-PR	1999
Mercedes	Cars	Juiz de Fora – MG	2000
GM	Cars	Gravataí-RS	2000
Iveco	Engines	Sete Lagoas-MG	2000
Ford	Cars	Camaçari-BA	2001
Nissan	Light commercial vehicles	São José dos Pinhais-PR	2001
Peugeot-Citroen	Cars and engines	Porto Real-RJ	2001

Source: Sarti (2002)

electronics manufacturers. As a result, the consumer electronics industry went through a reorganization process which included the bankruptcy of some local firms and the closing down of local operations by foreign firms.

The inverted V shape of television sales shows how volatile the Brazilian economy has been and, from a technical perspective, how production of consumer electronics items can be expanded and reduced very quickly, enabling firms to respond to positive and negative evolution in demand.

In car assembly, green field investment prevailed. Table 9 shows the impressive addition of new capacity to the segment during the second half of the 1990s both by existing producers and newcomers.

While new entrants and plants in car assembly increased competitive pressures, investments in auto parts also brought in new firms, but not via green field projects. Following international trends, mergers and acquisitions was the dominant mode of entry. Hence, as only a small proportion of resources were devoted to production expansion, higher rates of internationalization and market concentration were observed. In 1994, local capital accounted for at least 50% of total capital, sales and investment, but by the end of the decade, the share of locally owned firms was down to approximately 25%.

The performance of this industrial group was very much influenced by the evolution of aggregate demand. For example, in 2000 the sales revenue of the audio and video markets plummeted to US\$ 3.5 billion: far below the US\$ 8.1 billion reached in 1996. Idle capacity is more pronounced in auto producers, as they are not able to shut down capacity as easily as producers in the consumer electronics sector.

b) *Specialization and modernization*

By 2002, the Brazilian consumer electronics and

automotive industries became specialized in middle-range segments. Firms invested in upgrading technical specifications to international levels, while relying on established technology standards, imported components and imported finished products for the lower and upper-end segments. This option can be explained by two factors: firstly, the size and income profile of local demand, and secondly, the competitive pressure from imports, which imposed strict minimum levels of product attributes.

This industrial branch has yet to compensate the volatile local demand with greater exposure to international trade; exports in the audio and video segments have remained at around US\$ 350 million since 1990, representing a very small proportion of local sales; imports of final goods were around US\$ 150 million, increasing to US\$ 450 million when local demand expanded. The main destinations of exports were Argentina, Hungary, Italy and Spain. The infant but growing exports have not been able to compensate for the significant increase in the value of imports of electronic components from South Korea and Japan, however. According to Sá (2002), although total trade deficit in electronic components decreased from US\$ 1.5 billion in 1997 to US\$ 1.1 billion in 2000, the lack of production capacity in this segment constitutes a major structural weakness of Brazil.

In the automotive sector, regardless of ownership changes, investments were significant and the Brazilian competitive gap was significantly reduced in terms of product attributes and efficiency levels of installations. In aggregate terms, as shown in table 10, the number of cars produced per worker per year has trebled between 1990 and 2001, reaching 21.3 units. At the same time employment fell from 117,396 posts in 1990 to 85,257 in 2001, in spite of new investments.

TABLE 10

Brazil: Employment and productivity in the car assembly sector, 1990-2001

	1990	1992	1994	1996	1998	2001
Employment	117 396	105 664	107 134	101 857	83 049	85 257
Labour productivity ^a	7.8	10.2	14.8	17.7	19.1	21.3

Source: Sarti (2002)

^a Units per worker in the year in question.

At this point, it is important to call attention to changes in the nature of assembly-supplier relations in the automotive sector. Firstly, suppliers were induced to set up production facilities very close to assembly units, to enable de-verticalization and just-in-time operations. Most new plants were designed under the condominium concept, in which specific areas were designated to be occupied by selected auto parts corporations that would enjoy exclusive relations with assemblers. In return they had to share investment costs. Secondly, in line with new forms of relations, auto parts companies –now for the most part subsidiaries of key international players– developed intense intra-firm trade, thereby expanding auto parts imports from their parent transnational corporations. Between 1989 and 2001, auto parts imports increased 300%, reaching US\$ 4.3 billions in 2001, with a trade

deficit of US\$ 445 million.

Within a context of capacity expansion, modernization and ownership change, auto sales in Brazil increased from 713,000 units in 1990 to 1.9 million in 1997, going down to 1.6 million units in 2001. Most auto assemblers operating in Brazil focused on the subcompact segment, with engines in the 1000 to 2000cc range. In 2001, 71% of domestic production was related with this segment. The international trade of the Brazilian auto industry was marked by strong complementarities with Argentina: after a brief expansion in the post-trade liberalization years, the level of cars imports was reduced to US\$ 2 billion in the 2000/2001 biennium. Almost 66% of these imports came from Argentina. By the same token, 44% of Argentine auto imports come from Brazil.

VI

Traditional industries: competitive constraints are still defined by unequal income levels

1. The pattern of competition then and now: market segmentation and networking

Market segmentation is an inherent feature of traditional industries. Variety prevails, in terms of number and technical specifications of products, nature of production processes (assembly, flow and batch production), minimum size of technical economies of scale, levels of verticalization and outsourcing, and organizational format of the companies.

Industrial sectors are very sensitive to oscillations in demand, and responsiveness is the key competitive driver of these industries (see first two columns of table 11). Responsiveness is important for two reasons. Firstly, through considerable marketing efforts, companies constantly try to introduce new designs and create niches to impose themselves in their markets. If successful, immediate demand expansion follows. When this happens, they must increase production levels to correspond with growth in demand, while keeping delivery times under control. Secondly, demand levels are subject to seasonal oscillations, imposing the need for constant adaptation of production levels. Compliance with these two sources of oscillations in

demand is facilitated by the relative technical simplicity of production processes and the low investment costs in expanding capacity. Apart from the importance of imposing new consumer habits, investment in these industries is closely associated with changes in demand levels.

The degree of market segmentation is defined by the size and income profile of a given consumer population. The higher the income level, the less relative importance the price attribute will have and the greater the value of attributes associated with satisfying particular specifications of clients. Nationwide, if high income levels prevail, firms with similar competences will co-exist, while operating in different market segments. In contrast, when income differentials are significant, firms with very differentiated competences will co-exist in similar markets. It is important to note that, given the relatively low unit value of traditional products in consumer baskets, high levels of product renovation and differentiated competences among firms may prevail, even in a context of very unequal income levels, if the absolute size of the market is considerable, as in the case of Brazil.

Entrepreneurial skills for promoting product renovation and keeping organizational formats up to date

—especially in regard to design, marketing, quality control systems and relations with suppliers— are essential for competitive success in traditional industries. The basic sources of technical change for these industries are the equipment and input supplier industries. In the

past ten years an increasing role has been played by information technology-related equipment and chemical inputs. Those corporations capable of gaining access to such equipment and inputs on better terms will enjoy competitive advantages.

TABLE 11

Brazil: Patterns of competition and competitiveness in traditional industries: then and now

Sources of competitive advantages	POC based on responsiveness Main drivers, 1990	POC based on responsiveness Main drivers, 2002	Brazilian competitiveness, 1990	Brazilian competitiveness, 2002
<i>Internal factors</i>				
Management	Entrepreneurial skills	Increasing importance of creating new market segments	Heterogeneity, with a core group of competitive firms	Increased heterogeneity: leaders close to the international frontier
Production	Quality control	Greater flexibility and outsourcing	Incipient	Increased competence
Sales	Market information	Increasing importance of marketing	Incipient	Increased competence
Innovation	Embodied technology, learning by doing	Increasing importance of design	Strategy based on copying	Improvements in few segments and products
<i>Structural factors</i>				
Market	Segmentation by levels of income and type of product	Increased	Limited segmentation due to inequalities in income levels	Inequalities remained but segmentation increased
	Price, brand, delivery times, customer orientation	Increased	Low use of product attributes	Greater use of price and customer orientation attributes
	Local and international trade	Increased importance of insertion in international supply chains	Potential large size of national market but reliance on local trade; threats from imports	Demand fluctuation due to economic instability; incipient international exposure
Configuration of industry	Economies of agglomeration and networking	Great increase	Limited to few segments	Increased number of local clusters; relocation to lower labour cost regions
	Efficient supply of equipment	No change	Deficient supply of equipment	Expansion of equipment imports with better price/efficiency ratio
	Metrology, standardization, certification; market and technical information; training	No change	Low efforts and lack of coordination	Improvements restricted to medium-sized and large companies
Regime of regulation and incentives	Anti-dumping policy	Increased, due to preferential access under bilateral agreements	Low level of use	Increased use in local markets
	Competition and consumer protection policies	No change	Infant level, unfair competition from informal sector	Increased but still incipient importance; unfair competition from informal sector remains
	Support for SMEs	Increase in size and scope	Lack of effective instruments	Improvements in support for management but lack of financial instruments remains
	Tax system	No change	Anti-competitive bias	Bias remains

Source: Prepared by the authors.

Privileged access to suppliers is related to size: smaller companies can survive in specific market niches, but they may face economic and financial difficulties in mobilizing the resources they need to fully exploit equipment- and input-related sources of competitive advantage. Given the inherent economic variety of these industries, this may be the basic reason for the growing trend for companies to organize themselves horizontally and/or vertically around local production clusters. Through such local clusters, companies can benefit from another source of competitive advantage: economies of agglomeration, through which they share costs associated with all aspects of their economic activity: infrastructure, labour and other inputs, design and marketing, information systems, etc.

Traditional industries are among the oldest industrial activities in Brazil, and competitive heterogeneity was and still is an important structural feature. The coexistence of very differentiated levels of competence among firms in each sector –and even among stages of production, within a given firm– can be directly associated with the country's remarkably uneven income distribution profile.

In 1990 competitiveness was directly associated with size: large firms were likely to be more competent than their smaller counterparts. Larger firms were able to explore different market segments, to invest in modernization and to export. The analysis of textile, footwear and furniture industries indicates that, in 2002, such structural feature still prevailed, although,

as shown in the last two columns of table 11, some progress has been observed. The rate of product renovation has increased, through explicit and increased design efforts. Production modernization has been facilitated by the incorporation of more efficient machinery. Local clusters have emerged and are being consolidated in different industrial segments and regions of the country, while companies have further explored low labour cost opportunities, by transferring installations to the Northeast of the country.

2. Competitiveness in 2002: increasing responsiveness, but heterogeneity still prevails

a) *Asymmetric capabilities*

The footwear industry exports 30% of its total production, while the textiles and garment industries focus on the domestic market. Until the mid-1990s, most footwear exports were directed to low-end market segments, where the price attribute is important. In spite of competitive pressure from Chinese producers, export performance has evolved positively during the 1990s. As shown in table 12, exports increased from US\$ 1.1 billion in 1990 to US\$ 1.6 billion in 2001. Unit prices have also increased, indicating that the industry is upgrading its product portfolio. It is necessary to bear in mind that, since 1999, devaluation has helped exports.

TABLE 12

Brazil: Footwear exports, selected years

Year	Value (US\$ million)	Pairs (millions)	Average unit price (US\$)
1990	1 107	143	7.74
1995	1 414	138	10.25
2000	1 547	163	9.52
2001	1 615	171	9.43

Source: Costa (2002).

TABLE 13

Number of establishments, employment and sales revenue in the textile, chemical fibres and garment industries, 2000

	Chemical fibres	Textiles	Garments
Establishments	25	3 305	18 797
Employment (1,000 jobs)	15	339	1 233
Production (1,000 ton/year)	640	1 750	1 287
Annual sales (US\$ billion)	1.4	16.6	27.2

Source: Prochnik (2002).

Other factors have also contributed to the sector's international performance: fiscal incentives and export credits; the consolidation of gains from economies of agglomeration, especially in the southern state of Rio Grande do Sul, and the accumulated export experience. Nevertheless, labour costs still provide an important competitive edge to Brazilian production. In 1993 labour costs in Brazil were US\$ 1 per man-hour, compared to US\$ 0.5 in China, US\$ 2.5 in Korea and US\$ 8 in Spain. A study by Costa (2002) demonstrates the importance of the exchange rate to this export sector. During the 1994/1998 period, when the Real was overvalued, total employment fell by 56,000, but as demand expanded –between 1999 and 2000 exports increased by US\$ 270 million (26 million pairs of shoes)– companies quickly contracted 29,000 more workers.

In the textiles sector there are important econom-

ic differences between the three most important segments –textiles, chemical fibres and garments – as shown in table 13.

The combined sales of 22,000 establishments, employing 1.5 million workers, amounted to US\$ 45.2 billion in 2000. The production of chemical fibres is technically more complex and the plants are larger and generally controlled by foreign-owned firms. At the other extreme, in the garment industry, small and medium-sized locally-owned firms prevail, employing 1.2 million workers in 18,000 establishments.

In contrast with the footwear industry, the international performance of the Brazilian textile industry, as shown in table 14, was never economically significant, even though in some segments, such as the garment industry, the competitiveness drivers are similar to those prevailing in the footwear industry.

TABLE 14

Brazil: World trade and Brazil's share in the textiles and garment sectors, 1995-2000

<i>Textiles</i>	1995	1996	1997	1998	1999	2000
World trade (US\$ billion)	111.1	113.6	119.3	112.5	113.0	126.1
Brazil's share in exports (%)	0.90	0.89	0.86	0.79	0.73	0.71
Brazil's share in imports (%)	1.23	0.98	1.01	0.95	0.79	0.88
<i>Garments</i>						
World trade (US\$ billion)	124.0	128.7	141.9	149.3	150.0	165.5
Brazil's share in exports (%)	0.24	0.19	0.15	0.12	0.12	0.17
Brazil's share in imports (%)	0.30	0.29	0.32	0.25	0.14	0.11

Source: Compiled from Prochnik (2002).

b) *Modernization and relocation of production*

A modernization drive was also observed in this industrial group, but with very special features, including relocation towards the low-cost Northeast region of Brazil.

In the footwear industry, companies modernized production processes and product portfolio, including the introduction of automated equipment and new organizational techniques associated with raising quality and decreasing waste and down time. There were also concerted efforts to increase product lines in association with higher process flexibility.

In the textiles and garment sector, modernization was stimulated by three sources of dynamism. Firstly, during the first half of the 1990s, the Plano Real induced positive expectations in relation to growth of demand; secondly, starting in 1995, the National

Economic and Social Development Bank, BNDES, financed a US\$ 2 billion programme for machinery acquisition, especially for larger firms; and thirdly, import liberalization and an overvalued Real on one hand, and advances in technology, on the other, offered the possibility of importing updated machinery at lower prices. Investments in new machinery implied changes in production processes, with a negative impact on employment levels in the sector, which, as in other countries, fell substantially (by 40.7%) between 1990 and 2000.

Concurrently, a significant number of companies in these sectors migrated from the Southeast to the Northeast (table 15), looking for lower labour costs and generous tax incentives, including VAT exemptions, the provision of physical infrastructure and export credit lines.

TABLE 15

Brazil: Share of different regions in textile production, 1990-2000

Sector	Northeast		Southeast		South		Total
	1990	2000	1990	2000	1990	2000	
Fibres	24.9	35.4	55.2	42.6	17.2	21.7	100
Fabrics	17.6	21.5	65.6	62.0	12.8	13.7	100
Knitwear	2.8	10.0	39.9	35.2	55.7	53.5	100
Garments	8.0	11.3	66.6	56.1	21.6	25.4	100
Total	13.3	19.6	56.8	49.0	26.8	28.5	100

Source: Prochnik 2002

VII

Innovation carriers: progress, setbacks and a fragile competitiveness

1. The pattern of competition then and now: the increasing role of innovation

Innovation carriers are firms that engage in activities capable of inducing progress in other economic activities, through technical change incorporated in capital goods and components they produce. Market segmentation is the main feature of the demand for such goods. Since their products have specific applications, in general each firm competes directly with very few rivals. Over the years, and with the pervasive spread of information technologies, the leaders in this sector have evolved from supplying equipment and have become providers of technical solutions and services to clients.

Firms of this type must devote considerable resources to research and development (R&D) activities, reflecting the fact that the most important competitive driver is the capacity to implement product innovations and to address particular demands of clients in specific market segments (see first two columns of table 16). Innovation capabilities are also the most important barrier to entry. Growing R&D costs have led to the emergence of different forms of alliances among firms, mostly with the aim of diluting technological risks. These features mean that there is an important role for public or private research centres.

Due to the strategic role of innovation carriers,

nations with complex industrial structures have always implemented active policies to promote and consolidate the competitiveness of these enterprises in local and international markets. In addition to support for technological development, import restrictions, favourable financing conditions, government purchasing power and fiscal incentives are frequently used mechanisms.

Of all industrial groups, Brazilian innovation carriers suffered the worst consequences of economic liberalization. Before this process, firms had reasonable levels of production capacity and well-qualified human resources, especially in mechanical engineering, as the result of a long learning process associated with an expanding local market and active industrial policies of the 1970s and 1980s. Even then, however, most producers of mechanical engineering and electronics-based equipment were not competitively strong, displaying high levels of verticalization and diversification, dependence on foreign technological suppliers, and merely incipient relations with the local scientific infrastructure.

In the course of the 1990s, producers of mechanical engineering and telecommunication equipments and computers shared a common feature: substantial strengthening of their production capabilities. However, this was not enough to resist foreign competitive pressures. New entrants from abroad acquired local firms, and intra-firm imports were extensively used (see last two columns of table 16).

TABLE 16

Brazil: Patterns of competition (POC) and competitiveness in innovation carriers, then and now

Sources of competitive advantages	POC based on innovation Main competitive drivers, 1990	POC based on innovation Main competitive drivers, 2002	Brazilian competitiveness, 1990	Brazilian competitiveness, 2002
<i>Internal factors</i>				
Management	Integration of R&D, production and marketing	No change	Low capabilities	Low capabilities, but increasing marketing efforts
Production	Design for manufacturing	No change	Some capabilities in mechanical engineering	Reliance on imported design
Sales	Market creation and business-to- business marketing	Increased, due to t he use of information technologies	Low capabilities	Increased
Innovation	R&D + design	Increased capabilities, due to the use of information technologies	Low capabilities	Increasing reliance on imported technology
<i>Structural factors</i>				
Market	Segmentation by technical needs	No Change	Capabilities in lower-end segments	Increased segmentation
	Attention to client specifications	Increased	Excessive standardization	Increased responsive ness
	Local and regional trade	Increased	Exports of standard and technologically simple equipment goods to Latin America	Increased imports of components from OECD and exports of final
Configuration of industry	Economies of specialization	Relative diversification	Excessive diversification and verticalization	No clear pattern discernible
	Interaction with users	Increased	Low interaction	Increasing interaction
	Science and technology systems	Increased	Incipient	Low technological investment
Regulatory and incentive regime	Intellectual property rights	Increased	Nationalistic regulations	Enforcement of property rights
	Selective protection	Decreased	Nationalistic regulations	Excessive liberalization
	Risk support	No change	Non-existent	Limited
	Credit for users	No change	Limited	Limited
	State purchasing power	Decreased	Few attempts	Not in place

Source: Porto (2002).

2. Competitiveness in 2002: modernization, import dependence and ownership internationalization

a) Growth, modernization, de-verticalization and product upgrading

Suppliers of telecommunications equipment considerably expanded their production capacity due to the rigid expansion targets imposed upon telecommunication utilities during the privatization process.

Computer assembly became internationalized through foreign direct investment in new facilities and asset acquisition and substantial increases in imports of components, as a result of changes in legislation which equalized opportunities for local and foreign-owned firms. In the face of growing imports, producers of mechanical engineering-based goods promoted a rationalization process resulting in a significant decrease in production capacity.

Corporate efforts were focused on the introduction of new organizational techniques to ensure greater efficiency of production processes, and reduction and specialization of product portfolio. Through the adoption of just-in-time methods and subcontracting, the mechanical engineering sector was able to improve efficiency and maintain minimum levels of production, with a negative impact on employment levels (which dropped from 331,900 in 1990 to 160,200 in 1999). In line with this trend, computer firms first of all outsourced administrative activities and subsequently introduced new organizational techniques that required fewer staff, resulting in sharp reductions in

employment levels. Thus, after employment had expanded from 42,924 in 1984 to 74,155 in 1989, by 1999 the total number of employees in the computer industry was down to 38,450 (Porto, 2002).

Low investment levels and trade liberalization significantly affected the producers of mechanical engineering equipment. While apparent consumption decreased from US\$ 17.2 billion in 1990 to US\$ 14.4 billion in 2000, imports increased and local production decreased substantially. During the decade, while production levels declined steadily, exports and imports evolved cyclically, with an upward trend until 1997 and declines thereafter (table 17).

TABLE 17

Brazil: production and international trade in mechanical equipment, 1990-2000
(US\$ billion)

Year	Production	Exports	Imports	Trade balance	Apparent consumption	Export coefficient %	Import coefficient %
1990	16.7	2.6	3.2	-0.5	17.2	15.9	18.5
1995	14.3	3.8	6.9	-3.1	17.4	26.6	39.8
2000	11.5	3.5	6.4	-2.9	14.4	30.5	44.7

Source: Vermulm and Erber (2002).

The scenario for suppliers of telecommunications equipment was very different from that of the mechanical engineering sector. In the second half of the 1990s, this industry faced expanding demand due to the rules on the privatization of telecommunications utilities, coupled with intensive technical progress. An estimate by Oliva (2002) suggests that under the investment-inductive rules of concessions, sales amounted to US\$ 20 billion between 1998 and 2000.

Data from Oliva (2002) also show that sales revenue in 2000 was 124% higher than the 1995 level. These figures alone indicate that the growth in demand attracted firms to install new assembly units in the country. Brazilian firms were very efficient in setting up local facilities, relying strongly on global sourcing to ensure delivery times to clients. This is the reason why the industry's trade deficit reached US\$ 2 billion in 2001: the result of US\$ 3.5 billion of imports (43% from the United States, 26% from the European Union) and US\$ 1.5 billion of exports (90% to Latin America).

With regard to the computer industry (computers and components), Porto (2002) found a big expansion in sales, from US\$ 6 billion in 1990 to US\$ 10.7 billion in 1998. Since then growth has slowed down. These figures suggest that the computer industry has managed to outgrow component production. To a large extent, this is explained by the increasing reliance of this industry on imported components.

Indeed, when contrasting imports of components and imports of final computer goods (table 18), the disparity is quite clear: from 1997 to 2001 the average annual value of components imports equalled US\$ 5.1 billion, while that of imported computers amounted to US\$ 1.02 billion. More important, when local computer sales decreased —after 2000— and the Real was devalued —after 1999—, computer imports remained relatively stable but imports of electronic components increased even more.

TABLE 18

Brazil: Computer industry imports and exports, 1997-2001
(US\$ million)

Year	1997	1998	1999	2000	2001
<i>Exports (1+2)</i>	1 331	1 458	1 587	1 865	1 809
1. Computers	255	235	323	346	251
2. Components of which, components for computers	1 076 91	1 223 124	1 264 151	1 519 144	1 558 146
<i>Imports (3+4)</i>	6 406	5 840	5 874	7 690	6 793
3. Computers	1 232	1 090	855	1 080	1 032
4. Components of which, components for computers	5 174 562	4 750 671	4 839 665	6 610 856	5 761 782
Trade balance	5 075	4 382	4 287	5 825	4 984

Source: Porto (2002).

b) *The division of labour between local and foreign-owned firms*

The competitiveness of Brazilian mechanical engineering capital goods is higher in product lines of low and medium technological intensity, where product cycles have matured.

Price competitiveness is decisive, and company advantages lie in privileged access to low-cost inputs and labour. Brazilian industry is also competitive in specific market niches, especially where the equipment is technically more sophisticated, requiring strong interactions between suppliers and clients, and local and regional demand is relatively high in economic terms.

However, some of the structural features of the 1980s, especially the division of labour between local and foreign producers, have not changed. Locally owned companies are prevalent in low-technology segments, while foreign companies dominate sophisticated product lines. The companies that have managed to survive the hardships of the 1990s have improved their competitiveness: they are leaner in terms of production processes and product portfolios. Specialization levels have increased, and this may constitute the basis upon

which to grow in the years to come. Even so, most of the competitive challenges of the early 1990s remain, especially those related to the continuing weakness of the technological capability base.

In telecommunications, despite the increasing reliance on imports, to a great extent demand could be supplied from local sources because of the industry's previous experience within Brazil. Most of the international players were already established in the country before economic liberalization, and some local firms were also very active, but the expansion of demand brought in new foreign firms, through the acquisition of local firms. As a result, in 2000 foreign companies controlled 91.3% of the US\$ 8.8 billion total sales of the sector in that year (Oliva, 2002).

Indeed, according to Porto (2002), when a broader definition is given to the computer and telecommunications industries, the picture does not change very much. The gross sales of the information technology industries increased from US\$ 16 billion to US\$ 30 billion between 1996 and 2000, with foreign-owned firms expanding their market share from 48.2% to 65.8%, at the expense of locally-owned private firms.

VIII

After ten years of economic liberalization, rationalization and inward internationalization in Brazil: What comes next?

The institutional transition towards a new “market-driven” paradigm was not a smooth process and uncertainty increased, especially unpredictability in terms of the extent of entry of new competitors and imported goods. Firms lost the capacity to forecast the real size of their markets and reacted by undertaking defensive actions, most of them associated with cost reduction, production rationalization and product renewal, which led to further reductions of the already low levels of microeconomic confidence. These low levels of confidence were accompanied by a negative propensity to invest, with similarly negative repercussions on macroeconomic sustainability and economic growth.

A balance of the “Made in Brazil” production structure, ten years after economic liberalization, displays a strikingly different feature from those of other Latin American countries: between 1990 and 2002 very few genuinely new economic activities were added to the country’s industrial matrix, and very few previously existing activities ceased to exist.

Most important changes were observed in the management of production processes and in the ownership landscape of industry. Modernization and inward internationalization were the most outstanding, economically significant and generalized processes taking place in Brazilian industry in the 1990-2002 period. These processes do not really represent innovation in the Schumpeterian sense. Foreign capital has always had a prominent role in industry, because the Brazilian economy was never closed to foreign ownership as it was in foreign trade. As for modernization, around the mid-1980s leading firms in most industrial sectors were already introducing updated organizational techniques to increase efficiency and quality (Ferraz, Kupfer and Haguenaer, 1996a).

Over the years, modernization and inward internationalization were strengthened among leading firms and extensively diffused across sectors, assuming economically significant proportions. The role of foreign capital was considerably strengthened, espe-

cially in dynamic industrial segments. Modernization provided the basis upon which firms withstood competitive pressures from expanding imports and the entry of new competitors. The wide diffusion of labour-saving techniques and machinery, de-verticalization and subcontracting and the lack of sustained growth in demand levels caused a decline in employment never seen before in Brazilian history.

Modernization was strongly biased towards rationalization rather than towards expanding production capacity and developing innovation capabilities to support the introduction of new processes and products. Facing changing macroeconomic conditions, industrialists were not willing to invest in new plants and even less in R&D, the most uncertain of all investments.

More interestingly, modernization did not induce changes in the relative position of firms. Those that were relatively stronger in the pre-change period have shown better adaptive capacity and vice-versa. Large firms and those which were foreign-owned, operating in the industrial commodities or durables sectors and located in the southern part of the country, have widened the relative gap separating them from firms lower down on the competitive ladder.

Foreign trade expanded significantly, from US\$ 50 billion in 1990 to US\$ 100 billion in 2001. But trade patterns remained relatively unchanged: imported goods had high income elasticity of demand, while low unit values prevailed in exports. Production modernization benefited from imported electronic components and chemical inputs, while the industrial commodities group still generates most of the country’s foreign exchange. Trade deficits soared and were overcome only in 2000, after a heavy currency devaluation. Regardless of these advances, the share of Brazilian foreign trade in world trade has declined from 1.4% in the mid-1980s to 0.75% in 2001.

Mergers and acquisitions changed the ownership landscape of Brazilian industry, strongly reinforcing the share of foreign capital. Moreover, between 1990

and 2002, investments in new plants and capacity expansion were carried out only in a very few sectors: steel, automotive products, consumer electronics and telecommunications equipment. These are examples of positive reactions to the expansion in demand and pro-active responses to increasing competition, and they are interesting in indicating a pro-growth vitality in Brazilian industry.

Among industrial groups, some interesting regularities exist. Strong competitiveness has been and remains essentially associated with commodity producers, where local capital is still prevalent. But commodity producers have followed a dual-track strategy: exports of low unit value products and internal sales of high unit value goods. In the durables sectors, competitiveness was strengthened — especially in middle-range products — through investments in new plants, increasing product differentiation and expanding imports of components. Foreign firms are dominant and exports are increasing. Heterogeneity is still an important feature of traditional industries, in which local capital mostly predominates. Responsiveness — a key competitive driver — has increased, along with the formation of local production clusters and the relocation of plants to low-cost regions, especially the Northeast. Among innovation carriers, weaknesses still prevail, although the firms significantly improved their ability to deliver equipment when demand was expanding. Ownership internationalization has increased, inducing a marked division of labour: foreign firms control the assembly of equipment and the

importation of strategic components, while locally owned firms are either suppliers of standardized components or producers of technologically simple machinery.

In short, Brazilian industry has shown considerable capacity to adapt to institutional change. Competitive capabilities were reinforced, thanks to a modernization drive strongly biased towards rationalization. Interestingly, however, in a few areas where growth prospects were high, industry responded by expanding capacity. Nevertheless, responsiveness to the challenges imposed by economic liberalization and growth prospects is unevenly distributed, favouring those firms with previously accumulated capabilities. Most probably this was an important factor in the acceleration of ownership internationalization.

Consequently, Brazil may face a development paradox in the years to come. History tells us that local capital and innovation capabilities have been outstanding features in countries which have been successful in sustaining economic development. If ownership internationalization is to remain and local innovation capabilities are to be promoted, then Brazilian private and public policy makers must seek new ways of attracting the necessary investments. To a great extent, this will mean an important departure from established policy practices, towards new ways of regulating and inducing firms to increase local value creation.

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The influence of capital origin on Brazilian foreign trade patterns

Célio Hiratuka and Fernanda De Negri

This article aims to determine whether the geographical pattern of the external trade of foreign-owned enterprises in Brazil differs from that of domestic enterprises and whether, in the case of foreign enterprises, the region of origin of their capital is an important factor in determining that pattern, both in terms of the origin and destination of their imports and exports and with regard to the technological content of the pattern. The methodology employed was panel analysis, applied to a representative set of enterprises, using trade data broken down by region for 1989, 1997 and 2000.

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I

Introduction

Foreign enterprises have always had a large share in the Brazilian economy. This was the result of economic policies which for many years promoted the internationalization of the national productive system as a means of economic development and incorporation into the world market. Arguments such as the need for foreign savings, greater technological capacity and the foreign enterprises' better position in foreign trade were often adduced to justify the role of foreign capital in the country. The presence of foreign enterprises, especially in "heavy" industry, was indeed a decisive factor in Brazil's industrialization process, because their activities complemented those of the private-sector and State enterprises responsible for the "light" sectors of industry and the infrastructural sectors, respectively.

The growing internationalization of the Brazilian economy, as a result of a fresh wave of foreign direct investment (FDI) in the 1990s, revived the debate on the role of foreign enterprises. In recent years there have also been some changes which are extremely important in terms of this debate and in terms of the effects of internationalization on the performance of the national productive sector.

Firstly, there is the process of trade and financial liberalization in the early 1990s, which increased the coefficients of exports and imports and, in some respects, made the Brazilian economy more vulnerable to changes in globalized financial markets. Secondly, there are the regional trade agreements such as MERCOSUR and the negotiations for the establishment of a Free Trade Area of the Americas (FTAA) and an agreement between MERCOSUR and the European Union, which are likely to have significant effects on the foreign trade performance of the country in the coming years.

It was in this context that many of the recent studies on the role of foreign enterprises sought to analyze their effects on trade flows. In particular, the greater openness of the economy seems to have led some analysts to believe that the role of foreign enterprises in

Brazil's foreign trade would become more significant and beneficial for the country. Various studies also sought to compare the trade performance of foreign enterprises with that of domestic firms. In general, the results obtained showed that there were differences between the performance of the two types of enterprises: the foreign enterprises showed greater integration with the exterior, although this was more pronounced in the case of imports than of exports.

The aim of this study, apart from identifying the trading differences between domestic and foreign enterprises, is to go more deeply into the possible causes of these differences. One of these causes, which has far-reaching implications in view of the possible signing of trade agreements with the FTAA and the European Union, has to do with the influence of the region of origin of the capital of foreign enterprises on the patterns of origin and destination and technological content of Brazil's foreign trade. This article therefore seeks to appraise the regional trading pattern of foreign enterprises in Brazil as a function of the regions of origin of their capital and their differences with domestic enterprises and foreign enterprises in other regions.

This article is divided into six sections. The following section, section II, briefly addresses the relations between foreign direct investment (FDI), the activities of transnational corporations and trade flows in the recent past. Section III summarizes the main results of the studies on foreign enterprises and trade in Brazil made during the 1990s. Section IV contains an econometric analysis on a panel of 165 foreign and domestic industrial enterprises on the basis of data for 1989, 1997 and 2000 with a view to identifying regional trade differences between the enterprises according to their nationality and the region of origin of their capital. Section V seeks to determine if the technological density of foreign enterprises' trade influences their regional trade pattern and, more specifically, how much it influences their trade flows with their region of origin. Finally, section VI presents the main conclusions of the study, together with some inferences that may be drawn in terms of economic and trade policy.

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II

The effects of foreign direct investment and transnational corporations on international trade

The rapid growth of trade and FDI flows has been given a great deal of attention recently in international economic studies. As may be seen from table 1, both these flows, but particularly those of FDI, have grown on average considerably faster than world GDP over the last 20 years.

It may also be seen from that table that a counterpart to the faster growth of FDI flows than world trade and the world product was an increase in the importance of transnational corporations in the global economy. The total sales of the subsidiaries of those enterprises came to US\$ 15.6 billion in the year 2000,

which represents added value of some US\$ 3.1 billion. The average annual growth rate between 1982 and 2000 was 8.9% for sales and 8% for value added, while the share of the subsidiaries of transnational corporations in the generation of world GDP rose from 5.6% to 10.1% over the same period. It should be noted that these figures do not include the product generated by the operations of the parent firms in their home countries, but only that of their subsidiaries abroad, thus under-estimating the total share of transnational corporations in the generation of world wealth.

TABLE 1

Economic indicators of world as a whole and of subsidiaries of transnational corporations, 1982, 1990 and 2000
(Billions of 2000 dollars)

	1982	1990	2000	Variation between 1982 and 2000 (annual average, %)
<i>World data</i>				
FDI flows	77	239	1 271	16.9
World GDP	14 086	24 518	31 363	4.5
Exports	2 492	3 977	6 338	5.3
<i>Data for subsidiaries of transnational corporations^a</i>				
Sales	3 373	6 256	15 680	8.9
Assets	2 601	6 804	21 102	12.3
Product	789	1 625	3 167	8.0
Exports	889	1 335	3 572	8.0
Product of transnational subsidiaries/world GDP (%)	5.6	6.6	10.1	
Exports of transnational subsidiaries/world exports (%)	35.7	33.5	56.4	

Source: United Nations Conference on Trade and Development (UNCTAD).

^a For 2000: UNCTAD estimate.

It is also important to note that the share of the transnational subsidiaries in the total GDP of the industrial sector is considerably greater than those of the primary sector and of commerce and services. According to calculations made by Lipsey (1998) in 1990 the internationalized product in industry at the world level, that is to say, the proportion of a country's product controlled by enterprises based in other countries, represented 16% of world industrial GDP, and

this percentage must have increased still further in recent years.

As for trade flows, in 1999 the total exports of transnational subsidiaries were estimated to amount to US\$ 3.5 billions, representing nearly 56% of total world exports, compared with 35.7% in 1982. The share of the parent firms is not included in this figure in this case either, thus under-estimating once more the incidence of transnational corporations in total

exports. Even so, these data clearly show that FDI and international trade are interdependent phenomena, and also that an increasing share of trade flows is under the control of transnationals. According to estimates of the United Nations Conference on Trade and Development (UNCTAD, 1995), almost two-thirds of world trade involves a transnational corporation in some way, and nearly half of this figure corresponds to intra-firm trade. In other words, trade within transnational corporations represents almost a third of total world trade.

This phenomenon has given rise to a large number of theoretical and practical studies which seek to identify the relations between FDI flows, the activities of transnational corporations and trade flows by treating these variables in a more integrated manner.

The effect of the activities of transnational firms on trade flows was neglected for a long time in trade theory. The formal expression of Heckscher-Olin-type comparative advantage models included among its various prior assumptions the hypothesis that the factors of production were immovable and could hence only be analysed in the country where they were located. Furthermore, the idea of the enterprise inherent in the model was that of a production unit manufacturing only one product in a single plant, in an environment where there was perfect competition in all markets. This excluded in advance the possibility of the existence of transnational corporations, both because it would be impossible for the enterprises of one country to use the factors of production of another or for a foreign-owned firm to build up any kind of advantage over domestic firms in producing for the local market, in view of the hypothesis of perfect competition.

Although trade theories which exclude the transnational corporations are still sometimes used as explanatory models, the recognition that the activities of transnational corporations influence trade flows and patterns has stimulated the preparation of studies which seek to incorporate this aspect in equilibrium models based on the new international trade theories.

Basically, two main lines of argument can be identified to explain the emergence of transnational corporations in the new trade patterns. The first line, expounded in particular by Helpman (1984) and Helpman and Krugman (1985), seeks to explain the vertical investments of such corporations, which have the characteristic of carrying out different stages in the production chain in different countries, taking advantage of the disparities between the proportions of production factors in each country. In these models, the

firms are assumed to concentrate activities relating to more capital-intensive business functions in the country with the biggest relative endowment of this resource, exporting those services a production unit located in the country with the best endowment of labour, which would then export the end-product. International investment logic is therefore assumed to be connected with the possibility of separating the various stages of production to take advantage of the differences in factor costs, thus giving rise to intra-firm trade in business functions and end-products.

The second line of argument, developed by authors such as Brainard (1993), Markusen (1995) and Markusen and Venables (1998), analyses horizontal investments, namely, the transnational establishment of plants with similar product lines in countries which are similar in terms of market size, income, and endowment of factors of production. Horizontal investment is assumed to take place when the transport costs and prices of a plant are high and its economies of scale at the plant level are small compared with the economies of scale at the level of the firm as a whole. These patterns would explain the growing cross-flows of FDI among developed countries. The equilibrium situation in which the transnational corporations prevail would result in the predominance of direct sales in the countries where the subsidiaries are located, to the detriment of exports.

Some studies¹ which depart from the equilibrium models and are closer to the literature on the operations of transnational corporations state that the interaction between the increase in competition at the world level, the deregulation and/or liberalization of markets and the spread of information technologies in recent years have caused transnational corporations to seek something more than just the exploitation of factor cost differences or new markets.

FDI flows have also come to be directed towards the rationalization of the already established structure, in order to take advantages of the economies of scale available through the unified management of geographically dispersed production activities and the acquisition of assets that promote training for competition and help to attain strategic goals in global and regional markets.

Whereas previously the chain of value of enterprises was reproduced almost in full in each subsidiary, the expansion and rationalization of that struc-

¹ Such as those by Chesnais (1996), Dunning (1993) and UNCTAD (2002a and 2002b).

ture has resulted in a more fragmented chain in which the subsidiaries carry out activities and functions that form part of a much more complex international division of labour. The decision to assign a production or business activity to a given place has come to be based on the expectation that this will make a contribution to the global performance of the transnational corporations. Subsidiaries have begun to specialize in particular areas and to provide components or a particular line of products to the rest of the network, either within a region or worldwide, even taking on business functions for the line in question, such as organizing purchases and research and development activities (UNCTAD, 1995).

As the accumulation potential of transnational corporations has come to depend on the way they organize, coordinate and globally integrate their various activities, there has been an increase in the flows of information and resources between the parent firm and its subsidiaries, as well as among the various subsidiaries themselves. These flows involve everything from financial to technological resources, including all types of information connected with business management. The most visible aspect of this integration is the flow of products. The greater share of transnational corporations in trade flows, as shown in table 1, reflects not only the quantitative increase in the internationalization of big corporations, but also changes in their way of acting and new objectives of FDI flows.

The already noted increase in intra-firm trade is

also directly related with the expansion and integration of the activities of transnational corporations at the world level. As noted by Anderson and Fredriksson (2000), intra-firm trade has increased in recent years not only with respect to intermediate products, but also end-products.

Consequently, any analysis of trade flows and patterns must take into account the fact that a growing proportion of those flows corresponds to internal operations of the transnational corporations or subcontracting arrangements, and therefore does not involve pure market transactions.

In the present context, the reorganization of world production and marketing chains, which is necessarily accompanied by structural changes in the trade patterns of the countries of origin and destination of FDI, forms part of the inherent logic of the transnational corporations. According to Mortimore, Vergara and Katz (2001) and UNCTAD (2002a), one of the main factors which has conditioned the insertion of the developing countries in international trade flows, especially of more technology-intensive products, has been their participation in the internationally integrated production systems organized by the big transnational corporations.

In the next section we will analyze the studies which have been made with a view to establishing the effects of the activities of the transnational corporations on Brazil's external trade in recent years.

III

Transnational firms and Brazil's external trade in the 1990s

FDI flows into the Brazilian economy were quite low throughout the 1980s, but they increased in the 1990s, and especially during the second half of that decade. Between 1990 and 1995 the average inflow was US\$ 2 billion per year, and this level rose steadily up to the year 2000. Since then, the investment inflow has

shown a downward trend, but it still remains quite high. Brazil's share in both world FDI flows and in the total amount received by developing countries was also higher than at the beginning of the decade in relative terms (table 2).

TABLE 2

World, developing countries and Brazil: Foreign direct investment flows received
(Millions of dollars)

Countries and regions	1990-1995 ^a	1996	1997	1998	1999	2000	2001
World	225 321	386 140	478 082	694 457	1 088 263	1 491 934	735 146
Developing countries	74 288	152 685	191 022	187 611	225 140	237 894	204 801
Brazil	2 000	10 792	18 993	28 856	28 578	32 779	22 457
Brazil/world	0.9	2.8	4.0	4.2	2.6	2.2	3.1
Brazil/developing countries	2.7	7.1	9.9	15.4	12.7	13.8	11.0

Source: Prepared by the authors on the basis of data from the Central Bank of Brazil, ECLAC and UNCTAD.

^a Annual average.

As a counterpart to the high levels of FDI inflows, there was also an increase in the importance of foreign-owned firms in Brazil's production and foreign trade structures. According to data on the 500 biggest private firms in the country, in 1989 foreign-owned firms accounted for 30% of the number of firms and 41% of sales, and by the year 2000 those figures had risen to 46% and 56%, respectively (Laplaine and Sarti, 2002).

As the importance of foreign firms increased, the effects of their activities on the industrial structure of Brazil became the subject of renewed study, especially as regards trade flows.

Various authors have analyzed the trade performance of foreign-owned firms and have identified the differences with the trade patterns of domestic firms, using various different data bases and methodologies.

Moreira (1999), for example, worked with data on the income tax paid by legal persons in 1997, covering almost 26,000 firms, and observed that in a particular sector and size range of firms the exports of foreign firms were 179% higher on average than those of domestic firms, while their imports were 316% higher on average.

Using the same data base, Pinheiro and Moreira (2000) found that foreign-owned firms were more likely to export and that the expected value of their exports was 32% higher than that of domestic firms. In the same study it was also noted that as the size of the firms increased, the difference between the exports of foreign-owned and domestic firms grew smaller. The model also included other variables, such as total income, intensity of capital and labour use, average wages and qualifications of the workers, concentration, and use of the installed capacity of the firms' sectors of activity. In this study, the authors did not

address the differences between the two groups of firms as regards imports.

On the basis of data on the 500 biggest firms in Brazil, Chudnovsky and López (2002) carried out another exercise to identify the differences in the trade performance of domestic and foreign-owned firms. In that study, the authors found an increase in the import coefficients of foreign firms in Brazil in the 1992-2000 period and a small decrease in their export coefficients. Using statistical hypothesis tests in which they took account of the sector and size of the firm, they found that in 1992 there were no significant differences between the trade coefficients of foreign and domestic firms. In 1997 and 2000, however, although there were no major disparities between export coefficients, the differences between the firms' import coefficients were indeed significant.

De Negri (2003), whose study was based on micro-data from the annual industrial surveys covering almost 54,000 firms in the period from 1996 to 2000, made a panel data analysis and also found a discrepancy in the trade behaviour of foreign and domestic firms. Once more, the difference in favour of the foreign firms was much greater in the case of imports than of exports. The results of the random effects model, which included such factors as size, productivity, skill levels of the labour force, and differences in the product and sector of activity, indicated that foreign firms exported 70% and imported 290% more than domestic companies.

In short, the studies show that orientation towards the exterior is greater among foreign-owned firms than among domestic ones, especially in the case of imports. The contrast is not so marked for exports, especially in the case of large firms.

As well as this difference in trade performance,

another important aspect of the effects of the activities of foreign-owned firms concerns the origin and destination of trade flows. This aspect deserves to be analyzed more fully, since it has important implications for the debate on the consequences of the integration agreements currently being negotiated by Brazil. As noted by Baumann and Carneiro (2002), taking into account the capital origin and impact of transnational firms can have important implications for studies which seek to analyze the effects of integration processes but assume that transactions only take place between totally independent agents.

The study by Laplane and others (2001), which was based on a sample of 100 large foreign-owned firms in 1997, finds that these firms concentrated nearly 40% of their external sales in the countries of MERCOSUR and the Latin American Integration Association (ALADI), while their sales to more developed regions were considerably smaller: 16.6% to the North American Free Trade Area (NAFTA) and 18.5% to the European Union. On the other hand, their imports came mainly from the more developed regions (27.7% from North America and 36% from the European Union). The authors relate this pattern with the role played by the Brazilian subsidiaries in the strategies of their parent firms, which conditioned intra-firm trade and favoured the importation of inputs, components and final products (especially those of greatest technological density) from the parent firm or from other subsidiaries in more developed regions, while giving priority attention to the domestic market and exports to MERCOSUR and ALADI.

The analysis by Pinheiro and Moreira (2000) reproduces the estimates given by the model referred to earlier for different regions and notes that the greater probability of exporting displayed by foreign-owned firms compared with domestic ones is maintained in all markets. The exports of both types of firms are directed primarily to Latin America, in second place to the other industrialized countries, except for the United States and Canada, and in third place to the latter two countries.

The study by Baumann and Carneiro (2002) aims to make a more explicit analysis of the influence of intra-firm trade and to find out to what extent the geographical concentration of exports is related with the country of origin of the transnational firms operating in Brazil. In view of the lack of detailed information on the level of intra-firm trade in that country, the authors resort to the hypothesis proposed by Baumann (1993) that, for a given transnational firm with a given

country of origin, the transactions carried out with that country will be mainly with the parent firm or through marketing channels organized by that firm. Although it is possible that some transactions with the country of origin will not be of an intra-firm nature, the approximation used by these authors is the best available in view of the limitations of the available data.

Using a probit model, Baumann and Carneiro seek to identify the factors which explain the increase in exports between 1995 and 2000 in a set of 43 firms. Apart from the degree of openness of the firm or the variations in its sales, it is noteworthy that the exports were mainly to the MERCOSUR countries, NAFTA and the future FTAA. On the basis of these results, the authors test the factors explaining the variation in exports in those two years to four types of markets—the domestic market, MERCOSUR, North America and the future FTAA—and conclude that the firms which registered rapid growth in their sales did so by channeling them preferentially to those regions; according to their study, the greater the weight of external trade compared with the income of a firm, the greater the probability that that firm will direct a growing share of its exports to its country of origin. These authors also note that foreign-owned firms also acquire a considerable part of their imports in the country of origin of their capital, although they do not specify the model for explaining this.

The evidence assembled in Baumann and Carneiro (2002) would appear to indicate that an evaluation of the effects of regional accords based exclusively on considerations of trade diversion and creation would be distorted because it does not take account of the influence of transnational corporations on trade flows. The summary made by Castilho (2002) of several studies which seek to analyze the possible effects of FTAA and the MERCOSUR-European Union agreement shows that in spite of the variety of methodologies used, none of these studies takes account of the weight of transnationals and intra-firm trade.

Finally, mention must be made of the study by Coutinho and others (2003), which, although it does not explicitly analyze the influence of foreign-owned firms on regional trade patterns, but rather the competitive situation and prospects of a set of production chains vis-à-vis the new rounds of negotiations on FTAA and the MERCOSUR-European Union agreement, does take into account, in its analysis and summarized results, the importance of the strategies adopted by transnational corporations. According to this

study, the positive effects of integration agreements on production chains where the subsidiaries of transnational corporations are the leading players would be

conditional upon the possibility of those subsidiaries becoming better export platforms than other subsidiaries of the firm or the parent firm itself.

IV

The geographical orientation of the foreign trade of subsidiaries of foreign-owned firms in Brazil

1. General characteristics of the sample

As the differences between domestic and foreign-owned firms in terms of volume of trade were already noted in a number of studies, this section will seek to identify and classify those differences according to regions of origin and destination of foreign trade. The question we must answer here is whether, in this respect, the trade pattern of foreign-owned firms is different from that of domestic ones, and whether, in the case of foreign-owned firms, their region of origin carries much weight in determining their pattern of trade with the different regions.

In order to find the answer to this, we used foreign trade data for 80 domestic and 85 foreign-owned firms in 1989, 1997 and 2000. All the firms are among the 500 biggest firms in Brazil and were selected for having maintained this status in all three of the years in question. Of the foreign-owned firms, 33 are from the United States and Canada, 42 from the European Union, 7 from Asia, and 3 from other areas of the world.

The available data include the volume of imports and exports by region of destination and origin, sales turnover, and sector of activity of each firm.² All the variables are expressed in U.S. dollars at 2000 prices, deflated by the United States Wholesale Price Index.

The firms included in the panel represent nearly 30% of the total sales of the industrial sector and almost 30% of the exports and over 20% of the total

imports of the country in the period studied.³ Consequently, although the sample is relatively small, it is highly representative, so that some of the conclusions of this analysis can be extrapolated to industry as a whole.

The data given in table 3 on the nationality of the firms and the volume of their trade by the destination of their exports and the origin of their imports allow us to obtain a first approximation of their regional trade pattern. The Latin American market does not seem to be very important for the domestic firms, especially in terms of exports, since only less than 10% of their exports go to it. The situation changes in the case of imports, however, since a major percentage of the external purchases of those firms come from the ALADI countries. The rest of their trade is fairly well distributed among the NAFTA countries, the European Union and the rest of the world, the first two of these destinations being the most important.

The exports of firms from NAFTA and the European Union, for their part, go mainly to their markets of origin and to Latin America, especially MERCOSUR. In 1989 this was not an important market for those firms, but the situation changed in the 1990s with the deepening of the bonds between the member countries. However, although they are still significant, the coefficients of exports to MERCOSUR went down markedly between 1997 and 2000 as a result of the exchange rate mismatches caused by the devaluation of the Brazilian real early in 1999 and the subsequent crisis in Argentina. The data clearly show

² The sector of activity is defined according to the National Classification of Economic Activities (CNAE) at the two-digit level, taking the most representative product in the firm's overall sales.

³ The total value of industrial sales was obtained from the annual industrial surveys of the Brazilian Geographical and Statistical Institute (IBGE), which makes a census of the industrial firms (manufacturing and mineral extraction) with over 30 employees. Firms with fewer than 30 employees are covered in the sample. The sales of the firms in the panel are gross sales, whereas the sales

the importance of the markets of origin in the imports of the subsidiaries of European and NAFTA-based firms, which is much greater than in the case of exports.

The Asian firms are those which are most closely integrated with their countries of origin, both in terms of imports and exports. Asia is the origin and destination of over half the foreign trade of those

firms. Figure 1 gives data on the average values for the three years studied, which clearly illustrate these conclusions.

Although the results are quite clear, a more precise analysis of this trade pattern can be made through an econometric model which isolates the possible influence of a firm's sector of activity and size on the origin and destination of its foreign trade.

TABLE 3

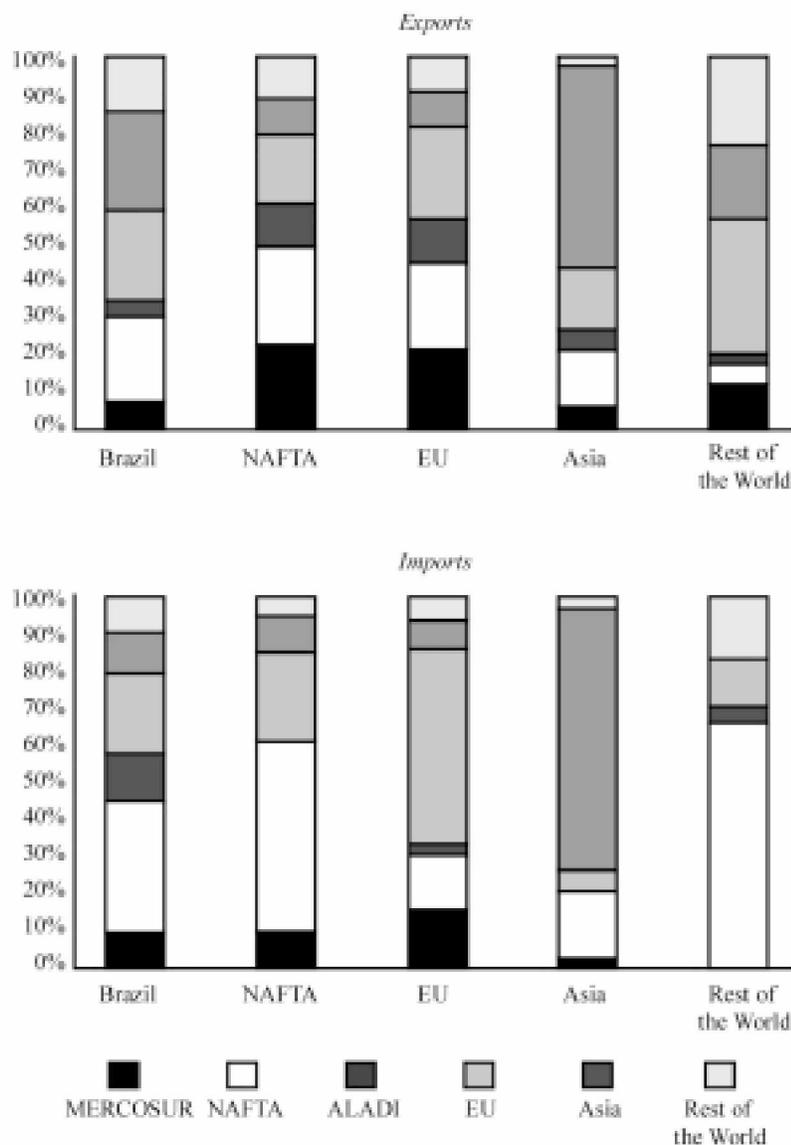
Brazil: External trade of selected firms as a proportion of total external trade of the country, by origin of capital and region of origin or destination of imports and exports, 1989, 1997 and 2000
(Percentages)

Origin of capital	Year	Exports, by destination						Imports, by origin					
		MERC	NAFTA	ALADI	EU	Asia	Rest of world	MERC	NAFTA	ALADI	EU	Asia	Rest of world
Brazil	1989	3	21	1	29	33	13	8	38	13	21	9	11
	1997	9	19	3	25	26	16	7	33	12	21	15	12
	2000	6	30	2	30	17	14	9	40	11	23	9	8
NAFTA	1989	4	39	8	25	14	10	4	66	2	16	11	1
	1997	32	23	12	15	8	9	6	47	1	26	11	9
	2000	25	21	13	23	8	11	21	49	1	19	6	4
European Union	1989	5	28	8	47	4	8	11	17	3	66	2	2
	1997	32	14	14	22	8	10	20	11	2	49	7	11
	2000	19	31	10	28	4	9	15	19	0	54	10	2
Asia	1989	1	11	3	15	66	4	3	17	0	8	72	0
	1997	10	11	9	15	54	1	2	22	0	3	72	2
	2000	5	21	3	20	50	1	3	19	0	6	70	1
Rest of world	1989	8	4	1	66	10	11	0	59	2	7	1	32
	1997	18	7	1	30	14	30	0	66	6	14	0	13
	2000	11	4	4	28	27	26	2	74	1	17	1	5

Source: Prepared by the authors on the basis of data from the Ministry of Foreign Trade (SECEX).

FIGURE 1

Brazil: Exports and imports of selected firms, according to origin of capital and region of origin/destination. Average for 1989, 1997 and 2000



2. Econometric procedures

The sample used is a panel of various firms with data for three years. This format requires a different type of econometric model from the traditional cross-sectional regression models. As in a cross-sectional model,

the panel model captures the specific effects on individuals, but unlike that model it can also capture time-specific dynamic effects. One of the advantages of the model used over cross-sectional analysis is the possibility of taking account of the heterogeneity that exists among individuals through the estimation of individual effects, thus separating the effects of the explana-

tory variables for individual effects not measured by the econometrist.⁴ This is because the model can capture dynamic aspects relating to each of the explanatory variables. In other words, it is possible to see the influence that the alteration of a given parameter has on the dependent variable, free of individual influences not captured by the other parameters of the regression.

With regard to the panel analysis, two possible estimation strategies may be noted: that using fixed effects models, and that using random effects models. In the first case, the individual effects can be freely correlated with the other regressors, whereas in random effects models it is assumed that there is no correlation between the individual effects and the other explanatory variables. In the fixed effects model, the ordinary least squares (OLS) estimator is consistent and efficient. Estimation with the random effects model, in turn, would require the use of generalized least squares, since it is assumed that the differences between individuals are distributed randomly.

In the specific case of the present study, it was decided to use the random effects model, since there are no changes in the region of origin of the firms in the period studied. The fixed effects model would only capture the dynamic effects of the panel, that is to say, the effects of change of nationality of the firms on their trade pattern. As in this sample there are no changes in the origin of the firms' capital, which is the subject of the study, it would not be appropriate to use the fixed effects model. Furthermore, in all the estimates Hausman's Test showed the desirability of using the random effects model.⁵

Using these models, the aim is to establish whether the country of origin of the firm is an important factor in its trade with the various economic blocs, especially NAFTA, the European Union and ALADI. These regions were chosen mainly because they would be the ones most affected by the regional accords that Brazil is currently negotiating.⁶ It is also important to

bear in mind the large share of the Brazilian industrial structure occupied by firms from the NAFTA and European Union countries.⁷ For its part, ALADI receives a considerable proportion of the exports of foreign-owned firms located in Brazil, as noted by Laplane and others (2001). In order to make this estimate, we took into account the size of each firm, its sector of activity, the technological content of the goods traded, and the current changes in the Brazilian economy in each of the years studied. The equations thus estimated are as follows:⁸

$$lx_{reg_{it}} = lfat_{it} + lit_{x_{it}} + TLC_i + ue_i + asia_i + rm_i + sector_i + year_i \quad [1]$$

$$lm_{reg_{it}} = lfat_{it} + lit_{m_{it}} + TLC_i + ue_i + asia_i + rm_i + sector_i + year_i \quad [2]$$

where:

- 1) $lx_{reg_{it}}$ is the logarithm of the exports of firm i to a given region in year t .
- 2) $lm_{reg_{it}}$ is the logarithm of the imports of firm i from a given region in year t .
- 3) $lfat_{it}$ is the sales turnover of firm i in year t . The value of the coefficient corresponds to the elasticity of the firm's exports or imports in relation to its size, represented here by its sales turnover. This is a way of taking account of the influence of the size of firms on their external trade.
- 4) $lit_{x_{it}}$ and $lit_{m_{it}}$ express the logarithm of variables that seek to capture the degree of technological content in the firm's exports and imports. In order to construct this variable, a weighted average was made of the percentage share of each category of technological density in the total trade of the firms, as follows:

$$it_{x_{it}} = (prim_{x_{it}} \times 1) + (rn_{x_{it}} \times 2) + (bit_{x_{it}} \times 3) + (mit_{x_{it}} \times 4) + (ait_{x_{it}} \times 5) \quad [3]$$

$$it_{m_{it}} = (prim_{m_{it}} \times 1) + (rn_{m_{it}} \times 2) + (bit_{m_{it}} \times 3) + (mit_{m_{it}} \times 4) + (ait_{m_{it}} \times 5) \quad [4]$$

where $prim_{x_{it}}$ is the proportion of primary commodities in the total exports of firm i , $rn_{x_{it}}$ is the proportion of products with intensive use of

volume. This is very likely due to the size of the sample analyzed and the relative homogeneity of the firms involved.

⁷ In 2000 the European Union accounted for 46% of total FDI flows into Brazil, which the figure for the NAFTA countries was 26%.

⁸ The classification of the technological density of products is the same as that used by UNCTAD (2002a).

⁴ For greater details, see Baltagi (1995) and Hsiao (1986).

⁵ Hausman's Test is used in the analysis of the random effects model to verify the possible existence of a correlation between the individual effects and the explanatory variables. If no such correlation exists, then the random effects model is consistent and efficient. The Hausman's Test statistic has an χ^2 distribution, on the null hypothesis that there is no correlation between the regressors and the individual effects.

⁶ More general models were also analyzed, whose dependent variables were the value of the firm's exports and imports. In this model, unlike the findings of other studies, no difference was found between domestic and foreign-owned firms as regards trade

natural resources, and bit_{it} , mit_{it} and ait_{it} respectively represent the proportions of products of low, medium and high technology. The same procedure was used to calculate the technological content of imports. The degree of technological content of trade is measured on a scale from 1 to 5.

- 5) TLC_i , ue_i , $asia_i$ and rm_i are binary variables that identify the origin of the capital of firm i : NAFTA, the European Union (EU), Asia and the rest of the world. The coefficients of these variables indicate to what extent the behaviour of firms from each of these regions differs from that of domestic firms.
- 6) $sector_i$ represents a set of 12 binary variables designed to capture the differences between the 13 sectors making up the sample.
- 7) $year_i$ represents the two binary variables used to capture the differences between the years 1989, 1997 and 2000 which have affected the different firms in the same way. In this way, it is hoped to prevent the differences observed between domestic and foreign-owned firms and between foreign-owned firms from different regions from being contaminated by conjunctural factors.

3. Results of the estimates

The results obtained from these estimates are given in table 4. As far as trade with Latin America is concerned, there are no significant differences between foreign-owned and domestic firms.⁹ European firms are an exception in this respect, since they tend to import more from Latin America than the others, but their coefficient is not very significant. This result seems to be in contradiction with the figures given in table 3, which suggest that the Latin American market played an important role in the exports of European and NAFTA firms. This apparent contradiction can be explained because the econometric exercise was based on individualized data for the firms, such as size and sector. Thus, the aggregate data in table 3 may not

reflect a generalized form of behaviour on the part of all the firms. It should also be borne in mind that the coefficient of the model may be conditioned by the limited importance the Latin American market had for European and NAFTA firms in 1989. Furthermore, that table referred to the proportion of total exports of the firms to the different markets and to absolute volumes of trade. Indeed, it is in trade with the developed countries that the differences between foreign-owned and domestic firms are most significant, at least as far as imports are concerned.

With regard to trade with the NAFTA countries, there are no significant differences either between the two groups of firms as regards their exports to that region. The disparity in the volume of imports is quite marked, however. The regression coefficients indicate that firms from the United States, Canada and the rest of the world tend to import significantly larger volumes from NAFTA countries than domestic firms, as already suggested in table 3.¹⁰ It may be noted that this difference is not due to the sector of activity of the firms, as might be argued on the basis of the initial data, since this was one of the control variables inserted in the model. The coefficient of the dummy variable on the origin of the firms' capital indicates that NAFTA firms tend to register average import volumes which are over 3,000% higher than those of firms from other regions.¹¹

The volume of exports to the European Union does not differ much either among firms which are of different nationalities but are of similar size, operate in the same sector, and market products of similar technological density. As in the previous case, however, imports from the European Union by European firms considerably exceed those of domestic firms (by 1,600% on average). Firms from the NAFTA countries also tend to import more from the European Union than domestic firms, although in this case the difference is not so marked. It was also observed that Asian firms tend to import less from the European Union than domestic firms and hence less than the subsidiaries of European firms. This is because of the high import coefficient of Asian firms from their region of origin (table 3 and figure 1 above).

⁹ As is customary when using binary variables in the regression model, the dummy variable distinguishing domestic firms was left out of the equation so that the coefficients of the other dummy variables for the region (NAFTA, the EU and Asia) can be interpreted in relation to it.

¹⁰ were no Mexican firms in the sample.

¹¹ As the dependent variable is in logarithmic form but the dummy variable is not, this percentage can only be obtained through the following transform: $[10^B - 1] \times 100$.

TABLE 4

Brazil: Results of estimates of exports and imports of firms to and from specific regions^a

Variables	Latin America ^b			
	Exports		Imports	
	Estimate	t test	Estimate	t test
Intercept	-5.57	-7.24*	-6.15	-4.80*
Lfat	0.98	7.91*	1.14	6.24*
Lit	0.16	0.59	-0.52	1.14
NAFTA	0.33	0.98	0.40	0.78
Rest of world	0.93	1.10	0.19	0.13
Asia	0.33	0.44	-0.91	-0.78
European Union	0.42	1.25	0.98	1.83**
Number of firms	144		126	
R ²	0.43		0.26	
Hausman (Pr>m)	0.25		0.51	
North American Free Trade Agreement (NAFTA)				
Variables	Exports			
	Exports		Imports	
	Estimate	t test	Estimate	t test
Intercept	-4.25	-3.85*	-6.84	-8.68*
Lfat	0.87	4.90*	1.17	9.74*
Lit	0.91	1.85**	-0.20	1.03
NAFTA	-0.16	-0.31	1.53	4.06*
Rest of world	1.11	0.56	1.72	1.78**
Asia	-0.01	-0.01	0.004	0.01
European Union	-0.41	-0.82	0.07	0.20
Number of firms	125		154	
R ²	0.19		0.38	
Hausman (Pr>m)	0.09		0.12	
European Union				
Variables	Exports			
	Exports		Imports	
	Estimate	t test	Estimate	t test
Intercept	-0.97	-0.75	-6.58	-9.86*
Lfat	0.56	2.72*	1.09	10.69*
Lit	0.31	0.75	0.45	2.75*
NAFTA	-0.39	-0.64	0.57	1.83**
Rest of world	0.82	0.46	-0.01	-0.01
Asia	-1.28	-0.90	-1.07	-1.75**
European Union	0.54	0.89	1.23	4.09*
Number of firms	135		154	
R ²	0.11		0.40	
Hausman (Pr>m)	0.31		0.99	

Source: Prepared by the authors.

^a * variable significant at 5%. ** variable significant at 10%.

^b MERCOSUR and ALADI, except Mexico.

In general terms, these results indicate a different trade pattern between domestic and foreign-owned firms and also among the foreign-owned firms themselves. There would appear to be a very strong link between the subsidiaries of foreign-owned firms and their regions of origin in the case of imports, possibly due to intra-firm trade by the subsidiaries in Brazil with their parent firms. This is not the case with Brazilian exports to those countries, however, since there was no observed tendency for such subsidiaries to export to their respective regions of origin.

According to Laplane and Sarti (2002) and Hiratuka (2002), these results may be interpreted as a consequence of the internationalization strategies of the Brazilian subsidiaries of foreign firms or even of the form of insertion of those subsidiaries in the global strategies of their parent firms. The main aim of this insertion is to serve the local market and the adjoining region, without playing an important role as suppliers of more developed regions. This characteristic, which is shared by both the NAFTA and European Union firms, results in a lopsided pattern of integration with their regions of origin which is much more marked in the case of imports than in that of exports.

One of the aims of the present study is to determine whether the technological density of the trade of domestic and foreign-owned firms is one of the factors explaining the above-mentioned imbalance in the trade flows with the regions of origin. This aim is justified by the tendency of the transnational corporations to internalize the production of technology-intensive goods, as highlighted in a number of theoretical studies on the subject.¹² Filipe, Fontoura and Saucier (2002) analyzed the intra-firm trade patterns of United States transnational corporations and confirmed that technological density is a determining factor in intra-firm trade. Thus, such trade is bound to have a greater content of technology than trade with independent firms. This matter will be addressed in greater depth in the following section, through an analysis of the foreign-owned firms included in the panel.

¹² See for example Casson and Pearce (1993).

V

The influence of the technological density of products on the trade patterns of foreign-owned firms in Brazil

It was seen in the previous section that European and United States firms have a greater tendency to import from their regions of origin than firms of other nationalities. Much of the trade with the region of origin probably takes place between the subsidiary and its parent firm: i.e., the channel used by the Brazilian subsidiary to trade with its country of origin is the parent firm. For this reason, and because of the lack of specific data on intra-firm trade in Brazil, trade with the country of origin is often used as a proxy variable for intra-firm trade (Baumann, 1993).

The determining factors of intra-firm trade may be different from those determining the overall trade of firms. Intra-firm trade may be due to specific strategies of each firm, to sectoral aspects, or – and this is what we seek to determine in this section – to the technological content of the products traded.

In order to evaluate the extent to which the technological content influences the trade of a foreign-owned firm with its region of origin, equations on exports and imports to and from that region were analyzed. As in the previous section, the methodology used was panel data analysis. Domestic firms, and those from the “rest of the world” were removed from the initial sample, leaving only the Asian, European and NAFTA firms. The equations used were as follows:

$$lx_{ro_{it}} = lfat_{it} + lit_{x_{it}} + TLC_i + asia_i + sector_i + year_i \quad [5]$$

$$lm_{ro_{it}} = lfat_{it} + lit_{m_{it}} + TLC_i + asia_i + sector_i + year_i \quad [6]$$

where $lx_{ro_{it}}$ and $lm_{ro_{it}}$ are the exports and imports of firm i to its region of origin in year t , in logarithmic form. The other variables are the same as those given in section IV.2 above.¹³ The results obtained are given in table 5.

¹³ In this case, the dummy variable distinguishing the European firms was left out of the equation in order for the coefficients of the other dummy variables for the region (NAFTA and Asia) to be interpreted in relation to it.

TABLE 5

Brazil: Results of estimated exports and imports of foreign-owned firms to and from their respective regions of origin^a

Variables	Exports		Imports	
	Estimate	t test	Estimate	t test
Intercept	0,10	0,05	-7,16	-7,85*
Lfat	0,73	2,63*	1,01	8,05*
Lit	-0,04	-0,08	0,93	3,85*
NAFTA	0,46	0,71	0,10	0,30
Asia	1,93	1,51	0,02	0,03
Number of firms		72		81
R ²		0,18		0,52
Hausman (Pr>m)		0,41		0,99

^a Variable significant at 5%.

The first important result concerns the coefficients of the dummy variables indicating the origin of the firms' capital. These show that there are no substantial differences among the transnational firms of different nationalities as regards trade with their respective countries of origin. The volume of intra-firm trade of the NAFTA firms, for example, is quite similar to that of the European firms, which are the basis for comparison in the model, and the Asian ones.

With regard to the technological density of the intra-firm trade of the transnational corporations, the results show that as the technological content of the imports of these firms rises, there is a corresponding rise in their imports from their region of origin. For every increase of one percentage point in the indicator of technological density of the products imported by the firm, the volume of imports from its region of origin rises by 0.93%. In the case of exports to the region of origin, in contrast, the technological density is not statistically significant. It should be borne in mind that these results are not affected by the firm's sector of activity, since this is one of the control variables inserted in the model.

It may therefore be concluded that the technological density of the imports by transnational firms from their region of origin is greater than that of their total

imports, which may be explained by the greater propensity of the firms to import from their own regions, as shown in the previous section. In other words, the greater volume of imports from their region of origin may be due to the technological dependence of the subsidiaries of foreign firms on their parent firms, bearing in mind the previously explained relationship between trade with the region of origin and intra-firm trade.

This result may be due to the tendency of the transnational corporations to internalize more technology-intensive production rather than trading it freely on the market. Such internalization prevents new technologies developed by the corporations from being readily imitated by competitors. In the specific case of

Brazil, the imbalance between exports and imports may be related with the role played by the Brazilian subsidiaries of transnational corporations within the overall operations of the parent firm. According to Laplane and Sarti (1997 and 1999), the main attraction of the country for foreign investment is the exploitation of the domestic and regional markets. Accordingly, the subsidiaries in Brazil are mostly not authorized to act as global suppliers of the transnational corporation but form part of its world network, acquiring intermediate or final products with a higher technological content from the parent firm or its subsidiaries in developed countries, as noted by Laplane and others (2001) and Hiratuka (2002).

VI

Final Remarks

According to the Census of Foreign Capital made by the Central Bank of Brazil, foreign-owned firms made 60% of the exports and 56% of the country's imports in the year 2000. As the intra-firm trade of those firms accounted for 63% of their exports and 57% of their imports, it may be concluded that almost 38% of Brazil's total exports and 33% of its total imports corresponded to intra-firm trade.

It is therefore extremely important to determine the effects of the activities of foreign-owned firms on Brazil's foreign trade. As noted in section III, a number of studies have pointed out the differences between the trade behaviour of foreign-owned firms and that of domestic firms, emphasizing that the disparities are much more marked in imports than in exports.

The present study represents an important contribution in this field, since the results of the model support the hypothesis that intra-firm trade is one of the factors explaining the differences in behaviour between domestic and foreign-owned firms. In our view, the fact that firms belonging to the United States, Canada and Europe import more products from their regions of origin than other firms, while not displaying any significant differences from them in terms of the regions of destination of their exports, reflects the position that the Brazilian subsidiaries of foreign

corporations occupy in the global strategies of their parent firms.

In a world context in which the transnational corporations are seeking to reorganize their production networks in order to maximize the results of their global operations as a whole, the role of their subsidiaries in Brazil seems to be more important in terms of access to the local market than as a link in the global supply network for other regions, especially when the technological content of the products traded is taken into account.

Two important inferences may be drawn from these conclusions. The first concerns competitiveness and foreign trade policies. Many developing countries have striven to apply active policies to attract investments, while at the same time seeking to improve the contribution of transnational firms to foreign trade and industrial development (UNCTAD, 2002b). Such policies are based on a recognition that the investment and plant location decisions of the great transnational corporations have increasingly strong effects on trade flows. This is a fact which must be taken into account when drafting policies on FDI or trade policies aimed at sectors where those corporations predominate. In the case of Brazil, a deeper knowledge must be gained of the factors conditioning the use of internal trade networks by the big corporations, in order to

determine to what extent those factors can be the subject of public policies designed to increase the positive effects on exports.

The second inference concerns the simultaneous trade negotiations which are taking place on the FTAA and the accord between MERCOSUR and the European Union. As Baumann and Carneiro (2002) and Coutinho and others (2003) observed, the studies being made to evaluate the effects of regional agreements are limited because they do not take account of the effects of intra-firm trade or the strategies of the transnational corporations. They must therefore be complemented with studies which recognize that an important part of the trade with those regions does not follow the traditional trading pattern because it is no longer carried out between independent firms.

This means that the agreements must be analyzed not only as a function of their immediate effects on trade flows but also their impact on the foreign investments to be made by new firms or firms which are already installed in the country. In other words, the regional agreements can have important effects on the activities of the Brazilian subsidiaries of foreign firms and their insertion within the organizational structure

of the parent firms, and these effects will undoubtedly be reflected in the trade flows.

Thus, for example, the tariff reductions within the framework of regional preference agreements could lead to a decision to replace production within the country with exports to the local market from the region of origin of the parent firm or from subsidiaries located in other countries covered by the agreement, thus further strengthening the inflow of intra-firm imports. It is also possible that part of the exports from Brazil to other countries forming part of the agreements will be replaced with exports from other places where the parent firm has subsidiaries. It may also be that the trade preferences will strengthen the position of subsidiaries located in Brazil through better utilization of the transnational firms' own channels to serve the closest outside markets.

These aspects highlight the importance of gaining a better understanding of the way in which the investments of transnational firms influence trade flows, especially in Brazil, where those firms are the leaders in various industrial branches. We hope that the present study will help to obtain a fuller understanding of some of these issues and will stimulate new studies in the same direction.

(Original: Portuguese)

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Information and knowledge: the diffusion of information and communication technologies in the Argentine manufacturing sector

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This article seeks to make a contribution to the study of information and knowledge in Latin America, with special attention to the use and diffusion of information and communication technologies (ICT) in Argentine manufacturing. It addresses two main aspects of this subject: the real extent of the use and diffusion of ICT, and its links with the overall performance of enterprises (innovation capacity, organization of work and competitiveness). It studies and summarizes the use and diffusion of those technologies in Argentine industry in order to i) present an empirical map of their use and diffusion in the Argentine manufacturing sector and ii) identify the linkages of such diffusion with the endogenous capabilities of the enterprises. It maintains that the incorporation and use of those technologies cannot be analyzed without taking into consideration the degree of development of endogenous capabilities achieved by the firms in question. On the basis of a survey of 246 Argentine industrial enterprises, it draws some conclusions on the way Argentine enterprises use ICT, not only in order to improve what they are already doing, but also to generate new knowledge.

I

Introduction

This article aims to make a contribution to the debate on information and knowledge in the Latin American economy and society. It focuses on the use and diffusion of information and communication technologies (ICT) in the Argentine manufacturing sector, with special attention to two main aspects of this subject: the real extent of the use and diffusion of ICT, and their links with the overall performance of enterprises (innovation capacity, organization of work and competitiveness).

In view of the great transformations which have taken place in those technologies and the changes that this involves for society, a variety of questions arise which this article will seek to address. Thus, what is the extent of the diffusion of ICT in Argentine manufacturing, especially when considered from a systemic point of view? Is a certain threshold of prior codified and tacit knowledge required in order to gain access to ICT, or is it possible to cut corners? Is the move towards the use of ICT an automatic process, or does it call for specific policies? Moreover, what is the link between the spread of ICT and development of the endogenous capabilities of enterprises? Can there be generalized development of ICT in a society without previous organizational changes and without structures to facilitate learning? Can such technologies spread evenly among the different segments of production and society?

This article will provide elements to help to address these questions from two perspectives. First of all, we will seek to outline a basic descriptive map of the situation by analyzing the results of a survey of 246 Argentine industrial firms, in order to give an idea of the effective diffusion of ICT in the manufacturing sector. This survey also permits some inferences to be drawn on the effective capacity of firms to use ICT in the generation of new knowledge. The central argument in this respect is that the incorporation and effective use of information and communication technolo-

gies is a function of other capabilities achieved by the firms, and the use and diffusion of ICT cannot be evaluated in isolation from this evolutionary path. For a start, it is considered that the efficient incorporation and optimal use of information and communication technologies to make possible the generation of new knowledge is only possible in firms that are already developing innovation capabilities and have some degree of competitiveness. This is because of the fundamental difference which exists between information and knowledge, which cannot be overcome through the mere incorporation of ICT out of context. Thus, with the new technologies it is relatively easy to reproduce information, even in large amounts and in the most varied forms (alphanumeric, graphical, audio, visual). It is much more difficult, however, to reproduce knowledge, especially when this is tacit,¹ since in order to turn this into information it is necessary first of all to codify it. As knowledge cannot be codified absolutely and completely, however, its reproduction must also be achieved through experience, teaching and training.

In order to contribute to the debate on these matters, section II below contains a theoretical analysis of the differences between information and knowledge and the linkages between the diffusion of ICT and the development of endogenous capabilities. Section III sets out the analytical dimensions taken into account in order to estimate the degree of information and communication technology use and the development of endogenous capabilities in enterprises. Section IV first of all describes the general characteristics of the panel of firms considered and the degree of diffusion of ICT among them and then goes on to present the results of an analysis of homogeneous clusters designed to identify groups of firms with different degrees of development of the two attributes in question. Finally, section V gives the main conclusions of the study.

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¹ Understood as the stock of learning possessed by individuals which cannot be defined, codified, published or fully expressed and which differs from one person to another, but which could be shared to a substantial extent by colleagues and fellow-workers with a similar background of experience (Dosi, 1998, cited in Cimoli and Correa, 2003).

II

Information and knowledge: linkages between endogenous capabilities and the diffusion of information and communication technologies

In recent years, both the economic literature and the press have made extensive reference to the existence of new paradigms regarding technological and social change, due to the confluence of two great currents: on the one hand, what has become known as the information society, and on the other, the generalized spread of new information and communication technologies. The expressions “knowledge-based society” (Lugones, Bianco and others, 2003), “information society” (Castells, 1998) and “new economy”, depending on the different authors, sometimes appear to be similar in meaning, sometimes different, and sometimes complementary.

Lundvall (2003), for example, accepts the idea of a new era as a working hypothesis and shares the basic assumption that the widespread diffusion and use of information and communication technologies represents a fundamental change in the economy and society. He criticizes the concept of the “new economy”, however, on the grounds that it takes a simplistic view of the problem, since it ignores the need to make significant changes and institutional reforms that will effectively promote learning processes.

Cimoli and Correa (2003) note that the debate on information and knowledge has been under way for at least three decades but has gained even greater impetus with the arrival of new technologies.² There are two well-defined positions in this debate: one is the view that almost all information is knowledge (Cowan, David and Foray, 2000), so that in the final analysis more information necessarily means more knowledge, while the other, much more cautious, position emphasizes the differences that exist between information and knowledge and sees the production of knowledge as a complex process which does not necessarily take place automatically as a result of an increase in information (Johnson, Moher and others, 2002).

It is this latter view that has been gaining ground. It holds that knowledge is fundamentally a cognitive capacity associated with the possibility of interpreting and transforming information. Information, in contrast, is a set of data which are structured and formatted but are inert and inactive until they are interpreted by those who have the necessary capacity to handle them (Lugones, Bianco and others, 2003).

This differentiation—but at the same time interaction—between information and knowledge is not something which is closed in on itself, but must also be incorporated into the learning process as an auxiliary factor. As noted by Rullani (2000), knowledge only maintains its value if it is constantly regenerated and expanded through learning and the various transformations in the cognitive cycle outlined by Nonaka and Takeuchi (1999), in which information and knowledge continually interact. This cycle begins with the socialization of tacit knowledge in specific contexts; its externalization to other contexts after codification; the combination of different levels of codified knowledge in order to increase its complexity, and finally, its internalization (transformation of specific codified knowledge) within the context of the enterprise which is carrying out learning processes in this way.³ In this sense, information and communication technologies can be functional to the development of learning processes if they reach a certain level of complexity and also if they make it possible to speed up the phases of the above-mentioned cognitive cycle.

In other words, these technologies could only have a significant influence on competitiveness if there is prior or simultaneous technical and organizational change which makes it possible to optimize them and which involves the definition of technological management strategies and policies, the development of models and systems for the organization of

² See Cimoli and Dosi (1995), Dosi (1998) and Dosi, Orsenigo and Sylos Labini (2002).

³ If used systemically, for example, ICT would give rise to stimuli for the codification, externalization and circulation of tacit knowledge, and would function as a vehicle for the circulation and qualitative transformation of the codified knowledge.

work designed to make the generation and circulation of knowledge viable, and an organizational structure which facilitates the communication and learning processes. In this respect, ICT could be said to have a dual impact on the codification of knowledge. While on the one hand these technologies permit greater codification, on the other they require more and more tacit skills in order to make possible its transformation (Lundvall, 2003). Consequently, ICT facilitate access to information, but this is only transformed into skills if there is a certain minimum threshold of knowledge among individuals, enterprises and local agents, and society as a whole. Thus, the potential of these technologies only emerges within the context of systemic processes, which must integrate endogenous skills on various levels. Otherwise, these processes will be severely limited and reduced to the mere circulation of information. This set of elements permits us to put forward the hypothesis that information and communication technologies are a dependent variable of other structural factors, especially the endogenous skills built up in the course of the evolutionary path followed by enterprises.

This interdependence, which is observed in many of the developed countries in a relatively systemic form, would appear to have a more disjointed character in most of the Latin American countries, because of the lower weight of knowledge in the public debate and in the sectors which shape the specialization pattern. A number of studies have indicated that, unlike the situation prevailing in the developed countries,⁴ in Latin America, within the framework of a high degree of structural heterogeneity, the prevailing situation is one of: i) low levels of technological skills; ii) a small and shallow presence in production networks; iii) a specialization pattern which is not very complex;⁵ iv) limited institutional development, and v) a lack of systemic policies. In this context, Latin American enterprises, and especially the relatively small ones, are marked by their limited innovation capabilities and endogenous skills,⁶ their self-centered tendencies, as

⁴ See Reinert (1996), Lall (2001), and Dosi, Pavitt and Soete (1990).

⁵ This presence is marked by scanty backward linkages and the predominance of commodities: goods which make intensive use of natural resources, with little processing or other forms of preparation (Cimoli and Correa, 2002; Perez and Stumpo, 2001). Consequently, during the expansive stage in the 1990s which culminated with the Asian crisis, seven out of every ten workers were engaged in low-productivity activities (Ocampo, 2001).

⁶ See Bisang, Lugones and Yoguel (2002); Cimoli and Katz (2002); Milesi (2002); OECD (1995), and Yoguel and Rabetino (2002).

expressed in their very limited participation in global networks and virtuous territorial systems, and the isolated nature both of the competitive dimensions they sometimes manage to attain and their efforts in terms of training and consultancy. This situation is made still worse by the extreme weakness of the public area⁷ and the strong presence of foreign direct investment, whose decision-making and R & D investment processes often take place in the parent firms or simply take no account of local needs.

This structural heterogeneity was further accentuated in the 1990s by the big differences in growth rates and the deterioration of the already regressive income distribution conditions (Cimoli and Correa, 2002; Perez and Stumpo, 2001). As a result, production systems have been generated in Latin America which, because of the very limited presence of the key factor of the new technological model (knowledge), are marked by their low levels of complexity and their high degrees of vulnerability. Because of this set of weaknesses, the market fails to select the most innovative forms of conduct,⁸ and this limits the advance of learning processes and the generation of dynamic competitive advantages.

Cimoli and Correa (2003) explain how some of the above-mentioned characteristics condition the spread and systemic use of ICT in the region. In the first place, these technologies are strongly correlated with the level of income, which means that there is an access barrier (Peirano and Bianco, 2002). In the second place, the interpretation and decodification of information demands certain minimum thresholds of codified and tacit knowledge which, as already noted, are rare in the region.

Consequently, placing emphasis on the innovation economy or the knowledge society as yardsticks is subject to a number of limiting factors connected

⁷ In many cases, economic openness without the creation of the necessary institutions has gradually destroyed the evolutionary path followed by territorial systems which had made some progress in learning processes. In these cases, the conflict between openness and a closed situation results in territorial systems which lose their identity because of excessive openness (Poma, 2000).

⁸ In addition to the problems already mentioned, there are also, on the one hand, the prevalence of a linear innovation model which dissociates both science and technology and the generation of knowledge from the production of goods, while on the other hand there is a severe level of disconnection between the demands of enterprises (which are sometimes not explicitly expressed) and the supply of private consultancy and training services, as well as the extreme weakness of the institutions needed in order for the market to function (Yoguel, Neuman and others, 1997).

with the structural conditions of the Latin American economies. In order for it to be possible to generate a virtuous circle between ICT and the advance of knowledge, profound technical and organizational changes are needed in enterprises and institutions. Therefore, this technology cannot be viewed as an

autonomous factor which, by its sole presence, guarantees learning processes or the development of skills. This would be similar – in a new form – to the now discredited technological determinism of the 1980s which associated electronic automation with social and productive development.

III

The analytical dimensions considered in this study

As already noted, the incorporation of information and communication technologies in enterprises can usefully be analyzed as a process which is dependent on the prior technological path already followed. Consequently, a necessary condition for these technologies to be functional to the development of competitive advantages by the enterprises is the existence of endogenous capabilities which can boost the processes of generation, circulation and appropriation of information associated with the spread of ICT.⁹

In the approach taken in the present study, the dimension connected with the use of ICT is equated with the set of information and communication tools used by enterprises to circulate information both in the areas of management and administration and in that of production, at the vertical and the horizontal levels. The dimensions connected with endogenous skills, for their part, seek to analyze the generation of knowledge and the possibility of learning in those enterprises. The main hypothesis of this study is that the diffusion of ICT should be linked with the degree of development of endogenous skills. In other words, proper (or inadequate) use of ICT as a means to facilitate the circulation of information depends on the greater (or lesser) degree of development of endogenous capabilities.

The present study, therefore, not only evaluates the degree of diffusion of ICT in the sample enterprises but also takes into account other variables which serve as proxies for the analysis of their technological conduct and endogenous skills.¹⁰ The aim is thus to

apply a kind of weighting of the complexity of the ICT incorporated and thereby get away from mere dichotomic counting of the “has/has not” type, as well as establishing a qualitative gradient to see how far an enterprise is moving, firstly, towards the use of informatics in existing processes and, secondly, towards the deliberate use of the largest possible amount of information. The complexity of the ICT incorporated allows some inferences to be made on the dynamics of the learning process taking place in the firms.

Thus, in order to analyze the use of ICT and identify the possible circulation of information in the enterprise, indicators were designed to take account of the information and communication equipment and infrastructure (hardware), the computer programmes used (software),¹¹ and the use and importance of the new communication tools —especially the internet, intranet and e-mail— as means of internal and external contact, including sales and purchasing (e-commerce). For production activities, an appraisal was made of the complexity of the production hardware and software, design software, and software for production planning and control.¹² As well as identifying the existence of these tools, in appraising the complexity of the diffusion of ICT, account is also taken of the proportion of the staff with access to them, the purposes they are used for (in

⁹ See, among others, Lundvall (2003) and Cimoli and Correa (2003).

¹⁰ In various studies by the authors (Yoguel, Novick and Marin, 2001; Novick, Yoguel and others, 2002) progress has been made in the construction of a set of indicators to measure these aspects.

¹¹ As well as the existence of a server and database engine and the existence and conformation of an information processing department in the enterprise.

¹² All this is based on the hypothesis that information and communication technologies are important in all sectors. While it is also considered that the links of ICT with production are specific to each sector and have different weights in the corresponding production functions, however, the level of disaggregation needed to analyze these factors would exceed the capacity of the sample used.

general activities, innovation, quality control, organization of work, training) and the type of linkages they help to develop (trade, institutional, etc.). In particular, account is taken, in the case of the internet, not only of whether it is used or not but also of whether the enterprise has a web page and what it is used for. In the case of the intranet, the platform on which it operates is also considered: internally within the enterprise, or via the internet. Finally, an indicator was prepared for evaluating the importance of e-commerce.

Endogenous capabilities —understood as the potential of the enterprises to turn their generic knowledge into specific knowledge on the basis of existing capabilities and dynamic accumulation of skills, including formal and informal learning processes for both codified and tacit information¹³— are determined on the basis of various elements: firstly, the innovative capacity of the agents, evaluated through an analysis of the formal and informal research and development efforts made;¹⁴ secondly, the efforts made by firms to

ensure process and product quality, as measured by compliance with certified standards; and finally, the model used for the organization of work, which influences the possibilities for the circulation of information and the acquisition of tacit knowledge by workers in order to improve their skills and make progress in the two fields in question. The existence of teams and spaces for interaction, rather than the assignment of specific individual job responsibilities, makes it possible to exchange experience and views and increases the possibility of the spread of tacit knowledge among individuals through observation, imitation and experimentation (Novick, Yoguel and others, 2002).¹⁵

The three elements in question make it possible to appraise the development and use of the skills of the entire labour force engaged in production activities, quality control and technological development. The formal and informal training of workers of different levels, as well as their qualification, are other key elements for the achievement of competitive advantages (Novick, 1999).¹⁶

IV

Principal results

1. The diffusion of information and communication technologies in the enterprises studied

The panel analyzed included 246 Argentine industrial enterprises located in the metropolitan area, Córdoba and Rafaela, which were interviewed between July and October 2002. The median for the number of employees and sales turnover of these firms in 2001 was 49 persons and 3 million dollars, respectively.¹⁷ The simple average for sales per employee was about

115,300 dollars at 2001 prices, which was similar to the average for Argentine industry, if micro-enterprises are excluded, but the median was only 62,500 dollars. The distribution of firms by types of agents was also similar to the general structure of Argentine industry. Thus, small and medium-sized enterprises predominated (69%), with significantly smaller proportions of very small enterprises (18%) and large enterprises (13%).¹⁸ Of the firms studied, 19% were wholly or partially foreign-owned. In sectoral terms, the production of traditional goods such as footwear,

¹³ See Ernst and Lundvall (1997), Lall (1992) and Yoguel and Boscherini (1996).

¹⁴ Appraised on the basis of two indicators which reflect the potential capacity of the firm's human resources to carry out R&D activities, the level of formal organization of those activities (R&D teams), and their importance and scope from the point of view of the results obtained (percentage of R&D products incorporated in the last few years).

¹⁵ The indicator designed for the organization of work seeks to capture these aspects by taking account of two elements, one quantitative and the other qualitative: i) the extent of work in cells or teams, and ii) the degree of autonomy of those cells or teams.

¹⁶ In estimating this element, the following aspects were taken into account: i) the proportion of human resources involved in these activities, and ii) the proportion of technical personnel among the total number of employees.

¹⁷ The simple averages for both variables in 2001 were 140 persons and 18 million dollars; these figures were strongly affected by the extreme values registered by some of the firms studied.

¹⁸ Very small enterprises were considered to be those with a turnover of less than 500,000 dollars at 2001 prices, while small and medium-sized enterprises were those with a turnover of between 500,000 and 20 million dollars and large enterprises were those with sales of over 20 million.

furniture, basic metal products and machinery, etc. predominated (44%), with lesser proportions of goods of greater technological complexity (23%), products for the automotive sector (17%), and commodities (12%). Durable goods accounted for only 4%.

The results of the survey indicate that the diffusion of ICT in the enterprises covered by the sample is considerable in quantitative terms, but is seen to be significantly less important when evaluated from the point of view of the complexity of the software and systems used (tables A.1 to A.6 of the Statistical Appendix). Almost all the firms in the sample made investments in information and communication equipment and systems between 1999 and 2001. The amounts involved in these investments during that period averaged 1.2% of annual sales, 78% of which was spent on equipment and systems for the management area.

As noted above, most of the investments were on management and administration tools,¹⁹ mostly of a low level of complexity, which had only a limited impact on the prevailing forms of management, production and interchange. In spite of this low level of complexity, the growing presence of ICT, mainly in management systems, has faced firms with the need to establish some kind of scheme for the handling of such technologies.

It should be noted that in the course of the 1990s there was a great deal of incorporation of equipment, favoured by the economic opening process and the level of the real exchange rate. This incorporation was not systemic, however. The shares accounted for by web pages and e-mail are even higher than in developed countries, but this highlights the fact that, in isolation, these tools are no measure of competitiveness or endogenous skills.

In keeping with the investments made, most of the firms have a substantial amount of equipment and systems which were incorporated in recent years. Thus, 87% of them have networks, mostly local area networks,²⁰ while a little over half of them have telephone lines that provide higher speeds and communication capacity (integrated services digital network (ISDN) lines or asymmetrical digital subscriber lines

(ADSL)). In the management area, 78% of the firms have servers, although in many cases these do not have a database engine, which reduces their potential. The average age of both the servers and the computers of the firms in the panel is around three years.

With regard to the use of software, the demand of most of the firms is quite unsophisticated, consisting mainly of standardized office automation systems (78%). Only a relatively small proportion of the firms (about 22%) use more complex programmes, such as systems for working in groups (circulation of knowledge) and for providing support for decision-making at the middle and managerial levels.

In the area of production, in contrast, the presence of informatics equipment and the use of special software is considerably smaller than in the management area. The most common equipment, found in 23% of the firms, is for programmable logical control; it is followed by computerized numerical control, robots, numerical control, automated assembly and fitting systems, and flexible production cells. In most cases, this equipment operates in isolation, without being integrated through software with other areas of the firm. Only in design is there extensive diffusion of systems (such as computer-aided design, computer-aided engineering, etc., which are present in 50% of the firms); the level of diffusion of systems is lower in planning and control activities (planning of requirements of materials, planning of manufacturing resources, and computer-aided process planning), and is almost completely absent in the production phase: only 4% of the firms use some system of computer-aided manufacturing.²¹

In contrast, the new communication tools are widely disseminated, although in many cases their "real" use and even the objectives which led to their incorporation limit their potential impact. 54% of the firms interviewed have a web site, although in most cases its purpose is not very complex (providing institutional information, publicizing products, and simply being present on the web). Similarly, 96% of the firms have an institutional e-mail account, while in 37% of the total number of firms, over 75% of the employees in the management and administration areas have personal e-mail accounts. A considerable number of firms (57%) also have intranets, although in two-thirds of them these are merely internal networks that do not operate via the internet, thus limiting their possibilities

¹⁹ This is in keeping with the findings of the survey on the technological conduct of Argentine industrial firms (Bisang, Lugones and others, 2003), which identified, within innovation activities, a marked tendency for efforts to be directed towards the management area rather than marketing and production.

²⁰ 75% of the firms have local area networks (LANs), while only 15% of the enterprises have wide area networks (WANs).

²¹ Although it should be noted that in many cases the equipment already has built-in software.

in terms of access and connectivity for suppliers and clients.

In this context, the weight of such tools in the field of links with suppliers and clients is considerable, although very uneven. The most frequently used medium is e-mail, but the telephone and personal visits still occupy important places, thus showing that personal contacts and face to face dealings cannot be replaced easily or completely by the new technologies. The intranet and internet are of less importance in this field; their level of use is similar to that of traditional mail, which has now lost much of its former importance. Something similar may be observed in the relations of firms with institutions such as technology centres, trade associations, technological liaison units, consultants and universities.

Lastly, e-commerce is fairly widespread among the firms in the panel: 5% of them make electronic purchases and sales, 10% only make purchases in this way, and another 14% only make e-sales. Thus, almost 30% of the firms in the panel make some kind of electronic purchases or sales. Of the 70% which do not engage in e-commerce, 42% are unfamiliar with the possibilities, functioning and regulations regarding e-commerce. In line with this, most of the firms (54%) would be unwilling to use this tool in the future, while 16% would only be willing to purchase in this way, another 10% only to make e-sales, and the remaining 20% would be willing to make both purchases and sales.

Within the analytical framework followed by this study, the empirical evidence collected makes it possible to outline a preliminary set of aspects which, in general terms, are seen as characterizing the process of incorporation of information and communication technologies undertaken by the firms in the panel: i) the degree of incorporation of these technologies may be deemed considerable from the quantitative point of view; ii) the presence of ICTs is considerably greater in management than in production; iii) there is a predominance of ICT tools of a low level of complexity, aimed at objectives with limited potential impact, so that the weight of the process is much less in qualitative terms than quantitatively; and iv) because of this, the process of diffusion of ICT analyzed here is closer to the mere management and circulation of information than to a process which will enable firms to strengthen the generation and circulation of the knowledge needed to improve their capabilities.

These general characteristics are observed, how-

ever, against the background of a high level of heterogeneity, which must be taken into account in order to enhance the debate and make it possible to include in it all the nuances that this new phenomenon undoubtedly displays. Consequently, in the next section but one an analysis will be made of homogeneous clusters of firms, in order to identify and summarize the main types of conduct adopted by the firms in the panel with regard to two dimensions – the use and diffusion of ICT, and the development of endogenous capabilities – and then identify the linkages between them.

2. Analysis of homogeneous clusters of firms

Using a multi-dimensional exploratory analysis technique —multiple correspondence factor analysis (MCA)— homogeneous clusters of firms were made on the basis of the simultaneous consideration of various characteristics associated with the diffusion of ICT on the one hand and the development of endogenous capabilities on the other. MCA makes it possible to analyze all the associations which exist between the different forms of the variables making up the data matrix and to obtain a set of classes made up of individuals having high intra-group homogeneity and high extra-group heterogeneity. This method operates through reduction of the number of dimensions studied for the phenomenon in question, thus forming factor axes whose determination makes it possible to concentrate the analysis on those variables and forms which do most to explain the problem addressed, thereby giving a more manageable picture of it (Roitter, 1991; Crivisqui, 1993).

Using MCA, an analysis was made of homogeneous groups, which made it possible to construct different groups made up of the individuals closest to each other on the basis of the Euclidian distances calculated for the coordinates of the individuals on all the factor axes.²²

Through two different statistical exercises, and using the methodology described above, it was possible to identify a gradient of situations for each of the analytical dimensions considered in this study. Thus,

²² In order to interpret the results correctly, it must be borne in mind that while the forms of the variables associated with a given group indicate that individuals with that characteristic are represented in the group to a (significantly) greater degree than in the sample as a whole, this does not necessarily mean that all the firms in that group display that characteristic.

homogeneous groups were identified which differ from others according to the degree of diffusion of ICT in them (in terms of both presence and complexity) and also according to the degree of development of endogenous capabilities, so as to subsequently establish the linkages between the two dimensions.

The analysis was carried out on the basis of the indicators already described, which make possible the simultaneous estimation of both quantitative and qualitative aspects. In both cases, the indicators reflect not only the presence of a given attribute, but also its degree of complexity and its possible contribution to the generation of knowledge. Finally, both planes were combined in order to evaluate the hypothesis of this study.

By differentiating according to the degree of diffusion of ICT, three groups were obtained with the following characteristics:

- i) *High level of diffusion of ICT.* This group accounts for 28% of the firms in the panel. They are marked by a strong presence and high degree of integration of most of the information and communication tools considered. There is a predominance of firms with complex management software, and also a considerable proportion of firms with complex programmes in the production area. The information tools are incorporated on a systemic basis, aimed at integration among the different areas of the firm. These firms make extensive use of the internet, intranet and e-mail.
- ii) *Limited level of diffusion of ICT.* This group, made up of 36% of the firms, has characteristics which are almost the opposite of those of the previous group. In terms of the various planes considered, these firms have the lowest relative level of complexity. They make little use of the intranet, e-mail, e-commerce and the internet.²³ Most of these firms do not have a server, and their computers are not networked. In management, the use of basic-level computer programmes predominates, while in production little use is made of the new tools based on ICT.
- iii) *Medium level of diffusion of ICT.* This group accounts for the remaining 36% of the firms, which do not display such homogeneous characteristics as in the previous two groups. In some

respects they are closer to group i), while in others they are more similar to group ii). Among their main characteristics is the absence of production software and hardware in most of the firms, the predominance of basic-level management software, the presence of servers and networks in most of the firms, a very high level of utilization of e-mail, but an almost complete absence of intranets.

When the firms in the panel were differentiated according to the degree of development of endogenous capabilities, a similar statistical exercise likewise gave three groups:

- i) *High level of development of endogenous capabilities.* This group accounts for 38% of the firms in the panel, which are marked by the predominance of highly-skilled human resources. The most notable endogenous capabilities were: the considerable presence of quality control systems throughout the production process, as reflected in process and product standardization; the importance of cells in the organization of work (high level of autonomy),²⁴ and the medium or high level of the efforts made in the field of training. Furthermore, an considerable proportion of the firms carry out research and development activities in the hands of formal and/or informal teams made up of staff members working full or part time in this area. Finally, in 55% of the firms “new” products account for a substantial proportion of their sales.
- ii) *Low level of development of endogenous capabilities.* This group accounts for 42% of the firms in the panel, with a low average level of human resources skills. The predominant characteristic of this group is the absence of quality control systems and of research and development teams. With regard to human resources management, the organization of work is through the individual assignment of job responsibilities, and training activities are scarce or non-existent. There is also little incorporation of new products.
- iii) *Intermediate level of development of endogenous capabilities.* This group consists of 20% of the firms —and like the previous group iii) established according to the degree of diffusion of ICT —is less homogeneous than the previous

²³ 93% of the firms in this group do not have an intranet, or if they do, it is used by less than 25% of their employees. In a similar proportion of firms, less than 25% of the employees use the internet. In 80% of cases, e-mail is used by less than half the staff.

²⁴ In 76% of the cases the workers participate, at least sometimes, in the programming or reprogramming of the equipment they use.

two groups. Quality control is practiced in 40% of the firms, while in those of them which carry out research and development activities, the staff working in this area only do so part-time, in spite of the importance of new products in the firms' turnover. With regard to human resources management, work in cells is a feature of this group, but the cells have little autonomy and the learning processes are therefore limited. Indeed, in half of the firms there is no training of human resources. The high level of qualifications of the staff in a considerable number of these firms marks a strong difference, however, from the group with a low level of endogenous capabilities.

3. Joint analysis

Using the two sets of homogeneous groups of firms constructed as described above, a joint analysis was made which makes it possible to identify several different types of situations (table 1).²⁵

On the one hand, there is a strong relation between the endogenous capabilities developed by firms and the degree of diffusion reached by information and communication technologies, in keeping with the central hypothesis of this study.²⁶ As may be observed, in the group with a low level of diffusion of ICT, firms with low levels of capabilities are over-represented, while those with high levels of capabilities are under-represented. In contrast, in the group with a high level of diffusion of ICT, firms with low levels of endogenous capabilities are under-represented, while those with high levels are over-represented. Finally, only 24% of the firms with a medium level of diffusion of ICT belong to the group with an intermediate level of endogenous capabilities. In this set of firms, which represents about half of the panel, the hypothesis that there is a systemic association

between endogenous capabilities and the level of diffusion of ICT is confirmed.²⁷

TABLE 1

Argentina: Distribution of groups of firms by degree of diffusion of information and communication technologies (ICT) and by level of development of endogenous capabilities

A. Diffusion groups, as a percentage of total number of firms

Level of diffusion of ICT	Level of development of endogenous capabilities ^a			Total
	Low	Medium	High	
Low	59 ^b	18	23 ^b	100
Medium	42	24	34	100
High	21 ^b	17	62 ^b	100
Total	42	20	38	100

B. Percentages of total number of firms in the panel

Level of diffusion of ICT	Level of development of endogenous capabilities ^a			Total
	Low	Medium	High	
Low	21	7	8	36
Medium	15	8	13	36
High	6	5	17	28
Total	42	20	38	100

Source: Prepared by the authors on the basis of the survey on the use and diffusion of information and communication technologies in Argentine manufacturing carried out by the Institute of Industry/Institute for the Greater Buenos Aires Conurbation (IDEI/ICO), Universidad de General Sarmiento.

^a Chi squared test significant at the 1% level.

^b Z test significant at the 1% level (see footnote 25).

²⁵ When examining the relation between two qualitative variables we considered on the one hand the chi-squared test in order to contrast the significance of the association between them, and on the other hand a Z test for the differences of proportions between each pair of forms. This latter test contrasts the contribution of each pair of categories to the chi-squared. A significant relation may be said to exist (over- or under-representation) when the corresponding test has a 10% significance level.

²⁶ The value of 25 obtained for Pearson's chi squared permits us to reject the hypothesis that there is no association between variables with a 1% significance level.

²⁷ In order to contrast the hypothesis that the diffusion of ICT depends on the level of endogenous capabilities reached, a linear regression analysis was also made between the two variables, including the size of the firms as an additional independent variable. In order to estimate the model with the data for the 246 firms studied, a numerical index was used which was constructed on the basis of the sum of the values assumed for each of the categories associated with ICT, on the one hand, and with endogenous capabilities on the other. The sales of the firms in 2001 were used as a proxy variable for their size. As may be seen from table A.6 of the statistical appendix, there would appear to be a positive relation between the level of endogenous capabilities and ICT, and also between the size of the firms and the level of diffusion of information and communication technologies. Similar results were obtained using an ordered Probit model, taking the level of diffusion of ICT as a dependent variable. The foregoing analysis does not make it possible to see what is behind the estimated coefficients, however: that is to say, the variance between cases. It was therefore decided to opt for examining the information by means of a non-parametric analysis.

There are two interesting hybrid cases where this hypothesis is not fulfilled: in 28% of the firms the level of endogenous capabilities reached was higher than the level of diffusion of ICT, and in the remaining 26% the opposite situation was observed (section B of table 1).²⁸

By combining the levels reached in terms of endogenous capabilities and diffusion of ICT, four groups may be identified:²⁹ i) high levels of endogenous capabilities and high levels of diffusion of ICT; ii) low levels of endogenous capabilities and low levels of diffusion of ICT; iii) levels of endogenous capabilities higher than those of diffusion of ICT; and iv) lower levels of endogenous capabilities than of diffusion of ICT.

i) High levels of endogenous capabilities and high levels levels of diffusion of ICT (17% of the panel)

The firms in this group display most of the attributes of “virtuous” groups: high levels of both endogenous capabilities and diffusion of ICT. In this sense, they differ from the intermediate cases —iii) and iv)— in terms of attributes linked with information and communication technologies and also with endogenous capabilities. With regard to the technologies used, these firms are markedly different from the rest because of their greater use of complex software in the management area (support for decision-making at the middle and higher management levels) and in that of production, as well as in the importance they attach to the training of their staff in informatics (table A.7 of the statistical appendix). If we also take account of the high level of endogenous capabilities reached by these firms, it could be argued that the diffusion of ICT can be a positive contribution in some phases of the metabolism of knowledge. These phases include both the conversion of tacit knowledge into information and the combination of information from various sources into new tacit and codified knowledge. In other words, the high levels of endogenous capabilities of this group reflect the development of learning processes involving both codified and tacit knowledge

²⁸ If only these two cases are taken into account in the estimation of the regression model referred to in the previous footnote, the endogenous capabilities variable ceases to be significant for explaining the behaviour of the diffusion of ICT. Consequently, in these groups qualitative analysis becomes even more important.

²⁹ In this analysis, no account is taken of the 8% of firms with medium levels of diffusion of ICT and medium levels of endogenous capabilities.

of some degree of complexity. Likewise, in view of the importance assumed by information and communication technologies, these would permit connections both between different areas within the same firm and between different groups of firms and could therefore act as a vehicle for the circulation of codified knowledge and for promoting the codification of tacit knowledge generated in the various working environments.

This group displays a high relative presence of firms which have some proportion of foreign capital in their ownership and are medium-sized or large in terms of both sales and number of employees. It also displays a marked degree of sectoral specialization, since 65% of the firms are concentrated in five sectors (chemical products, motor vehicle parts, rubber and plastic products, electrical machinery and equipment, and medical and measuring instruments).

Most of the firms in this group have a considerable degree of openness to the exterior, as reflected in a high export coefficient and the magnitude of their imports of inputs (table A.7 of the statistical appendix). Finally, as regards their market dynamism, the considerable weight of the firms whose sales increased during the 1990s should be noted.

ii) Low levels of endogenous capabilities and low levels of diffusion of ICT (21% of the panel)

The firms in this group display the predominant features of the groups with low levels of endogenous capabilities and low levels of diffusion of ICT. This means that neither the information they receive and process nor the development of learning processes appear to be of much significance. As regards the degree of diffusion of ICT, they are characterized by the presence of basic-level software in the management and administrative areas and the absence of complex software in the area of production. As for the levels of endogenous capabilities reached, most of these firms do not have certified quality control systems or research and development teams. They also make little effort to train their staff and their employees generally have low levels of skills.

In this case, the low levels of endogenous capabilities give grounds for assuming that there are only feeble learning processes and, in view of the low levels of diffusion of ICT, only very limited codification of the tacit knowledge which may exist.

In this group, domestic-capital firms predominate which are small in terms of both sales and numbers of

employees. These firms are agents with a very low export coefficient, and they purchase few imported inputs. Almost two-thirds of the firms in this group had a negative sales performance in the 1990s, and this was reflected even more starkly in their employment figures. They display less specialization, and most of them carry out activities which are generally less complex than those of the previous group (rubber and plastic products, motor vehicle parts, metal products, foodstuffs and furniture).

iii) Levels of endogenous capabilities higher than those of diffusion of ICT (28% of the panel)

Most of the firms in this group are in a stage of their technological trajectory in which, although they have medium or high levels of endogenous capabilities, they have not yet reached a high level of diffusion of ICT.

Although this group does not differ much from the most virtuous one in terms of its levels of endogenous capabilities, some of its attributes cause it to be located in a lower category. Among these are the lesser importance assigned to quality control systems and the lower relative weight of training.

In view of the definition of this group, it would seem of interest to explore the various attributes connected with the diffusion of ICT which caused this group to occupy a lower level than the most virtuous group. Firstly, it is important to note that the lower degree of development in this respect is not located in any area in particular (management, production or communication), but corresponds to a generalized lag in the adoption of this type of technology.

With regard to the management area, this group differs from group i) in the low level of complexity of the software and equipment used,³⁰ the more limited use of its servers, and the lesser importance attached to training in the field of informatics.

The same is true in the production area, where there is not only limited use of this type of tools but also a low level of complexity and lack of integration with the rest of the firm. Thus, the number of persons in different areas who interact with each other is significantly less than in group i). Likewise, the degree of synergy and proper utilization of the learning process are also more limited.

³⁰ There is total predominance of basic-level office software in this group, which brings it down to a level similar to that of the least virtuous group in the panel.

Finally, if we look at the characteristics regarding the use of ICT as a tool for communication, it is noteworthy that these firms assign little importance to the use of the internet, intranet and e-mail (table A.7 of the statistical appendix).

In terms of the size of the enterprises, small firms predominate,³¹ while as regards sectoral specialization the most important branches were motor vehicle parts, metal products, machinery and equipment, rubber, and chemical products, which accounted for 67% of the production of the firms in the group.

In this case, the relatively high degree of development of endogenous capabilities is reflected in quite a high degree of generation and circulation of codified and tacit knowledge. The shortcomings observed in terms of the diffusion of ICT do not permit the enhanced circulation of this knowledge, however.

iv) Lower levels of endogenous capabilities than of diffusion of information and communication technologies (26% of the panel)

This group of firms is located at a low level, because the position they occupy in terms of the level of development of endogenous capabilities is relatively lower than the degree of diffusion of information and communication technologies in them. As noted at the beginning, the fact of having made progress in the incorporation of these new technologies, even in the absence of a prior competitive base, should at all events enable these firms to occupy a higher level than those registering both a low level of endogenous capabilities and limited diffusion of ICT. The firms in this group have better performance in the domestic and foreign markets and a higher level of diffusion of ICT than all the other groups except i). This is reflected in general in a greater presence of servers with database engines; interconnected networks; training in informatics; substantial use of the internet, e-mail and the intranet; complex management software; design software in the production area which is integrated with the rest of the firm, and, to a lesser extent, integrated planning and control software. It should be noted, however, that in these latter aspects, which are considered to be of key importance for defining the level of complexity attained in the diffusion of ICT, there is a significant distance between these firms and those in group i).

In terms of endogenous capabilities, as may be

³¹ In 2001 these firms had a sales turnover of up to US\$ 3 million

seen in table A.7 of the statistical appendix, this group occupies a position which is higher than that of group ii) but below that of groups i) and iii).

In view of the low level of these capabilities, there is little generation of codified and tacit knowledge. In this respect, although the greater importance attached to ICT should make possible a higher degree of connection between the different areas and better circulation of knowledge, there are limitations due to the shortcomings in question.

Among the structural features which distinguish this group from the weakest one is the greater relative

size of the firms, among which medium-sized and large enterprises predominate. Furthermore, this is the group with the greatest sectoral diversification, the five main activities being chemical products, electrical machinery and equipment, machinery and equipment, motor vehicle parts and printing and publishing. Although, in view of the predominant sectors and sizes of enterprises, the level of endogenous capabilities reached could be expected to be higher than that actually registered, this might be explained by questions of structural heterogeneity.

V Conclusions

In this article we have analyzed the use and diffusion of ICT in Argentine industry with two main objectives: to provide an empirical map of the use and diffusion of these technologies in manufacturing, and to identify the linkages between this diffusion and the development of endogenous capabilities in the enterprises in question.

The study shows that ICT is widely disseminated in industrial activity and that most of the firms have made significant investments in those technologies, especially in certain periods – such as the period of convertibility – when the cost of computers and software was relatively low compared with other goods. Both the level of diffusion of ICT and the use made of these technologies show weaknesses, however, which may be summarized as follows: generally speaking, the diffusion of these technologies is greater in the administrative area than in that of production, and in both areas there are many cases of the use of relatively unsophisticated tools for tasks of a low level of complexity.

The evidence assembled shows that, in the firms included in the panel, this process is uneven and incomplete and that most of them are far from having applied informatics in the major part of their processes and integrated the sources of information of their different areas (production, marketing, purchasing, etc.). The level of progress in the outside linkages of these firms is at an even more incipient level. Thus, for example, although most of the firms have web pages, few of them make sales electronically or contact their

suppliers by this means. The study found almost no indications of more complex actions such as the establishment of networks among small and medium-sized enterprises for the exchange of information or local or sectoral cooperation. Nor is there any evidence that the incorporation of ICT has led to appreciable changes in the forms of organization of production (within the plant, or between different plants where a given enterprise carries out different processes).³²

Within these global characteristics, however, there is a high degree of heterogeneity, which it was possible to examine more systematically on the basis of an analysis of groups which are more homogeneous in terms of the degree diffusion of ICT. Similar heterogeneity was observed in respect of the uneven development of endogenous capabilities.

When the classification of firms as a function of their endogenous capabilities is compared with their classification by degree of diffusion of ICT, a high degree of coincidence between the two groups is observed. Thus, a little less than 50% of the firms are located at the extremes of the two classifications (high levels of endogenous capabilities and high levels of diffusion of ICT and low levels of capabilities and diffusion). The gulf between these extreme groups is very

³² This evidence collected in the case of Argentina is also partly applicable to other Latin American countries. It also shows the need for caution when interpreting ICT indicators based solely on the development of web pages, e-mail, intranet and extranet, when these are not supplemented with information on the application of ICT to the production process and relations with clients and suppliers.

significant in both of the indicators in question. Thus, 60% of the firms in the first group train their staff in informatics, while only 6% of the second group do so, and the percentages are similar for the use of complex computer programmes (65% against 4%). These differences highlight the big disparities between the extreme cases in the survey.

We thus see that in the set of firms studied, there is a very marked direct relation between endogenous capabilities and the degree of diffusion of ICT. At the same time, however, the same data reveal that the incorporation of these technologies and their applications in the manufacturing firms analyzed are not only a consequence of the endogenous capabilities attained, although those capabilities are a powerful predictor of the degree of diffusion of ICT, for the size of the firms is also an important variable, showing the indivisibilities that exist in the acquisition of computer equipment and programmes.

Obviously, the most interesting cases are those corresponding to the two intermediate groups, where the working hypothesis is not fulfilled: high (low) levels of endogenous capabilities and low (high) levels of diffusion of ICT. The two intermediate groups very clearly show something which has already been noted in the specialized literature, namely, the varied ways in which these technologies are incorporated in firms and the different rates at which firms introduce informatics tools. The existence of these two groups in the sample suggests that the incorporation of ICT may lag behind the path already travelled by the firm, or it may run ahead of their capacity to make full use and take full advantage of the new technologies. Imbalances may thus be observed within the firms which can act as a burden or a new motor of progress in their forward path. It may well be imagined that firms whose progress in terms of endogenous capabilities outstrips their level of incorporation of ICT could strengthen their endogenous capabilities by a more systemic incorporation of information and communication technologies.

In short, the process of incorporation of ICT is unbalanced and unequal in many senses: within the firms themselves (for example, between the areas of production and management), between different firms, and between sectors of activity. The diffusion process has advanced along the lines of least resistance, being connected with structural factors such as the size of the firms and the capabilities they have acquired in the course of time. The data obtained gives grounds for inferring that, in most cases, the most interesting

potentialities of ICT (such as the possibility of promoting internal learning processes) are still only being exploited in a very incipient manner.

In line with this set of arguments, it seems appropriate to contrast the foregoing conclusions with the recommendations of some international experts who specialize in the digitalization of the operations of manufacturing and services enterprises.

After having had some rather unrealistic views on the immediate potential of ICT, many of these experts are now a good deal more cautious in their recommendations. They now say that the incorporation of information and communication technologies in firms should be subject to a joint analysis which also involves the trading strategies of the firms. The degree of digitalization of a firm cannot be considered in isolation, but must also take into account its business strategy (Slywotzky and Morrison, 2000).

Much of the literature on real cases of the diffusion of ICT offers elements of interest for the matters addressed in the present study. It has been stated that the incorporation of ICT is a process which runs into various types of resistance within firms and in their links with suppliers and clients. This resistance is due to difficulties of communication between the experts in these fields and the persons responsible for running the various areas of a firm; fear of change and of the unknown; and difficulties in choosing technologies. Moreover, there is the difficulty of finding digital solutions to improve production processes, which are less generic in nature than those developed for the administrative and management areas. In order to incorporate information and communication technologies it is necessary to have a horizon and time sequence that depends on the evolutionary path of each individual firm (Slywotzky and Morrison, 2000; Windrum and de Berranger, 2002).

In conclusion, the data and views presented here serve to identify a set of questions that may usefully be taken into account in policy design. Firstly, the systemic incorporation of information and communication technologies cannot be seen as a process that is independent of the development of the endogenous capabilities of the firms involved. Secondly, it must be borne in mind that the Argentine manufacturing sector, like that of many other countries of the region, is made up of very diverse organizations which have very dissimilar possibilities of incorporating such technologies in their internal processes and their links with suppliers and clients. In this respect, the identification of four groups in the joint analysis (based on the two

analyses of homogeneous groups) clearly shows that there is a limited number of stages or types of diffusion of ICT that can be envisaged for incorporating these technologies into Argentine industry. Thirdly, policies for promoting the incorporation of information and communication technologies in firms should recognize from the beginning that such incorporation is more than just a new element to be put on the firms'

balance sheets. It does not seem reasonable, therefore, to propose isolated policies which do not take account of the fact that the diffusion of these technologies and their effective use is a complex and relatively slow process.

(Original: Spanish)

Statistical appendix

Nature and distribution of informatics equipment

TABLE A.1

Argentina: General infrastructure and equipment for information and communication technologies in the management area

Infrastructure and equipment	Percentage of firms
Networks	87
Local	75
Wide area	15
Integrated services digital network/ asymmetrical digital subscriber line	56
Servers	78
Servers with a database engine	41
Networked printers	79
Shared scanners	31
Shared plotters	13
Shared hard disks	68

TABLE A.2

Software used by firms

Type of software	Percentage of firms
Management	
Off-the-shelf	77
Complex (CASE tools, CUBO software, Datawarehouse)	13
Production	
Manufacturing	4
Planning and control	30
Design	50

TABLE A.3

Informatics equipment in the production area

Equipment	Percentage of firms
Programmable logical control	23
Computerized numerical control	11
Robots	8
Numerical control	6
Assembly and fitting system	4
Flexible manufacturing cells	2

TABLE A.4

New communication tools used by firms

Tool	Percentage of firms
Web page	54
Internet access	96
75% of staff with internet access	18
e-mail	96
75% of staff with personal e-mail accounts	37
Intranet	57
75% of staff with access to intranet	28

TABLE A.5

Form of links with other firms and institutions

Form of link	Percentage of firms		
	Total	With other firms	With institutions
e-mail	95	93	80
Telephone	90	87	74
Visits	46	38	36
Internet	24	22	16
Intranet	13	12	3
Mail	17	14	10

TABLE A.6

Results of regression analysis^{a,b}

	Regression analysis Total sample of firms	Regression analysis Intermediate groups
A	11.4 (11.9) ^c	18 (15.1) ^c
B	0.53 (7.1) ^c	$8.3 \cdot 10^{-3}$ (0.09)
C	$9.7 \cdot 10^{-3}$ (3.6) ^c	$2.6 \cdot 10^{-2}$ (3.4) ^c
R ² (adjusted)	0.23	0.06
F	35.0 ^c	5.8 ^c

^a Model: Index of homogeneous dissemination groups = A + B (index of endogenous capabilities) + C (sales, in millions of dollars).

^b Figures in parentheses correspond to t statistic.

^c t is significant at the 5% level.

Source for all tables in this appendix: Prepared by the authors on the basis of the survey on the use and diffusion of information and communication technologies in Argentine manufacturing carried out by the Institute of Industry/Institute for the Greater Buenos Aires Conurbation (IDEI/ICO), Universidad de General Sarmiento.

TABLE A.7

Percentage of firms belonging to each of the four groups, by attributes

Attribute	High levels of endogenous capabilities and of diffusion of ICT (group i)	Higher levels of endogenous capabilities than of diffusion of ICT (group iii)	Lower levels of endogenous capabilities than of diffusion of ICT (group iv)	Low levels of endogenous capabilities and of diffusion of ICT (group ii)
<i>1. Structural characteristics</i>				
Sales under 0.5 million	0 ^a	15	10	41 ^a
Sales between 0.5 and 3 million	12 ^a	48 ^a	37	26
Sales between 3 and 8 million	29 ^b	17	13	20
Sales between 8 and 20 million	33 ^a	9 ^b	23	11
Sales over 20 million	26 ^a	11	18	2 ^a
Fewer than 20 employees	0 ^a	27	27	39 ^b
21 to 50 employees	21	39 ^b	18	29
51 to 100 employees	28 ^b	19	11	14
Over 100 employees	51 ^a	15 ^a	44 ^a	18 ^b
Foreign direct investment	40 ^a	18	22	6 ^a
Export	80 ^b	70	75	45 ^a
Merger or purchase	42 ^a	21	23	22
Do not import inputs	17 ^b	40	26	47 ^b
Increased sales in the 1990s	56	40	66 ^b	39
Motor industry	18	24 ^b	6 ^a	14
<i>2. Endogenous capabilities</i>				
Fully implemented quality control system	91 ^a	55	31 ^b	10 ^a
Existence of a research and development team with full-time personnel	44 ^a	36 ^b	16	6 ^a
New products account for over 30% of sales since 1995	50	56	41	34
Operatives programme machines used in their cells, at least sometimes	81 ^a	55	34 ^b	33 ^b
Medium or high levels of training efforts (over 40% of staff involved)	69 ^a	55	31	16 ^a
High proportion of technical personnel	67 ^a	54 ^a	20 ^a	18 ^a
<i>3. Diffusion of ICT</i>				
Server and database engine	67 ^a	30 ^b	55	24 ^a
Backup and UPS ^c systems	93 ^a	49	70	49
Have interconnected network, at least internally	33 ^a	10	27	6 ^a
Complex management software	65 ^a	3 ^a	31	4 ^a
Only basic-level office software	33 ^a	92 ^a	58	92 ^b
Complements or contracts in informatics	35 ^b	70 ^b	42	71
Training in informatics	60 ^a	14 ^a	34	6 ^a
Integrated planning and control software	77 ^a	9 ^a	17	10 ^a
Complex hardware and software in the production area	47 ^a	18	20	14
Does not have design software	28 ^a	55	48	77 ^a
Design software integrated in production	42 ^a	5 ^a	20	6 ^b
Low level of importance of internet	12 ^a	49	13 ^a	84 ^a
High level of importance of internet	30	25	31	0 ^a
Low level of importance of intranet	35 ^a	78	67	96 ^a
High level of importance of intranet	35 ^a	8	13	0 ^a
Medium level of importance of e-mail	2 ^a	39	2 ^a	75 ^a
High level of importance of e-mail	98 ^a	58	98 ^a	22 ^a

Source: Prepared by the authors on the basis of the survey on the use and diffusion of information and communication technologies in Argentine manufacturing carried out by the Institute of Industry/Institute for the Greater Buenos Aires Conurbation (IDEI/ICO), Universidad de General Sarmiento.

^a Z test significant at the 5% level.

^b Z test significant at the 10% level.

^c Stabilizer designed to protect delicate equipment from surges or interruptions in the electricity supply.

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Local economic development and decentralization in Latin America

*Francisco Alburquerque,
in memory of Gabriel Aghón*

This article describes the work done under the ECLAC/GTZ project directed until his death by Gabriel Aghón from the ECLAC Economic Development Division. It shows that the emergence of local economic development initiatives is not only the consequence of the decentralization processes under way in the different countries of the region but is the result of a more complex set of factors which have arisen in the local areas themselves and have given rise to the mobilization and action of public and private local agents. The project carried out almost thirty case studies in seven countries of the region and is one of the most extensive studies made since local economic development initiatives began to be made in Latin America.

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I

Laying the foundations for the local economic development approach

As is generally known, the territorial (or local) nature of economic development has long suffered from a situation of theoretical marginality. For some authors, however, the crisis of the Fordist mass production model has facilitated the theoretical rediscovery of flexible forms of production at the local level, although these have in fact always been present as forms of industrialization in economic history. Local economic development should not be seen, then, as a post-Fordist industrialization model opposed to the functioning of big business. In reality, the local economic development approach basically stresses the local values of identity, diversity and flexibility which have existed in the past in forms of production which are not based only on large-scale industry but on the general and local characteristics of a given area.

Thus, the main cause of the theoretical marginalization of the territorial or local nature of economic development is to be found in the simplification of this process of evolution made by a large proportion of economic thinkers by abandoning the local dimension and taking as their unit of analysis the enterprise or economic sector in the abstract, that is to say, separated from their local environment. In this way, the local area has been reduced to a uniform and undifferentiated space, and the central analysis of economic development has long been dominated by the concept of economies of scale which are internal to the enterprise: an aspect shared by the main lines of economic thinking.

Another consequence of this analytical approach is the reduction of the concept of economic development to industrial development based on large vertically integrated enterprises and linked with urbanization processes. This form of reasoning, which is still very much alive, was modified, however, in the late 19th century by Alfred Marshall (1890), who examined the geographical concentration of industry and proposed that the unit for the study of economic development should be a locally-based entity. Marshall's theory of industrial organization and his concept of organization (which cannot be reduced solely to busi-

ness capacity) thus provide a fundamental theoretical base for the local economic development approach, by restoring the local area as a unit of analysis. Marshall's theory of industrial organization thus runs counter to the neoclassical theory of industrial location, since the central role played by the enterprise in the latter is replaced in Marshall's theory by the local environment and the cluster in which the enterprise is located. Likewise, internal economies of scale linked with the enterprise-based dimension are now accompanied by external economies generated by local interdependencies.

As we can see, this approach to industrial organization is a structural or systemic statement, since it is not possible to consider a part of the system in isolation, ignoring the relations of interdependence which exist between that part and the whole in which it is integrated. Organization is not just business capacity, but also the interdependence which exists within the enterprise, between the enterprise and the rest of the group of enterprises of which it forms part, and between those two aspects and the area in which the local system of enterprises is located. In short, it is not the enterprise alone that competes, but the network and local area in which it is located. Consequently, in the terms expressed by Marshall, the economies achieved in production are not just the internal economies of the enterprise considered in isolation; there are also "general external economies" (of the group of enterprises of which it forms part) and "local external economies" corresponding to the specific local area in which it is located (Sforzi, 1999). Knowledge, which is at the centre of the definition of local external economies, is the most important element in production and sometimes becomes an asset shared by the local community as a whole. Likewise, local external economies also include the existence of local linkages with auxiliary firms, or the complementarity between the local labour market and production system. All this forms part of a "local environment" favourable to the production efficiency and competitiveness of the local production system.

Local production systems are thus the local referents or units in which production economies within firms merge with local external economies; this thereby goes beyond the analysis by types of firms, as the important thing is the interaction of the various local economies. Consequently, as well as the economic relations and production techniques, other essential factors for local economic development are social relations and the development of a business culture, the formation of associative networks among local actors, and the creation of what is now called “social capital” (Kliksberg and Tomassini, 2000).

Although it will not be possible in this article to analyse in detail the main references and basic contributions behind the local economic development approach, special mention may be made of the “rediscovery” by Becattini (1979) of the notion of “industrial districts” put forward by Alfred Marshall (1890) and the identification of the local area as the unit of analy-

sis instead of the enterprise in isolation. Since there has been a flow of different contributions which, from different angles, have been building up a more integral view of development which incorporates the local approach as one of its main sources of theoretical and conceptual support.

From a more pragmatic standpoint, various proposals have been put forward by the Organization for Economic Cooperation and Development (OECD, 1999), the International Labour Organisation and, in particular, the European Union on the new pillars of local economic policy: the promotion of rural development and sustainable development. Finally, mention must be made of the development of decentralization and the reform of the State and the implementation of processes of modernization of the public administration and political management in order to achieve active participation by society at large in development processes (Haldenwang, 2000).

II

The advance of democratization and decentralization processes

The advance of the processes of democratization and decentralization, with a consequent increase in the functions of local public administrations, have obliged those responsible for political and technical policies to seek approaches and proposals suitable for dealing with the growing problems and demands of the population (Affonso, 2000). This has become necessary not only because of the need to provide concrete and effective responses to the local population as a whole, but also because of the shortcomings or limitations of centralist and sectoral policies and of the old assistentialist approaches in regional development and social policy. Thus, local development strategies have been gaining currency as an approach with a strong pragmatic component, a “top-down” concept, and a more integral vision of the different facets or aspects of development, with a horizontal presentation of the latter which demands that the different development policies should have links with the local level.

In this sense, it should be recalled that the economic crisis which broke out in the developed countries as from the end of the 1970s had a pronounced

impact on many local areas, which suffered a deterioration in their economic and social conditions. In these circumstances, the measures designed by the central governments were generally too generic and ineffective, since the distance and vertical approach of the latter prevented them from taking account in them of the specific features of the different local production systems. Furthermore, the growing process of transnationalization, globalization and external openness of the economies has been showing even more clearly the enormous heterogeneity of the different local production systems and their greater exposure to the demands of the current phase of technological transition and structural change (Albuquerque, 2000).

Some authors, such as Vázquez Barquero (2000a), have described local economic development initiatives as being “spontaneous”, since they were not induced or promoted from the central level of the State, which was more concerned at that time with coping with the demands of macroeconomic stability and the crisis in the traditional sectors. An analysis of the links between the decentralization processes in

Latin American countries and the emergence of local economic development initiatives also shows that the latter have been arising because of the tension caused by the necessary adaptation to the demands of the crisis and economic restructuring, in spite of the unfavourable context prevailing in the countries of the region. At all events, there can be no doubt that the advance of decentralization processes is opening up more room for the deployment of local development initiatives, while the practical experience and reflections on local development strategies represent an innovative contribution which has encouraged a more integrated view of development itself (Vázquez Barquero, 2000b). At the same time, the greater participation of local administrations in economic development and the efforts to increase productive employment have involved a redistribution of responsibilities and functions in the economic field among the different local levels of the public administration.

III

The origin and objectives of local economic development initiatives in Latin America

One of the main conclusions which may be drawn from an analysis of local economic development initiatives in Latin America is the incipient nature and small number of the “best practices” existing in the region. The analysis does, however, reveal some examples which, although they cannot be included among the “best practices”, are nevertheless interesting initiatives because they provide some useful lessons to further the collective learning process in this field.

There is no single cause lying at the origin of the local economic development initiatives implemented in Latin America. Many of those initiatives arose as a reaction to local economic crisis situations and the lack of suitable policies emanating from the central level of the State to deal with them. The industrial crisis which gave rise to the “Gran ABC” initiative in the state of São Paulo is a good example of this (Leite, 2000).

Local economic development initiatives have also had to tackle economic problems at the municipal level which are reflected in growing demands by local

The boost given to public-private cooperation and the pursuit of strategic consensuses among local economic and social actors for the design of local development strategies have brought about the application of a form of shared economic development which is not based solely on directives from the public sector or simply guided by the free market. In this way, the search for an intermediate space between the market and the public authorities, that is to say, a space at the mesoeconomic level, has served to define a new way of policy-making, and especially of economic development policy-making. All this has made it possible to link together different processes in a virtuous circle of interactions between the advance of a more participative form of democracy and the decentralization of responsibilities at the subnational levels, in order to ensure the assumption of responsibilities, capabilities and resources by local bodies and actors and thus promote local development strategies.

communities. After the first popular election of mayors in 1988, the municipality of Pensilvania, in the eastern region of Caldas (Colombia), began to play an active role in the promotion of local economic development, while also promoting improvement of the road infrastructure, expansion of the coverage of public services, greater access of the population to health and education, and the implementation of programmes and projects designed to generate source of employment through support for micro-enterprises (Maldonado, 2000b).

In the same way, the restoration of democracy at the municipal and the local level in general has been accompanied by greater demands for the local public authorities to present concrete programmes and proposals to the inhabitants on the substantive issues of the development of production and employment at the local level. In some cases, the emergence of local economic development initiatives has been facilitated by an intelligent process of institutional deconcentration promoted by some central-level bodies, as in the case of the Solidarity and Social Investment Fund (FOSIS)

in Chile, where a leading role has been given to local teams so that they can act as local development agents (Cáceres and Figueroa, 2000).

In Brazil, the need to form a collective front to deal with the “fiscal war” situation acted as a powerful stimulus for the municipalities of the Valle Medio Paraíba region of the state of Rio de Janeiro to take an initiative which culminated in the creation of a Forum of Secretaries of Planning for the collective formulation of measures to be taken at the municipal level (Coelho, 2000b). Also in Brazil, in the state of Acre, the Municipal Prefecture of Rio Branco promoted a project for the establishment of an agro-forestry pole in the rural surroundings of that city to meet the needs of the settlements of peasant families displaced from rural areas by big commercial agricultural projects (Coelho, 2000a). Finally, there is the example of Villa El Salvador (Peru), where the initiatives taken had their origin in the plans designed by the central government to promote self-build activities in the areas of housing and urban infrastructure, instead of the traditional housing programmes subsidized by the State (Benavides and Manrique, 2000).

There are thus two types of tensions which incentivate local economic development initiatives “from below”. One is the tension caused by the development of democracy itself and the direct election of the officials responsible for the different local levels of public administration (municipalities, provinces, regions or states), which makes it necessary to meet the demands of the public regarding the basic issues of production development and employment in each local area. The other is the tension caused by the general situation of crisis and economic restructuring, which impels the actors in the private business sector to incorporate modernizing elements and processes of adaptation to cope with the new demands in the field of production and the higher levels of competition in markets. In addition to these two types of tensions “from below” there is another “top-down” process corresponding to the advance of decentralization and reform of the State at the central level in the countries of the region. This does not yet have a complementary relationship with the aforementioned processes emanating “from below”, but it is clear that the advance in decentralization should be capable of creating favourable environments for the promotion of local economic development initiatives.

At all events, it is important to note that the most advanced decentralization processes, that is to say, those which include the direct election of all levels of local representation of the citizens, from the mayoral to the regional level, and which transfer resources and decision-making powers to the subnational governments, are much more consistent bases for the promotion of local economic development initiatives. In the state of Jalisco (Mexico), the decentralization process did not stop with the transfer of resources and powers for the improvement of municipal management but also incorporated a clear productive dimension, by seeking to strengthen the medium-sized cities of the state and to promote traditional industries and local SMEs. Thus, it is not merely a question of fiscal decentralization but of reorganization of the state by strengthening its different levels of government and creating spaces for dialogue, participation and consensus-building among the different local actors (Ruiz Durán, 2000a).

In short, among the main objectives of local economic development initiatives in Latin America, special mention may be made of the following:

- Enhancement of the endogenous resources of each local area by seeking to promote diversified production activities and encouraging the establishment of new local enterprises.
- Organization of local networks among public and private actors in order to promote production and business innovation in the local area.
- Establishment of inter-municipal consortia in order to increase the efficacy and efficiency of local development activities.
- Search for new sources of employment and income at the local level.
- Promotion of scientific and technological development activities at the local level.
- Creation of new financing instruments to meet the needs of local micro- and small enterprises.
- Progress beyond the limitations of the assistentialist approach implicit in social investment funds and anti-poverty programmes.
- Incorporation of city marketing policies to promote systemic local competitiveness.
- Search for strategic accords on environmental goods and sustainable development, like the sustainable development strategy adopted in Buena Vista, Bolivia (Salinas, 2000a).

IV

The basic elements of local economic development initiatives

A local economic development initiative is not just a project which is successful in a local area. It requires an institutionalized consensus among the most important local public and private actors around a common development strategy (Ábalos, 2000). Moreover, a complex sum of promotional instruments can never take the place of the set of local institutions needed for economic development (Falabella, 2000). Creating instruments from the central level which can be used by the different local areas is not the same as impelling and promoting a more important role and greater capabilities of those areas to make better use of their own endogenous resources. Some of the cases outlined in this project, such as those of Colombia (Maldonado, 2000a) and Mexico (Casalet, 2000), are quite eloquent in this respect, since they still reflect a centralized design of promotional programmes and instruments instead of the local design of measures to promote economic development.

This limitation is accompanied by a basically assistentialist approach to micro- and small enterprises in almost all the countries of the region, which still

do not have locally-designed policies for the promotion of these kinds of enterprises, in spite of their numerical importance, their widespread presence, and their importance from the point of view of generation of employment and income. At the same time, the degree of preparation and consolidation of the strategic capabilities of the municipality and its capacity to recognize the real economic, social and cultural situation of the local area, the capacity for maintaining a dialogue with the community, skill in planning promotional actions, the capacity to coordinate and link up development actions with other economic, social and political agents, and the capacity to present proposals to other levels of government and negotiate with them are likewise key elements to permit the municipalities to learn how to think out the type of development they need in order to solve critical problems such as the lack of productive employment and the modernization and diversification of the local production base.

The set of basic elements which define local economic development initiatives and form the fundamental pillars for their support are shown in figure 1.

FIGURE 1



Many of the local economic development initiatives in Latin America have made considerable progress in a number of the components shown there. The weak points of those initiatives may be identified through the absence or weakness of some of those components.

The first thing that leaps to one's attention is the importance of the mobilization and participation of the local actors. This calls for the construction of community social capital, which, in turn, requires the promotion of a pro-active, enterprising attitude, far removed from the kind of approach which relies on subsidies. At the same time, a local economic development initiative requires a pro-active attitude by local governments (and regional authorities in general) to the development of production and the generation of employment. This means that local public authorities must assume new functions that go beyond their traditional roles as providers of social, urbanistic and environmental services at the local level.

It must be stressed that the regional identity, like social capital, must not be understood as assets which already exist in the area as the result of the combination of pre-existing geographical or historical factors, but as an intangible asset which can be constructed locally by generating spaces for the building of consensuses and confidence among actors to tackle the common challenges they share. In this sense, the participation of the different local actors in the discussion of local problems greatly assists this process of construction of a shared local identity and, ultimately, the social construction of the region. The Cooperation Pact in the state of Ceará (Brazil), which was originally established as a forum for discussions between entrepreneurs and the state government on the most important issues for local society, ended up by being extended to the remaining sectors of civil society, thus forming a network of persons, movements and organizations interested in local development (Do Amaral Filho, 2000).

Likewise, the Strategic Plan for Rafaela (Argentina) made it possible in 1996 to open up a space for discussion by the whole of local society for the definition in a concerted and participative manner of the way the city's growth should be planned and the vision local society had of the city. As one of the projects in this Strategic Plan, late in 1997 the Institute for Local Development Training and Studies was set up; the purpose of this municipal body is to keep track of the changes in and evolution of the local community, working to train human resources and foster a set of cultural and socioeconomic conditions favourable to

the development of the city and its region, in order to strengthen in this way the interaction between the State and local society and collaborate in the process of developing a new and different form of municipal management (Costamagna, 2000).

The local economic development programme of the municipality of Medellín (Colombia), for its part, incorporates urban and metropolitan infrastructure projects, as well as objectives connected with the creation of a new image of the city, thus complementing the programmes to support the competitiveness of local small and medium-sized enterprises (Londoño, 2000). Likewise, the municipality of Bucaramanga (Colombia) has made a decided effort to participate in furthering the competitiveness of the area by promoting the city of Bucaramanga as the "Technopolis of the Andes"; as part of this project it has opened up concrete spaces for action with the private sector, the Chamber of Commerce, and the Department of Santander and has promoted important joint actions (Vargas and Prieto, 2000).

Local governments are not always the initiators of local economic development processes, although in the medium term their presence in them is of fundamental importance for establishing the institutions that those initiatives require. Moreover, in democracy they are the most legitimate local public authorities responsible for calling together the different local actors and seeking areas of public-private consensus to further local economic development. It is therefore important that they should take the lead in fostering such processes of mobilization and participation of local actors and forming teams of leaders to ensure the continuity of the activities undertaken.

The main strategic objectives in the formulation of a local economic development strategy backed by a consensus among the main local actors are to make better use of the endogenous resources and to diversify the local production base through the incorporation of innovations based on high quality and differentiation of products and production processes; the incorporation of management innovations, and the introduction of the necessary social and institutional adaptations. The promotion of local micro- and small enterprises and the training of human resources in line with the innovation needs of the local production system are a fundamental part of this strategy too.

The local supply of business development services should include the training of human resources in line with the needs of the local production systems, both in order to modernize existing production

activities and to incorporate other activities which may be viable in the immediate future. For this purpose, it is important to have the capability of keeping track at all times of the real and potential needs of the local enterprises and the characteristics of the local labour market (Bernales, 2000). A local development strategy can sometimes be initiated through the local coordination of some sectoral development programmes and instruments which are defined at the central level but are to be implemented locally. For efficient coordination of different sectoral programmes designed at the central level, it is essential that the actions taken should be guided by the actual demand, that is to say, by the real needs to be satisfied, which must be identified and prioritized by the local actors.

Finally, local economic development initiatives must be institutionalized by reaching the necessary political and social agreements in the corresponding local areas. Local pacts which are above political party considerations and enjoy the fullest possible participation of local actors should be sought, in order to endow them with the highest possible levels of stability, regardless of possible political changes. The private business sector needs to be represented in local development institutions in order to avoid the uncertainty arising from frequent changes in the local political representatives, while the presence of the public authorities at the head of the local development institutions seeks to endow the entire process with a lasting medium- and long-term perspective, which is not always possible when only short-term business benefits are sought.

Electoral disputes and party differences should not be allowed to interfere with the implementation of the local economic development initiatives agreed upon by the different social and economic actors. The decision to form a mixed organization to execute the agreements on local economic policy and improve the competitiveness of the city of Córdoba (Argentina) was based on the conviction that it was necessary to overcome the traditional separation between local government and private enterprise (Marianacci, 2000). For this purpose, it is essential that the institutional arrangements for such initiatives should include the signing of "local area pacts" for local development that rise above party considerations (D'Annunzio, 2000). Local investments for development, whether tangible or intangible, need longer lead times than those connected with electoral and political cycles. This is why it is so necessary to call upon the local political and social forces to involve themselves in

these initiatives, so that electoral contests, although perfectly legitimate, will not weaken the processes of local economic development and generation of employment.

Local economic development thus calls for decided action by the local public bodies, which means that this dimension must be incorporated in the current programmes for the strengthening of local governments. Decentralization cannot be limited solely to improving the capacity for the efficient management of the resources transferred to local governments and modernizing municipal management. These tasks are extremely important, but the modernization of local administrations must also include their training for their new role of promoters of local economic development, so that, together with the private actors and the rest of local civil society, they can construct the necessary innovative local environments for the promotion of production and the development of the local structure of enterprises. The local development strategy of Villa El Salvador (Peru) was centered on the establishment of an industrial park for small enterprises, as part of the new population settlement, for which purpose it fostered the provision of common business services and suitable infrastructure (Benavides and Manríquez, 2000).

As part of their effort to promote local economic development, municipalities should also adopt efficient organizational practices, in order to modernize their management. To this end, they should undertake administrative modernization programmes and train their staff in order to improve municipal management. Adopting a strategic approach and an integral conception of municipal planning helps to visualize the context of which the city forms part and makes it possible to incorporate an intersectoral view of the various problems faced, thus going beyond an approach based only on physical and spatial considerations and viewing urban matters in all their social and economic dimensions. By investing in public works, municipalities give their area added economic value and enhance the competitiveness of the local production base. The urban services provided by the municipality are likewise linked with local economic competitiveness, since the quality of those services increases the attractiveness of the area for private investment. Thus, an important function of municipalities is to create the necessary conditions in terms of basic infrastructure and urban development services for the private business sector to take on its role as a producer of goods and services and a motor of the local economy.

V

Criteria for action

1. Construction of the local supply of business development services

A crucial question for promoting local economic development is the construction of a suitable local supply of business development services for micro- and small enterprises, including services in the fields of technological and market information, innovation in the fields of products and production processes, technical and business management training, cooperation among enterprises, marketing and quality control, and financial advice. Such services are always hard to reach for micro- and small enterprises located in the interior of the country.

It must be borne in mind, however, that in order to identify the underlying demand for innovation in the local production systems, made up mainly of micro- and small enterprises, it is necessary to take pro-active action on the supply side, in order to overcome the difficulties that this segment of business experiences in making known the circumstances that affect its production efficiency and competitiveness.

It is not possible, therefore, to implicitly trust that it will be the micro- and small-scale entrepreneurs themselves who will give timely signals in these strategic business development services markets. Even they are not always sufficiently sure of the future outlook for their businesses, not do they have the financial resources to pay for such services. Furthermore, the local supply of such services is not organized in locations close to the clusters of enterprises. In short, it is necessary to construct that market for business factors and development services through intelligent measures that will bring about the clear expression of the signals regarding the demand for business services which lies below the surface in the group of local areas.

In local economic development initiatives, there is a clear need for a local production development policy for micro- and small enterprises, in order to ensure their access to business development services. This means that business promotion policies cannot be of a generic nature, but must incorporate a local dimension. The quantitative importance of the micro- and

small enterprise sector has led to the generic design of measures for application en masse, without taking account of special economic, local, technical or production-related features. The different conditions prevailing within the various sectors shows the need for different instruments and special targeting on the groups to which they are directed, however. The Articles of Association of the Regional Chamber for the Greater ABC Area,¹ in Brazil, note the fundamental importance of providing support for micro- and small enterprises because of their importance in terms of production, employment and income. In order to give due attention to this group of small businesses, however, a selective local policy is needed which promotes the strengthening of the production chains of the Greater ABC Area in particular, instead of the usual generic policies which involve a great waste of efforts (Leite, 2000).

In many countries of the region, local economic development initiatives are not given sufficient support in central government policy, in which priority is given to competitive integration within the globalization process, thus placing the internal linking of local economies on a secondary level. Nor have central public policies so far attached sufficient importance to micro- and small enterprises as the element which integrates and strengthens the domestic market, in spite of the importance of this segment of enterprises in terms of employment and income in all the countries of the region.

Business promotion policies must place emphasis on the importance of implementing specific programmes to strengthen the business skills of women, who represent a great potential within the overall group of micro- and small enterprises. In many cases, the border between the workshop and the home is quite vague and the conditions of work and production inevitably affect the family, which is not only a unit of consumption but also of labour and production (Benavides and Manrique, 2000). Specific programmes are therefore needed which are aimed at

¹ The Greater ABC Area is the name given to the group of three municipalities south of São Paulo – São André, São Bernardo do Campo and São Caetano – which form one of the most dynamic areas in Brazil.

persons who use their own homes as places of production. Through such programmes, women can receive technical, artistic and business guidance services, as well as information on legal aspects of production, details of new products, easier access to the existing lines of finance, and incentives and guidance for the formation of community workshops and product marketing facilities.

2. Local development and municipal development

Local development policies are not limited solely to municipal development. Sometimes the local area of action covers several municipalities with similar economic, labour and environmental characteristics. The frontiers of local production systems therefore do not necessarily have to coincide with the borders of the municipalities in question. Consequently, it is important to identify the appropriate units for action, by preparing special information systems for local economic development: a task which the various local initiatives should undertake sooner rather than later. The study of the production linkages and territorial location of enterprises and activities is of fundamental importance for formulating intelligent lines of action in terms of local economic development. The main objective is to identify and understand the production and marketing structure of the activities which are most important for the local economy; that is to say, the set of economic relations between producers, marketers and clients, together with the necessary support infrastructures, training and technological research centres, business services, and all the elements associated with the environment in which the various activities and enterprises involved in the different local areas are located.

This shows the desirability of addressing the challenges of local economic development jointly, through associations of municipalities, and ensuring intelligent and coordinated action among the different local public authorities at the municipal, provincial, regional and central levels. Likewise, although this may seem obvious, municipal development must extend not only to the urban centre of the municipality, but also to the whole population of the municipal area. This is a matter of fundamental importance when it is a question of meeting the needs of the population spread out in peasant communities, who are often

ignored or excluded from development processes (Zubieta, 2000).

3. Local economic development: not merely the development of endogenous resources

In order to promote local economic development, it is necessary not only to make better use of endogenous resources but also to take advantage of the outside growth opportunities that may exist. The important thing is to find ways of endogenizing the favourable impacts of those external opportunities through a development strategy defined and agreed upon by the various local actors. Thus, local economic development initiatives must not be seen as closed processes confined to local markets and using only local resources (Benavides, 2000).

Some local development initiatives look for spaces of mutual benefits for both big firms and the local systems of enterprises, by seeking to promote subcontracting schemes based on quality and cooperation among firms. This shows the importance of starting negotiations to strengthen the economic relations between micro-enterprises and big firms, in order to go beyond the level of dependent sub-contracting. The Chihuahua Center for the Development of Suppliers, in Mexico, has persuaded outside agents to adopt a position of commitment to the development of local suppliers. There is a great deal of potential in this field, since the small enterprises of the region can link up with this effort with support from the training and advisory assistance programmes of the Autonomous University of Chihuahua, the Autonomous University of Ciudad Juárez, and the Chihuahua Campus of the Monterrey Institute of Technology (Ruiz Durán, 2000b).

Another form of participation by the private sector is through the granting of concessions for works and services previously provided by the local authorities. Thus, the concessions granted by the municipality of Rancagua (Chile) from 1993 onwards provide for the construction of infrastructure and urban equipment at no cost to the municipality, which thus obtains private resources for the execution of projects of social value. The process of awarding these concessions was endowed with the necessary transparency by the adoption of a set of rules and regulations on the granting of concessions (Muñoz, 2000).

4. Access to credit for micro- and small enterprises

One of the aspects which explains the lack of flexibility and relative uselessness of the existing instruments for the promotion of production activities has to do with the fact that since they are mainly provided according to traditional criteria on the profitability of the economic activities thus supported, this rules out many production units which do not satisfy the established conditions because they do not have bank guarantees, they have only a small annual sales volume, or they belong to the informal sector. It is therefore important to create local funds for the development of micro- and small enterprises, in order to overcome their difficulties in gaining access to medium- and long-term lines of finance. The Community Credit Institution (PORTOSOL) is part of the Local Economic Development Plan of the city of Porto Alegre (Brazil). This is an institution which was proposed by the Prefecture of the city but has been formulated and executed in collaboration with other private-sector local economic and social agents (Coelho, 2000a). Such a system of technical assistance and training, together with the provision of lines of credit, is of fundamental importance for consolidating and expanding projects by small producers which are given financial aid.

5. Promoting association and cooperation among micro- and small enterprises

There are many difficulties which hinder the full involvement of the private business sector in local economic development initiatives, such as the difference in interests, the small size of most local enterprises, and the unequal level of representation of the relevant business organizations. Likewise, the diverse activities carried on by these organizations and their sectoral approach, together with their traditional mistrust of local governments, also limit their participation in projects for public-private cooperation at the local level. Consequently, in order to achieve adequate incorporation of the business sector in local economic development initiatives, it is necessary to strengthen the institutional arrangements for the representation of trade and business associations and support changes in these bodies in at least two key aspects: the transition

from a sectoral view to one based on the production linkages that exist, and the replacement of their usual lobbying approach by one that seeks to support and promote local production systems.

In order for the producers' associations to change, they must begin to support the firms they represent in matters such as technological development, market information, etc. At the same time, they must prepare themselves to take part, together with the local governments, in the definition of major regional development objectives and projects. Sometimes the situation is quite precarious in this respect, as there is not even yet a permanent means for the inter-institutional coordination of the actors. In this case, the immediate challenges are to promote encounters with the organized producers to discuss local economic promotion and assume responsibilities for it; to make producers more aware of profitable activities, and to provide joint support for the study of marketing possibilities that can make local economic initiatives viable.

6. The need to link the regional universities and scientific and technological research centres with the local production systems

The traditional generalist approach of universities has been overtaken by new developments, like so many traditional forms of transmission of knowledge. The need to train human resources capable of asking themselves good questions and not just memorizing answers that are already written down is increasingly obvious, in view of the rapid pace of change in the world of today. Likewise, more integrated forms of teaching are required. This also brings into question the content of many study plans, to say nothing of the excessive attachment of many of those plans to outworn views and their inability or unwillingness to adapt to the new realities. Above all, it is necessary to overcome as soon as possible the disparity between the supply of training offered by the universities and training centres and the innovation needs of the various local production systems. For this purpose, it is essential for the educational, university and scientific and technological research bodies to play an active part in local economic development initiatives. Through the decided action of the local actors it will be possible to build links between the supply of knowledge and its end-users or other sources of demand in the different local production systems.

In order to achieve a higher level of complexity and diversity in the local production system and, in particular, to train peasants in management and product marketing techniques, the initiative launched by the province of El Loa, in Chile, sought the collaboration of the universities in the northern region of the country, and they began to incorporate areas of training that will make it possible to achieve the economic sustainability of the various peasant production projects –production of goat cheese, for example– by exploring sales channels and supply strategies both inside and outside the region (Salinas, 2000b). In Colombia, one of the main aspects responsible for the restructuring of the Industrial University of Santander was the desire to establish closer links between that institution and the production sector of the city through the development of concrete projects in various areas, such as the feasibility studies for the creation of the “Corporación Bucaramanga Emprendedora” incubator for technology-based enterprises, which was indeed established later (Vargas and Prieto, 2000).

7. Basic infrastructure endowment for local economic development

The provision of basic infrastructure in accordance with local economic development needs is vitally necessary, because sometimes the existing infrastructure corresponds almost entirely to the needs of big firms, and this does not always ensure the necessary interconnection of the local production systems, resulting in inadequate links among the areas of production and between them and the main distribution and marketing centres. In Chile, for example, although Route 5, which runs through the Araucania region from north to south, is the communications backbone of the region, it only provides weak internal interconnections, resulting as noted above in inadequate links among the areas of production and between them and the main distribution and marketing centres (Bernales, 2000).

In Ilo (Peru), for its part, the municipality has obtained resources from the central government to channel the waters of the river Osmare to the water treatment plant; it has negotiated with the Office of the President of the Republic the provision of an adequate supply of water to the upper part of the city, where the Industrial Park is located but which suffered from water shortage and low water pressure; and it has made substantial

investments in the asphaltting of the streets of the port and the construction of a land transport terminal, in order to facilitate transport and commerce (Benavides, 2000).

8. The adaptation of the legal and juridical frameworks for the promotion of local economic development, and the need to incorporate follow-up and evaluation mechanisms

When designing and implementing local economic development policies, it is necessary to clarify the role of the central government in the specific context of this type of initiatives: it must not only promote such initiatives by giving a decided boost to decentralization but must also adapt the necessary juridical, legal and regulatory framework for the promotion of local economic development. So far, however, local economic development initiatives have run into many obstacles in these fields, which reflects the lack of congruence between them and the priority concerns of central governments, which still do not seem to attach sufficient importance to them. “Production support” is sometimes equated with the execution of infrastructural works in the areas of basic sanitation, urbanism, roads and highways, irrigation, health or education, but usually without including the construction of markets for strategic factors and services for the development of micro- and small enterprises in the various local production systems.

It is hard to obtain finance for institutional investments of an intangible nature, such as the construction of networks of local actors, in Latin America: the criteria defining the activities that can be financed by the existing funds give priority to tangible investments of a social nature and relegate to a minor level those connected with the construction of innovative local environments. It must be emphasized that today this kind of intangible investment is just as important as investment in roads or telecommunications, since overall it makes it possible to establish the main conditions needed for the achievement of systemic local competitiveness. In some cases, the limitations are due to an unsuitable design imposed from outside, with an essentially assistentialist approach, but in others they are due to the failure to adapt the juridical frameworks of the countries to current needs, thus preventing the co-participation of the local public administration and

the private business sector in the creation of mixed local economic development institutions.

It should also be noted that all local economic development initiatives need permanent evaluation mechanisms. The indicators of the success of such initiatives are not only quantitative, however. Equally necessary are indicators on the construction of the social and institutional capital needed by those initiatives, which provide a better understanding of the technical, social, institutional, political and cultural dimensions of local development. Sometimes, establishing such qualitative indicators seems to present a problem for researchers, but it is perfectly possible to measure these qualitative phenomena one way or another: for example, through the number of local consensus-building bodies which have been set up and consolidated, the degree of participation of those who take part in them, the resources contributed by the various local actors to those bodies, etc.

The degree of public-private involvement in local economic development initiatives, both in the formulation of projects and in their execution, is a good indicator of the success of such initiatives. Another important indicator in local economic development initiatives is the creation of institutions that place the existing public-private agreements on a formal basis. If it is desired to promote local economic development, it is necessary to join wills, stimulate dialogues, build public and institutional agendas, construct local networks, and assume and share responsibilities. Thus, local economic promotion depends not only on the attainment of indicators of economic efficiency, but also on vital investment in the social and institutional capital needed to ensure the success of these processes.

9. Efficient coordination among institutions

As already noted, many local economic development initiatives have problems in achieving effective and efficient coordination among the different levels of institutions (central, provincial and local) of the public administration and among the different sectoral ministries or bodies. However, the excessive distances that sometimes exist between the capital city where the regional (departmental or state) government is located and the different municipalities could be mitigated through more active behaviour on the part of the intermediate levels (provinces

or micro-regions). As shown in the case study on Rancagua (Chile), the existing set of bodies or services may not achieve fully coordinated action at the local level because it is based on a sectoral and centralist design. Its local institutional linkages must therefore be strengthened in order to increase its efficacy and efficiency. Likewise, the relations between the central and municipal levels may suffer from insufficient coordination of measures to promote production, thus causing duplication of efforts and resources (Muñoz, 2000).

There is also a need to overcome the system of dispersed action by non-governmental or international cooperation organizations, mostly based on an assistentialist approach. Local economic development is not just social or solidary development. It is also a question of promoting the introduction of technological, management, social and institutional innovations in the local production systems, in order to generate suitable conditions for the viable and sustained creation of employment and income. Priority attention to the needs of micro- and small enterprises and the strengthening of local governments for the promotion of local economic development must therefore be incorporated in the development strategies of the different local areas, in order to obtain more consistent results than those achieved through praiseworthy but excessively isolated efforts. At the local level, therefore, there must be institutions capable of coordinating the dispersed actions of NGOs and international cooperation bodies.

10. The need for complementarity between social investment funds and resources for the promotion of local economic development

Finally, it should be noted that social investment funds and investments to promote production are complementary, and it is a mistake to think that it is only necessary to think in terms of the latter when social needs have been taken care of. As a peasant woman who was once a municipal councillor in Irupana (Bolivia) said: "It is no use building local health centres if we have no money to maintain our families" (Zubieta, 2000). It is indeed little use investing in rural health facilities or schools if the inhabitants have to emigrate to find a job. Paying attention to social investments without

simultaneously incorporating a local economic development approach is nonsensical. Both these things must be addressed in an integrated manner, as many social investments (such as those in health, education and housing, for example) are also investments in development: raising the skills of the human resources is crucial in any development strategy, and even more so in the present “knowledge society”.

Consequently, social policies cannot be considered apart from development policies. Decentralized bodies generally show considerable “know-how” in their handling of social development instruments, but much less in the field of the promotion of production.

The absence of funds for the promotion of local economic development initiatives which are complementary to social investment funds is thus a serious shortcoming in Latin America, in contrast with the situation in the developed countries. In this respect, it would be desirable for the multilateral organizations which have an influence in Latin America and the Caribbean to consider the possibility of creating funds to promote local development

initiatives – like the structural funds in the European Union – in order to make up for the limitations of the assistentialist approach of the social investment funds in Latin America.

In this sense, it is important to emphasize that local economic development is an alternative approach to that based on assistentialist policies to overcome poverty, and it seeks to influence the generation of employment and income by improving the productivity and competitiveness of the various local production systems. This involves progressing from an assistentialist design to one based on economic development and from a sectoral view to one of a more integrated and horizontal nature, according to the characteristics, actors and social capital of each local area. It is in this local area that the demand for the modernization of the existing structure of enterprises is defined, and it is on the basis of this demand that the appropriate supply of innovation services and technical and business training for the promotion of local production must be built up.

(Original: Spanish)

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Migrations, the labour market and poverty in Greater Buenos Aires

Rosalía Cortés and Fernando Groisman

This study analyses the labour behaviour of two segments of migrants – one coming from the provincial areas of Argentina and the other from neighbouring countries – in Greater Buenos Aires during the 1990s. Their labour trajectories were different: the economic activity of the migrants from neighbouring countries increased, but there was an expansion in the proportion of internal migrants in the “not working” category. A process of replacement of internal migrants with migrants from neighbouring countries took place: the latter worked in precarious, poorly-paid occupations, while the internal migrants swelled the ranks of the “structural poor”: persons with no trade, only occasional employment, and few possibilities of improving their situation in the near future.

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I

Introduction

This study analyses the differences that occurred in the course of the 1990s in the labour situation of recent internal migrants and migrants from neighbouring countries (hereinafter also referred to as “cross-border migrants”) who arrived in Greater Buenos Aires during that period.¹ In that decade, the low fixed exchange rate attracted migrants from Chile, Paraguay, Uruguay, Bolivia and latterly Peru, even in the years of recession, which represented a difference from the behaviour of internal migration flows.

From the mid-1970s and during the following decade –that of the debt crisis– the stagnation of the product and of the demand for labour had caused a slowing-down in the growth rates of the labour force, employment and income. The recessionary context affected the rate of internal and international migrations to the metropolitan area, which fell below their historical levels between 1975 and 1980 because of the return of migrants to their provinces or countries of origin.²

The international migrants from neighbouring countries who arrived in Greater Buenos Aires had historically shared a number of common characteristics with migrants from provinces in the interior of Argentina. With low levels of education and skills, they mostly entered the informal sector of the labour market, with working conditions and wages that were lower than those of the native population (locally-born citizens or long-time residents). Consequently, they were more vulnerable than the native population

to cyclical swings in the economy and employment.³

In the 1990s, however, the behaviour of internal and cross-border migrants to Greater Buenos Aires took on different features from those prevailing in the previous period. During the short period from 1991 to 1993, the growth rates of the product, labour supply and employment all coincided, and in those years the recovery of the economy and the increase in the demand for labour became a factor of attraction for internal migrants, while the overvaluation and stability of the local currency also attracted migrants from neighbouring countries. After the crisis in 1995 and during the period of expansion between 1996 and 1999, however, there was a decline in the demand for labour in the most traditional sectors in which those migrants sought work, and this affected the level of internal migrations. Migrations from neighbouring countries behaved differently, however: the fixed exchange rate lasted until the end of 2001 and served as an incentive for migration from other countries of the region.

In addition to this reduction in internal migration flows and the maintenance of those from neighbouring countries, some differences also began to emerge in the composition and employment status of recent migrants in both groups.⁴ Firstly, whereas in the 1970s and 1980s both groups had similar levels of education, in the 1990s the cross-border migrants –especially the women– had higher levels of education than those of the internal migrants. Secondly, the labour trajectories of the two groups started to draw apart. The severe crisis in 1995 caused a contraction in labour demand in the construction, domestic service and manufacturing sectors, which became net expulors of labour.⁵ This gave rise to an increase in open unemployment in both groups of recent migrants, but

The authors wish to express their thanks for the valuable comments of an anonymous referee.

¹ In this paper, “migrants from neighbouring countries” refers to foreigners from Chile, Paraguay, Uruguay, Bolivia, Brazil and also, in the 1990s, Peru, while “internal migrants” means those coming from Argentine provinces in the interior of the country. The provinces from which such migrants came were mainly Santiago del Estero, Corrientes, Chaco, Entre Ríos, Tucumán, Salta and Jujuy. Table A.1 of the Appendix shows the relative proportions of internal migrants and those from neighbouring countries, by province or country of origin.

² The migration rate went down from 2.3 per thousand in the 1970-1975 period to -1.6 per thousand in 1975-1980 (CELADE, 1998), and there was also a decline in the proportions of migrants from other provinces (from 8% to 6%) and from neighbouring countries (from 0.9% to 0.5%) in the total population (INDEC, 1980).

³ Between 1978 and 1982, for example, unemployment in the metropolitan area of Buenos Aires – “Greater Buenos Aires” – affected migrants more than natives (Cortés, 1985).

⁴ The analysis of the behaviour of recent cross-border and internal migrants is limited to those migrants arriving in the area in the last ten years, according to the respective measurements of the Permanent Household Surveys. The source of the information is described in the Appendix.

⁵ The nationwide unemployment rate in construction rose from 14% in 1993 to 31% in 1995, subsequently never falling below 23%

among the internal migrants there was also an increase in the proportion of inactive persons – those in the “not working nor looking for work” category – which was probably a factor in the slackening in migration flows and – this is speculation, since there are no data that prove or disprove it – an increase in the rate of departure from the metropolitan area.

After the brief period of economic expansion which ended in 1994, and as from the 1995 recession, the decline in the proportion of internal migrants in the area in question would appear to indicate that open unemployment acted as a factor that discouraged internal migration to the area. In contrast, the overvaluation of the local currency exchange rate continued to attract migrants from neighbouring countries (including Peru). The decline in employment in the branches

which traditionally employed migrant labour was a factor in the reduction of the proportion of internal migrants, while there was an increase in the relative proportion of cross-border migrants, who finally lasted longer in these jobs. This situation of high unemployment and relative abundance of cross-border migrant labour favoured the spread of precarious working conditions in this segment; recent cross-border migrant workers formed a segment marked by low-quality working conditions: lack of social protection, long hours and low wages. The internal migrants, for their part, without a trade or engaged in only casual employment, with few possibilities of improving their situation in the near future, swelled the hard core of unemployed likely to sink into structural poverty.

II

Migrations and the labour market in Argentina

1. The debate in the 1980s and 1990s

The studies carried out between the late 1970s and the 1990s all identify internal and cross-border migrants as one of the segments most vulnerable to economic swings. They do not coincide, however, in their interpretation of the characteristics of the labour market or the role of migrants in it. According to one line of research, up to the 1980s Argentina suffered from a shortage of unskilled labour and that the rate of economic growth was sufficient to ensure that the migrants were absorbed and integrated into the urban labour market (Mármora, 1977). Other interpretations more in line with the thinking of Lewis, however (Marshall, 1977), argued that the local labour market was marked by sluggish growth in the demand for unskilled labour and the existence of a segment of surplus workers. According to this argument, the demand for migrants suffered from the same sluggishness: migrants were not required by the host economy, since they were the result of processes of expulsion from the

economies of origin and therefore entered occupations outside the formal labour market. According to this view, the growth rate of manufacturing and the urbanization process played a central role in the variations in the volume of migrations as well as in the way migrants entered the labour force in the metropolitan area. Some authors (Marshall, 1977; Marshall and Orlanski, 1983) described from this perspective how in the 1960s, as a result of technological modernization, the concentrated segment of industry had ceased to require unskilled labour, so that migrants had to work in construction and small-scale industry.

In the late 1980s, studies on poverty included the migration dimension; thus, one study on the links between migration and poverty found evidence that in Greater Buenos Aires, in 1988, the incidence of poverty among recent migrants was higher among cross-border migrants than among internal migrants (Maguid, 1990, p. 25). It was also argued in that study that the educational level of recent cross-border migrants was lower than that of internal migrants: findings which differ from those given in the present study.⁶

(Ministry of Labour, www.observatorio.net). In Greater Buenos Aires, the unemployment rate in domestic service fluctuated around 17% from 1995 on, according to data from the Permanent Household Survey carried out by the National Institute of Statistics and Censuses (INDEC).

⁶ The study by Maguid (1990) was based on 1990 data from the “Investigación sobre Pobreza en Argentina” (IPA) project, but if the Permanent Household Surveys are used as the data source, in 1980 there was no difference between the educational levels of recent cross-border and internal migrants.

The debate on the enforcement of population laws and regulations during the 1990s –both with regard to the amnesty and bilateral agreements and the decrees on the expulsion of illegal aliens– revived interest in the relation between migrations and the labour market. The public debate revolved around the role of cross-border migrations in the increased unemployment rate, and there were heated discussions about the extent to which cross-border migrants were competing with local residents for jobs: in other words, about how far they could be “blamed” for the high rate of unemployment.

There were two particularly outstanding subjects of discussion: the rate of migrations from neighbouring countries in the 1990s and the way these migrants entered the labour force. With regard to the first of these questions, Lattes (1997) questioned the demographic projections predicting zero migration balances by the year 2015, since according to his estimates there had been no interruption in the volume of cross-border migrations.⁷ He also argued that both the active population and the rates of participation in economic activity increased during the 1990s as a result of migrations, natural growth and other factors such as the greater propensity of women to participate in the labour force. Maguid (2001), in contrast, minimized the role of the low fixed exchange rate as an incentive for cross-border migration and claimed that in the first half of the 1990s the contraction in the demand for labour of itself reduced cross-border migration.

With regard to the way migrants entered the labour force, a by no means negligible proportion of local authors put forward the hypothesis that the cross-border and internal segments of recent migration flows did not compete for jobs: on the contrary, there was rather some degree of “complementation” or “absence of competition” between them (Mármora, 1994). This view was maintained, for example, by authors such as Maguid (1995) and Benencia and Gazotti (1995), who claimed that the contribution of cross-border migration to open unemployment in the metropolitan area has been negligible. Montoya and Perticará (1995) came to the same conclusion, although they did wonder how far this could be extended to all internal migrants, since in their view internal migrants from the relatively less developed provinces might have

affected the level of unemployment.

Marshall (2000), in contrast, argued that there were grounds for maintaining that cross-border migrants did compete –marginally– with other recent migrants for the same kind of jobs. Revising the views they expressed in 1995, in subsequent studies Benencia (2000) and Maguid (2001) accept the possibility that there may have been some degree of competition between recent cross-border migrants and internal migrants in the metropolitan area. Maguid (2001) considers that the impact of migrations from neighbouring countries on the local labour market depended on the level of economic activity. Maintaining his view that there was a shortage of unskilled labour in the urban labour market in Argentina, he argues that in periods when there was a sustained demand for labour, such as during the import substitution industrialization era, native citizens rejected low-quality jobs. In his revised view, he holds that in the 1990s the decline in the manufacturing product, plus other changes, reduced the level of demand for labour, thereby causing native citizens to be “willing to work in jobs that they previously rejected” (Maguid, 2001, p.67). He consequently accepts that the new recessionary context may have led to competition between migrants and native citizens in the construction and domestic service sectors and may also have led to a reversal of cross-border migration flows. He accepts, however, that “there is no reliable information that shows whether immigration has declined or there has been a process of substitution between new migrants and older ones returning to their countries of origin” (Maguid, 2001, p.65). From the standpoint taken in the present article, this analysis attaches excessive importance to voluntary decisions by the native and internal migrant population not to compete with cross-border migrants, while failing to give due weight to the role of the demand for labour in the distribution of jobs.

In the present article, it is considered that in the 1990s the flow of cross-border migrants continued,⁸ and that during the expansionary phases of the economic cycle the employment of cross-border migrants grew more rapidly than that of internal migrants, pre-

⁷ In Lattes (1997) the migration flows were estimated by using data for 1991-1996 from the Permanent Household Surveys, brought into line with those from the 1991 Population and Housing Census.

⁸ Between 1993 and 2001 the recent migrant population (with ten or fewer years of residence) in the Buenos Aires metropolitan area went down from 141,093 to 105,017 (25%), while the number of cross-border migrants increased from 230,504 to 265,852 (15%), according to the Permanent Household Surveys. The employed population of internal migrants went down from 1,061,388 to 933,027 (12%).

cisely in the same branches of activity in which the latter were mainly concentrated. In contrast, although during recessions there were dismissals of both types of migrants from the construction and domestic service sectors, when the economy recovered only the employment of cross-border migrants grew in these two sectors; not that of internal migrants.⁹

The differences in the levels of qualifications, which favoured the cross-border migrants, and the acceptance by the latter of low wages and long hours, made it more attractive to hire this type of migrant. As from 1995, there was a decline in internal migrations to the area; the high levels of unemployment prevailing there probably caused migrations to other urban centres, open unemployment, a feeling of discouragement and sporadic participation in the labour force; i.e., various different aspects of a growing process of abandonment of the world of work.

This suggests that there was a process in which workers in the construction and domestic service sectors who were recent internal migrants were replaced by recent cross-border migrants. In addition to the processes of exclusion from the labour market there were other problems which, together, affected recent internal migrants more severely. This group would appear to have been concealing, in the course of the last ten years, a sector not recorded in the statistics and hidden behind a situation of inactivity, which could be called the “relatively excluded” sector. Although the information currently available does not provide sufficient evidence to confirm this tendency, this matter warrants more investigation in the future.

2. The regulatory framework

The Buenos Aires metropolitan area was a centre of attraction for internal and international migrations from the 1930s up to the mid-1970s. The slackening in migrations increased the proportion of native citizens and reduced the weight of migrants in the population

of this area.¹⁰ Cross-border migration nevertheless continued to be concentrated there, however,¹¹ and this pattern of geographical distribution continued in the 1990s: Greater Buenos Aires accounted for 70% of the cross-border migrants residing in urban areas, 75% of the cross-border migrants with jobs who arrived over the last ten years, and 78% of those who arrived during the last five years.¹²

During the years of military rule (1976-1983), the legislation on migrations was predominantly restrictive. In 1981 the General Law on Migrations and the Promotion of Immigration was adopted, with the aim of exclusively promoting “the immigration of foreigners whose cultural characteristics permit their appropriate integration” and discouraging immigration from neighbouring countries.¹³ An important point in this law was the imposition of restrictions on the employment of transient and temporary residents: both they and the employers who opted to hire them had to comply with a number of requirements. From this point on, and even after the beginning of the democratic phase, the legislation did not follow a single line: while some decrees restricted migration flows, some amnesties were also decreed, as for example that in 1984. In 1985 (decree 828/85), restrictions were once more imposed on migration – further intensified in 1987 with the regulation of entry permits, which made it difficult to take out legal residence – and stricter controls were applied to migration, although in the 1990s more permissive bilateral agreements on the entry of nationals of neighbouring countries. The regulatory framework did not play an ongoing dissuasive role with regard to the decision to migrate or to employ migrants, however, since effective controls were not always put into effect to enforce compliance with the restrictive legislation. This lack of controls made it possible to use cross-border migrant labour, which in any case took place outside the law.

⁹ After the drop in the proportion of recent cross-border and internal migrants employed in the construction sector between 1994 and 1995, in 1996 the proportion of internal migrants continued to fall, whereas the proportion of cross-border migrants increased. Thus, the latter accounted for 40% of the total in 1995, 53% in 1996, 57% in 1997 and 58% in 1998 (calculations by the authors on the basis of data from the Permanent Household Surveys).

¹⁰ In the metropolitan area, between the 1980 and 1991 censuses, the proportion of non-neighbouring international migrants in the population went down from 4.4% to 2.5%, while that of internal migrants went down from 22.6% to 19.5%. The proportion of non-migrants, however, rose from 70.6% to 75.5% (INDEC, 1991).

¹¹ In the City of Buenos Aires, between 1980 and 1991, the proportion of cross-border migrants increased from 2.9% to 3.9% and remained unchanged in the 19 sections covering the Buenos Aires conurbation (INDEC, 1991).

¹² Estimates by the authors, based on data from the Permanent Household Surveys.

¹³ Text of the General Law on Migrations and the Promotion of Immigration, No. 22439/1981. See CELS (2000) and Novick (2001).

This situation of illegality was a contributory factor in causing workers from neighbouring countries to accept precarious working conditions (lack of pensions, heavier workloads, lack of access to trade union representation, etc.), and although in strictly legal terms there were no obstacles to them bringing labour-related legal proceedings, their nationality may well have deterred workers from initiating such proceedings.¹⁴ These difficulties in gaining access to justice, together with the rising unemployment, created suitable conditions for the spread of the use of cross-border

labour under increasingly substandard conditions. The increase in non-labour production costs (energy, communications, transport) encouraged firms to use strategies aimed at reducing the labour component of costs, as for example by hiring migrant workers, and the hiring of cross-border migrants made more sense than hiring internal migrants, because on the one hand their skills were in no way inferior to those of the latter, and on the other hand they formed a labour force which was very easily disciplined.

III

Internal and cross-border migrants in the 1990s

1. Activity, employment and unemployment

Between 1993 and 2000, the variations in cross-border migration flows, as a proportion of both the total and the active population, were positively linked with the evolution of overall GDP and, in particular, that of the sectors in which recent cross-border migrants were concentrated. In the case of internal migrants, in contrast, the link between migration and the product was negative (table 1). The demand for labour in the economic sectors where migrants were typically employed, which was more clearly directed towards cross-border migrants, was one of the factors which led to changes in the composition of both the total and the active population. The weight of the migratory groups of different origins in the population changed during those years: the proportion of internal migrants went down slightly, but that of cross-border migrants showed an upward trend (table 2). The economically active population also changed in the same direction, since the proportion of internal migrants went down, while that of cross-border migrants increased slightly (table 3).

The direction of these changes is also reflected in the different growth rates of the economically active population, the employed population, and the unemployed. The percentage of economically active internal migrants ceased to grow, while the proportion of

employed persons fell in this segment and the percentage of unemployed rose. In contrast, the percentages of economically active persons, employed persons and unemployed all rose among the cross-border migrants. The factor marking the greatest difference between the two types of migrants was that employment only rose among the cross-border migrants (table 4 and figure A.1 of the appendix).

A breakdown of the variations in the size of the sub-populations of employed and unemployed (table 5) shows that between 1993 and 1995 cross-border migrants played a more important role than internal migrants and even than native local citizens in the variation in the level of employment. If we analyze the other periods we see that although the most important contribution was that of non-migrants, the contribution of cross-border migrants to employment and the economically active population was greater than that of internal migrants. In all periods the latter contributed more than the others to urban unemployment. Table 4 suggests that in periods of recession recent internal and cross-border migrants lost their jobs more frequently than native local citizens, with the loss being even more marked in the case of recent internal migrants. The latter class of migrants had no effect on the levels of employment or activity, but they did help to explain the variations in unemployment in different periods.

¹⁴ Interview with Dr. Pedro I. Galin, consultant on labour matters, Buenos Aires, 4 October 2002.

TABLE 1

Argentina: Coefficients of correlation between the gross domestic product and migration

1993-2000 Population groups by migratory origin	GDP	Manufacturing GDP	Construction GDP ^a	Services GDP ^b	Commerce GDP ^c
Internal migrants/total population	-0.13	-0.10	-0.36	-0.16	-0.5
Recent internal migrants/total population	-0.53	-0.50	-0.63	-0.55	-0.42
Cross-border migrants/total population	0.90	0.71	0.69	0.93	0.67
Recent cross-border migrants/total population	0.49	0.26	0.68	0.60	0.19
Internal migrants/economically active population	0.06	0.13	-0.16	-0.06	0.19
Recent internal migrants/economically active population	-0.60	-0.54	-0.63	-0.62	-0.45
Cross-border migrants/economically active population	0.82	0.61	0.59	0.89	0.55
Recent cross-border migrants/economically active population	0.34	0.05	0.19	0.47	-0.03

Source: Prepared by the authors on the basis of data in absolute values on the gross domestic product, at current prices, provided by the Ministry of the Economy (base year 1993), and data in absolute values from the October figures of the Permanent Household Census for Greater Buenos Aires.

^a In the case of the construction sector, the coefficients of correlation were calculated for the 1993-1999 period in order to avoid the skew caused by the marked fall in activity in this sector in 2000. Whereas the tequila crisis caused a fall of 6% in the construction GDP in 1994-1995, the recession between 1999 and 2000 caused a contraction of -13%.

^b Includes social, community and personal services; excludes education, health and public administration.

^c Wholesale and retail trade and repairs.

TABLE 2

Greater Buenos Aires: Composition of population by migratory status
(Percentages)

Year	Total population	Total non- migrant population	Total internal migrant population	Total cross- border migrant population	Total international migrant population of other origins
1993	100	73.4	18.1	3.8	4.7
1994	100	72.9	19.1	3.6	4.4
1995	100	72.8	18.8	4.0	4.4
1996	100	72.5	19.0	4.2	4.2
1997	100	73.4	18.2	4.5	3.9
1998	100	74.7	17.5	4.6	3.2
1999	100	75.3	16.9	4.7	3.1
2000	100	76.0	16.8	4.3	2.9
2001	100	75.8	17.0	4.6	2.6

Source: Permanent Household Survey.

TABLE 3

Greater Buenos Aires: Composition of economically active population by migratory status, 1993-2001
(Percentages)

Year	Total economically active population (EAP)	Non-migrant EAP	Internal migrant EAP	Cross-border migrant EAP	International migrant EAP from other origins
1993	100	67.1	24.0	5.4	3.5
1994	100	66.8	25.0	5.0	3.1
1995	100	65.8	24.9	5.8	3.5
1996	100	66.6	24.5	5.8	3.1
1997	100	67.4	23.4	6.2	3.0
1998	100	68.5	22.8	6.2	2.5
1999	100	69.5	21.6	6.5	2.4
2000	100	70.8	21.0	6.1	2.2
2001	100	71.1	21.0	6.2	1.6

Source: Permanent Household Survey, figures for October, Greater Buenos Aires.

TABLE 4

Greater Buenos Aires: Annual average rates of variation in the total, active, employed and unemployed population, 1993-2001
(Percentages)

Population	Non-migrants	Internal migrants	Cross-border migrants	Other international migrants	Total
Total population	1.93	0.75	4.00	-5.76	1.52
Economically active population	2.52	0.10	3.47	-7.57	1.75
Employed population	1.23	-1.60	1.80	-8.69	0.32
Unemployed population	10.97	10.67	11.79	15.20	10.97

Source: Permanent Household Survey, figures for October, Greater Buenos Aires.

TABLE 5

Greater Buenos Aires: Breakdown of increases in sub-populations, by migratory status, in selected periods
(Percentages)

Period	Non-migrants	Internal migrants	Cross-border migrants	Other international migrants	Total ^a
Total population					
1995-1993	45	44	11		100
1997-1993	63	18	19		100
2001-1993	83	8	10		100
Economically active population					
1995-1993	37	45	14	3	100
1997-1993	69	15	15		100
2001-1993	89	1	10		100
Employed population					
1995-1993			100		100
1997-1993	68		32		100
2001-1993	89		11		100
Unemployed population					
1995-1993	64	26	7	3	100
1997-1993	65	25	5	4	100
2001-1993	69	23	8	1	100

Source: Permanent Household Survey, figures for October, Greater Buenos Aires.

^a The totals do not include cases in which the migratory status was not reported.

In the 1990s, there was an expansion in the rates of activity and of unemployment in the total population of Greater Buenos Aires. In order to estimate the extent to which variations in the volume of the labour supply affected the rates of unemployment in the different sub-populations, we carried out the following exercise. We calculated the value reached by the unemployment rate between 1993 and 2000 with a constant activity rate and then compared the result with the unemployment rate actually observed (real unemployment rate); the resulting coefficient was taken as a proxy for the net effect of the demand for labour, which indicates the portion of unemployment caused by the elimination of jobs. As may be seen from table 6, the net effect of the

demand for labour differs between population groups according to sex and migratory origin.

For the labour force as a whole, the variations in the rate of participation had rather more weight than the elimination of jobs in the increase in unemployment (3.1 percentage points and 2.2 points, respectively). The groups of different migratory origin behaved differently, however.

i) *Non-migrants*. The general tendency was more marked in the case of women than of men. Among women, it was the expansion in the rate of participation which affected the unemployment rate, whereas among men, both factors contributed equally to the increase in unemployment.

- ii) *Internal migrants.* Men were marked by a fall in the activity rate: a factor which helped to soften the increase that would otherwise have been registered by the unemployment rate as a result of elimination of jobs. Thus, in the case of men, if this fall in the activity rate had not taken place the unemployment rate of this group would have risen by more than 12 percentage points. In contrast, the increase in unemployment among female internal migrants was due in equal extents to the elimination of jobs and the increase in the labour supply.
- iii) *Cross-border migrants.* Female cross-border migrants increased their participation rate, but the increase in the employment rate was even greater, which was why unemployment went down among them. In the case of male cross-border migrants, the elimination of jobs was the most decisive factor in the increase in unemployment.

TABLE 6

Greater Buenos Aires: Changes in unemployment, by migratory status
(Percentages)

Population, by migratory status rates	Unemployment rate, 1993	Unemployment rate, 2000	Employment effect	Activity effect	Difference between 1993 and 2000 unemployment
Total active population	9.6	14.9	2.2	3.1	5.3
Non-migrants	10.2	14.8	-0.3	4.9	4.6
Men	8.0	12.6	2.5	2.0	4.6
Women	13.7	18.0	-5.4	9.7	4.3
Internal migrants	8.3	16.0	9.5	-1.7	7.8
Men	7.4	14.7	12.5	-5.3	7.3
Women	9.6	17.9	4.2	4.1	8.4
Cross-border migrants	12.1	14.4	0.5	1.9	2.3
Men	11.7	17.6	5.8	0.1	5.9
Women	12.6	10.3	-4.7	2.3	-2.4

Source: Permanent Household Survey, October figures, Greater Buenos Aires.

TABLE 7

Greater Buenos Aires: Recalculation of activity and unemployment rates
(Percentages)

A. Activity rate					
	Non migrants	Internal migrants	Cross-border migrants	Total	Percentage difference with respect to observed rate
1993	39.5	57.3	62.2	43.3	
1996	41.1	57.7	61.2	44.9	
2001	41.4	54.4	59.7	44.1	
1996 ^a				44.8	-0.06
1996 ^b				44.6	-0.22
2001 ^a				44.0	-0.11
2001 ^b				44.0	-0.11
B. Unemployment rate					
	Non migrants	Internal migrants	Cross-border migrants	Total	Percentage difference with respect to observed rate 1993
1993	10.2	8.3	12.1	9.6	
1996	19.1	19.3	19.3	18.8	
2001	18.8	20.0	22.8	19.3	
1996 ^c				18.5	-0.4
1996 ^d				17.6	-1.2
2001 ^c				18.7	-0.6
2001 ^d				17.9	-1.4

Source: Permanent Household Survey, October figures, Greater Buenos Aires.

^a New rate, assuming there were no new cross-border migrants since 1993. The total number and number of active cross-border migrants would be the same as in 1993.

^b New rate, without recent cross-border migrants.

^c New rate, assuming that unemployment among cross-border migrants was the same as in 1993.

^d New rate, without unemployed and employed recent cross-border migrants, with redistribution of jobs.

Table 7 gives an estimate of the effect of cross-border migration on overall activity and unemployment rates. Both rates were recalculated according to the assumption that there had been no increase in cross-border migration since 1993, and even that there had been no entry of migrants at all in the last ten years. The differences registered are only slight. Thus, although the sign is of the expected type (reduction in both rates), because of the relatively minor weight of cross-border migrants in relation to the rest of the groups, the proportion by which those rates went down is only marginal: the activity rate goes down by less than one percentage point, while the open unemployment rate goes down by a little more than that value (in both cases, according to the most restrictive assumption).

An estimate was also made of the impact of migrations on the tendencies that might be expected in the rates of activity, employment and unemployment according to the behaviour registered during the 1990s. Through ordinary least squares linear regression analysis, the proportions of internal and cross-border migrants in the labour supply and the employed population were taken as independent variables, and the above-mentioned rates of activity, employment and unemployment were taken as dependent variables (tables A.1, A.2 and A.3 of the appendix).¹⁵ The regression analysis showed that cross-border migrations affected almost exclusively unskilled young people, but not the other age groups or the groups with higher levels of education (for example, the employment rate of persons under 30 with incomplete secondary education goes down as a result of the presence of recent cross-border migrants in the labour supply).

To sum up, the tables indicate that there was a halt in internal migrations but not in those from neighbouring countries, and this affected the relative weights of the two groups in the active population. The volume of migrants was not enough, however, to affect the rates of activity, employment or unemployment. In addition, there was an increase in the economic activity of non-migrant female natives, female internal migrants, and female migrants from neighbouring countries, but the losses of jobs were concentrated solely among female internal migrants. In the case of men, there was a decline in the proportion of

employed persons in all three groups, but the biggest decline was among male internal migrants.

2. Occupational breakdown

In order to make a breakdown of the occupational sectors in which migrants work we formed a data pool by adding together the October figures from the Permanent Household Surveys for 1993, 1995, 1997, 1999 and 2001. This made it possible to increase the number of cases in order to permit their analysis, assuming that the groups maintained common features throughout the period.¹⁶

In the 1990s, the patterns of sectoral occupation of employed migrants – both cross-border and internal – settling in the Greater Buenos Aires area had not changed substantially from the previously prevailing trends. Migrants in general (regardless of when they arrived) continued to be concentrated in construction, domestic service and the textile sector, although those from neighbouring countries had greater weight in that decade. Thus, these three sectors accounted for 46.4% of recent cross-border migrants and 32.3% of recent internal migrants; if their date of arrival is not taken into account, there was a higher relative proportion of cross-border than of internal migrants in those activities: 57.6% and 27%, respectively.

During the economic growth stage – up to 1995 – cross-border migrants continued to be in demand due to the growth of the typical urban economic sectors, but this was not so in the case of internal migrants; in the stage of recession, however, when construction and manufacturing became net expellers of labour, both groups of migrants were affected by the decline in the demand for labour

Cross-border migrants occupied jobs previously occupied by internal migrants, in unregistered wage-earning jobs in construction and in domestic service, and to a lesser extent in the garment and leather and footwear industries, while internal migrants resorted more often to own-account activities.

¹⁵ In order to have enough observations, the May and October figures of the Permanent Household Survey for the period from October 1993 to May 2002 were used.

¹⁶ See the second paragraph of the appendix.

TABLE 8

Greater Buenos Aires: Composition of recent migrants employed in the construction sector, by migratory origin, 1993 to 2001
(Percentages)

Year	Recent internal migrants	Recent cross-border migrants	Total
1993	58.5	41.5	100
1995	45.7	54.3	100
1997	33.1	66.9	100
1999	6.9	93.1	100
2001	19.7	80.3	100

Source: Prepared by the authors on the basis of the October figures of the Permanent Household Census.

TABLE 9

Greater Buenos Aires: Composition of recent migrants employed in domestic service, by migratory origin, 1993 to 2001
(Percentages)

Year	Recent internal migrants	Recent cross-border migrants	Total
1993	45	55	100
1995	41.5	58.5	100
1997	21	79	100
1999	29.1	70.9	100
2001	8.9	91.1	100

Source: Prepared by the authors on the basis of the October figures of the Permanent Household Census.

TABLE 10

Greater Buenos Aires: Breakdown of recent internal and cross-border migrants, by sector of activity
(Percentages)

Sex	Sector	Migrants		Total
		Internal	Cross-border	
Men	Manufacturing	27.3	28.5	27.8
	Construction	10.7	36.4	19.2
	Others	62.0	35.1	53.0
	Total	100.0	100.0	100.0
Women	Manufacturing	10.8	12.0	11.3
	Domestic service	40.4	63.8	50.7
	Others	48.8	24.2	38.0
	Total	100.0	100.0	100.0

Source: Pooled data from the Permanent Household Survey (October figures) for Greater Buenos Aires, for 1993, 1995, 1997, 1999 and 2001.

Among men, 36.4% of recent cross-border migrants and 10.7% of recent internal migrants were employed in construction, while among women, 63.8% of cross-border migrants worked in domestic service, compared with 40.4% of female internal migrants.¹⁷

Although there is a historical continuity in the proportion of wage-earners in the two groups, it is clear that in the 1990s the wage-earning jobs in the typical economic sectors of construction and domestic service went more to the cross-border migrants (77% and 51%, respectively). In the case of women in domestic service, the same tendency is observed, with proportions of (female) wage-earners of 84% and 76%.

The incidence of precarious employment – jobs not registered with the authorities – was higher among the cross-border migrants: only 26% of cross-border wage-earners worked in jobs protected by social security, 60.2% were not registered, and the remainder enjoyed some partial benefits; among the internal migrants, in contrast, the standards of labour protection, although low, were somewhat higher than those of the cross-border migrants (table 13).

TABLE 11

Greater Buenos Aires: Composition of recent migrant wage-earners, by migratory origin, 1993 and 2001
(Percentages)

Wage-earners	Internal	Cross-border	Total
1993	64.6	35.4	100
2001	61.6	38.4	100

Source: Prepared by the authors on the basis of data from the Permanent Household Survey (October figures) for Greater Buenos Aires.

¹⁷ According to the pooled data, in the 1993-2001 period the proportion of recent cross-border migrants among the total employed was of the order of 2.4%, while the proportion of recent internal migrants was around 2.6%. In view of the historical over-representation of these groups in construction and domestic service, a comparison by sectors is in order. Thus, 45% of those employed in domestic service were internal migrants 13% were cross-border migrants, and 41% were non-migrants, but when the comparison is restricted to the recent migrants group (up to ten years), the proportion of cross-border migrants rises to 48% and that of internal migrants goes down to 40%. In construction, internal migrants accounted for 35% of those employed, non-migrants for 47%, and cross-border migrants for 16%, but once again, if only the migrants with up to ten years' residence are taken into account, the cross-border migrants rise to 49%, the internal migrants go down to 29%, and non-migrants (persons born in the province of Buenos Aires who moved to metropolitan Buenos Aires) go down to 21%. Source: pooled data from the Permanent Household Survey.

TABLE 12

Greater Buenos Aires: Composition of recent migrants, by origin and occupational category, in two branches of activity
(Percentages)

Branch	Occupational category	Migrants		Total
		Internal	Cross-border	
Construction	Employer	2.2		0.8
	Own-account work	46.5	22.8	31.6
	Wage-earner	51.3	77.2	67.6
	Total	100.0	100.0	100.0
Domestic service	Own-account work	23.8	16.1	19.5
	Wage-earner	76.2	83.9	80.5
	Total	100.0	100.0	100.0

Source: Pooled data from the Permanent Household Survey (October figures) for Greater Buenos Aires, for 1993, 1995, 1997, 1999 and 2001.

TABLE 13

Greater Buenos Aires: Labour benefits received by wage-earners, according to migratory status
(Percentages)

Extent of labour benefits	Wage-earners		Total
	Recent internal migrants	Recent cross-border migrants	
All benefits	55.3	26.1	44.5
No benefits	31.9	60.2	42.3
Some benefits	12.8	13.7	13.2
Total	100.0	100.0	100.0

Source: Pooled data from the Permanent Household Survey (October figures) for Greater Buenos Aires, for 1993, 1995, 1997, 1999 and 2001.

3. Educational level and income

The differences in educational level between cross-border and internal migrants were not evident among the total number of employed persons, but they were observable among those employed in domestic service and construction. Thus, among women working in

domestic service, the proportion who had completed their secondary education was higher among cross-border than among internal migrants, while among men working in the construction sector, the educational level of migrants from the provinces of the interior was lower than that of cross-border migrants, although the difference was less marked than in the case of women (table 14).

TABLE 14

Greater Buenos Aires: Composition of employed migrants (total and in two branches of activity), by educational level
(Percentages)

	Educational level	Migrants		Total
		Internal	Cross-border	
Employed persons, total	Complete secondary education	34.6	34.6	34.6
	Incomplete secondary education	65.4	65.4	65.4
	Total	100.0	100.0	100.0
Employed persons (men)	Complete secondary education	32.3	30.5	31.7
	Incomplete secondary education	67.7	69.5	68.3
	Total	100.0	100.0	100.0
Employed persons (women)	Complete secondary education	38.5	39.1	38.7
	Incomplete secondary education	61.5	60.9	61.3
	Total	100.0	100.0	100.0
Domestic service (total)	Complete secondary education	8.9	34.6	23.1
	Incomplete secondary education	91.1	65.4	76.9
	Total	100.0	100.0	100.0
Construction (total)	Complete secondary education		10.1	6.4
	Incomplete secondary education	100.0	89.9	93.6
	Total	100.0	100.0	100.0

Source: Pooled data from the Permanent Household Survey (October figures) for Greater Buenos Aires, for 1993, 1995, 1997, 1999 and 2001.

TABLE 15

Greater Buenos Aires: Structure of educational level of recent employed migrants, by place of origin
(Percentages)

Educational level	Bolivia	Paraguay	Peru	Uruguay	Total	
Incomplete secondary education	70.8	88.7	21.1	64.3	65	
Complete secondary education	29.2	11.3	78.9	35.7	35	
Total	100.0	100.0	100.0	100.0	100.0	
Educational level	Corrientes	Chaco	Entre Ríos	Santiago	Tucumán	Total
Incomplete secondary education	67.6	79.6	56.8	87.6	82.8	70
Complete secondary education	32.4	20.4	43.2	12.4	17.2	30
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Pooled data from the Permanent Household Survey (October figures) for Greater Buenos Aires, for 1993, 1995, 1997, 1999 and 2001.

In the 1990s, cross-border migrants continued to show characteristics which were similar to those they had displayed in the previous two decades and which they shared with internal migrants: low levels of education and skills. The change which took place in the 1990s was that there was a visible deterioration in the educational levels of internal migrants compared with those from neighbouring countries.

Internal migrants mostly came from provinces where the levels of dropping-out, repetition and high age-for-grade in secondary education were markedly higher than in the other provinces, and especially the metropolitan area. Rather than an improvement in the levels of skills of cross-border migrants, what was observed was a relative decline in the levels of skills of native migrants arriving in Greater Buenos Aires from the 1980s on (data from the Federal Education Network of the Ministry of Education).

To some extent, cross-border migrants were more favourably placed as a source of labour for the branches of activity in which recent migrant workers have traditionally found employment: construction and

domestic service. With levels of education that were comparable with and in some cases superior to internal migrants, and willing to accept more flexible wages and working conditions, they were in greater demand by employers than the latter. This is one possible explanation for the differential impact of the crisis on cross-border and internal migrants.

Throughout the period studied, cross-border migrants worked under less favourable conditions. Their monthly income was consistently below that of internal migrants, whether wage-earning or not, and their working hours were longer (table 16). Indeed, the total number of hours worked by cross-border migrants was gradually rising, even when the demand for labour was falling, whereas the total number of hours worked by internal migrants was going down, particularly in construction and domestic service, reflecting the decline in demand for this segment. The real income of cross-border migrants was consistently below the general average and that of internal migrants (figures 1 and 2).

TABLE 16

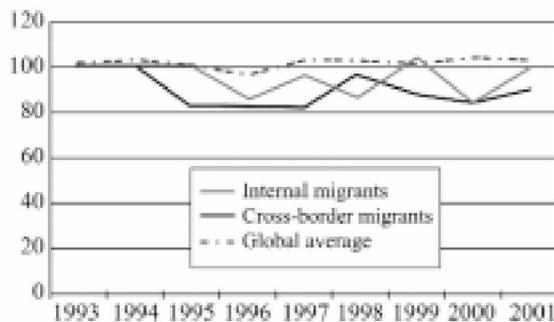
Greater Buenos Aires: Coefficients of hourly income, monthly income and hours worked by cross-border migrants, with respect to the corresponding values for recent internal migrants

Cross-border migrants	Working conditions	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total	Hourly income	0.86	0.80	0.69	0.77	0.77	0.91	0.70	0.81	0.77
	Monthly income	0.89	0.80	0.77	0.74	0.91	0.91	0.72	0.90	0.81
	Hours worked	1.02	1.00	1.06	0.93	1.14	1.00	1.07	1.06	1.10
Wage-earners	Hourly income	0.85	0.85	0.70	0.83	0.73	0.93	0.72	0.85	0.77
	Monthly income	0.89	0.79	0.77	0.73	0.89	0.91	0.78	0.89	0.83
	Hours worked	1.04	0.96	1.04	0.93	1.17	0.98	1.15	1.05	1.11

Source: Permanent Household Survey, October figures, Greater Buenos Aires.

FIGURE 1

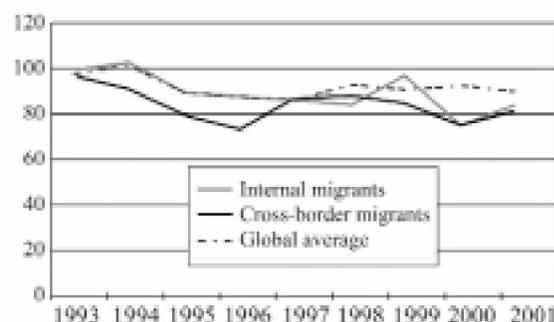
Evolution of real hourly income of wage-earners, according to whether internal or cross-border migrants (1993=100)



Source: Permanent Household Survey, October figures, Greater Buenos Aires.

FIGURE 2

Evolution of real monthly income of wage-earners, according to whether internal or cross-border migrants (1993=100)



Source: Permanent Household Survey, October figures, Greater Buenos Aires.

IV

Conclusions

The economic and labour market changes which took place in the 1990s affected the rates of migration to Greater Buenos Aires; throughout the decade, cross-border migration continued, whereas internal migration tended to diminish. The hypothesis that internal migrants may have returned home or withdrawn as a result of the decline in the demand for labour is worth investigating.

The changes in the form of insertion of internal migrants in the labour market were caused by the demand for labour, which, especially in the construction and domestic service sectors, gave preference to the incorporation of segments of the labour force with fewer demands for social protection in precarious jobs, under unfavourable working conditions and at low wages. As there had also been changes in the composition of the labour supply –a slight improvement in the educational level of cross-border migrants with respect to that of internal migrants– demand was reoriented towards the former. In the literature on migrations in the case of Argentina, several authors have put forward an explanation based on labour supply factors: thus, the hypothesis which holds that there was no competition between cross-border and internal migrants, and that the latter were not willing to accept those kinds of jobs, refers above all to the decades before the 1990s. As from the beginning of the 1990s, they argue, the rise in unemployment in the metropolitan area and the elimination of jobs may have caused competition between the two groups of workers. The role of demand in the competition between these two migrant segments does not appear to have been fully analyzed, however. In the present study, we consider that the most important factor has been the reorientation of the demand for labour because of the changes in the composition of the migrant flows: the rise in the educational level of cross-border migrants and the decline in that of internal migrants. This process led to the displacement of recent internal migrants from the sectors in which migrants typically work: there was a decline in the activity rate of internal migrants, which could well be a sign of discouragement, while the

activity rate of cross-border migrants rose, although unemployment affected both groups. The cross-border migrants who were still employed took jobs with long hours and low hourly wages. Employment in the construction sector fell, and although in the domestic service sector the fall was not as great, in both sectors there was an increase in the proportion of cross-border migrants.

The increase in unemployment since the mid-1980s has undoubtedly been a factor in the formation of a hard core of unemployed who have not been able to re-enter the labour force in the successive periods of economic reactivation. In diagnostic studies on the social situation in the metropolitan area, however, the size and extent of this hard core of unemployed –and hence of structural poverty– has often been minimized.

Our argument –which requires more detailed research– suggests that the above changes affected the composition of this sector of structural poverty and unemployment. In the 1970s and 1980s, structural poverty was associated with both migrant segments –internal and cross-border– although the incidence of poverty was greater among cross-border migrants. In the 1990s, however, the degree of unemployment and the persistence of poverty were more clearly limited to the internal migrant sector. Internal migrants were more likely to suffer situations of severe social privation, representing the first step towards exclusion. This is not a recent process, but rather a new pattern of distribution of access to income-generating activities which facilitated the reproduction of the “poverty trap”. The replacement of under-privileged segments in the labour market deprives those thus displaced of possibilities of entering that market again and, in general, obtaining income.

This process has been building up a new social setting in which there are increasingly marked divisions between those holding precarious jobs and those who are unemployed and are simply no longer taken into account for employment.

Appendix

Characteristics of the Permanent Household Survey carried out by the National Institute of Statistics and Censuses (INDEC).

This survey is carried out on the basis of a set of samples from the main urban agglomerations in the country, representing approximately 70% of the national urban population. The population of Greater Buenos Aires, which comprises the city of Buenos Aires and 19 areas of the Buenos Aires conurbation, represents 30% of the total population of the country and approximately 40% of the total urban population. The data

are collected twice a year, in May and October, and the units of observation are households. The household survey of Greater Buenos Aires represents 100% of the population of that agglomeration. The information collected corresponds to characteristics of the households and the individuals in them. The first characteristics include in particular the size and composition of the household and the characteristics of the dwelling, while the second set of characteristics includes demographic, labour, income, educational and migration variables.

TABLE A.1

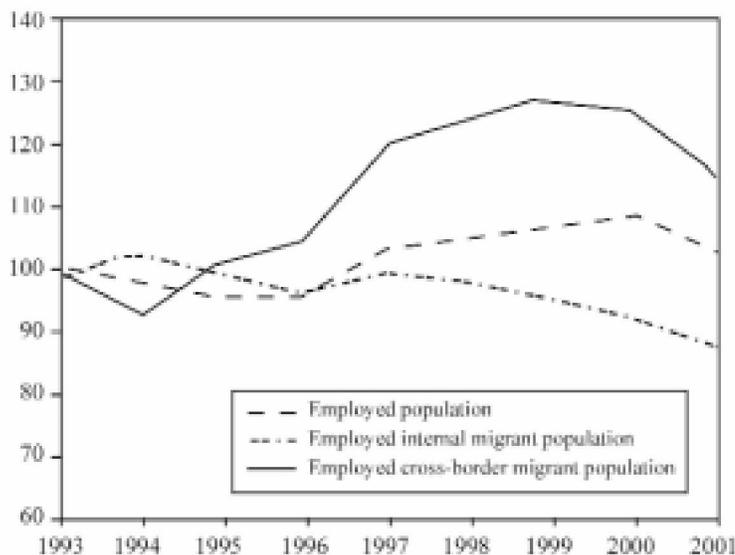
Greater Buenos Aires: Composition of recent resident migrants, by place of origin
(Percentages)

Province or country	October 1993		October 2000	
	Recent internal migrant	Recent cross-border migrant	Recent internal migrant	Recent cross-border migrant
Corrientes	13.6		8.4	
Chaco	16.2		9.2	
Entre Ríos	6.9		7.5	
Santiago	11.0		9.9	
Tucumán	7.7		7.8	
Misiones	11.4		21.7	
Other provincial migrants	33.2		35.5	
Total, provincial migrants	100.0		100.0	
Bolivia		15.5		16.5
Paraguay		42.6		42.4
Peru		5.7		27.4
Uruguay		27.2		7.4
Others		9.0		6.3
Total, cross-border migrants		100.0		100.0

Source: Permanent Household Survey.

FIGURE A.1

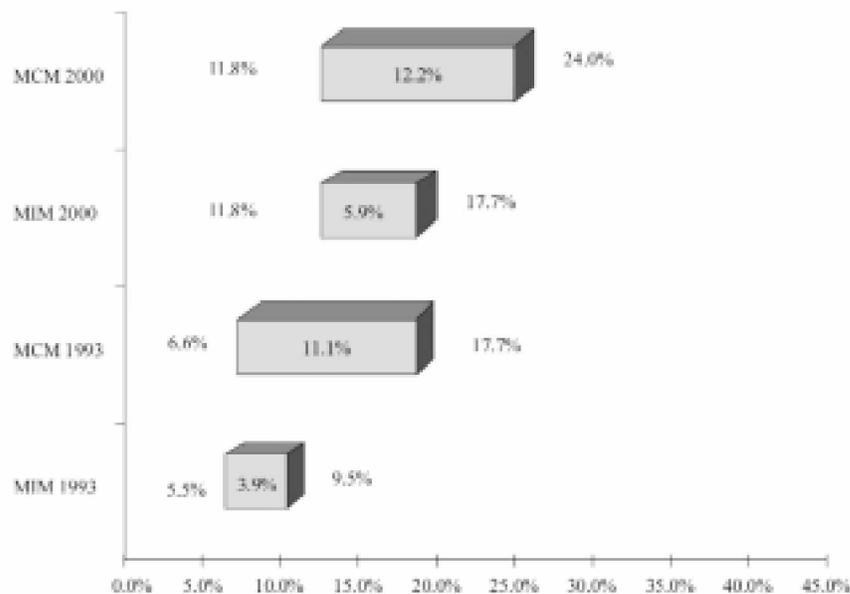
Greater Buenos Aires: Evolution of the employed population, by migratory status
(Index, 1993=100)



Source: Permanent Household Survey, October figures, Greater Buenos Aires.

FIGURE A.2

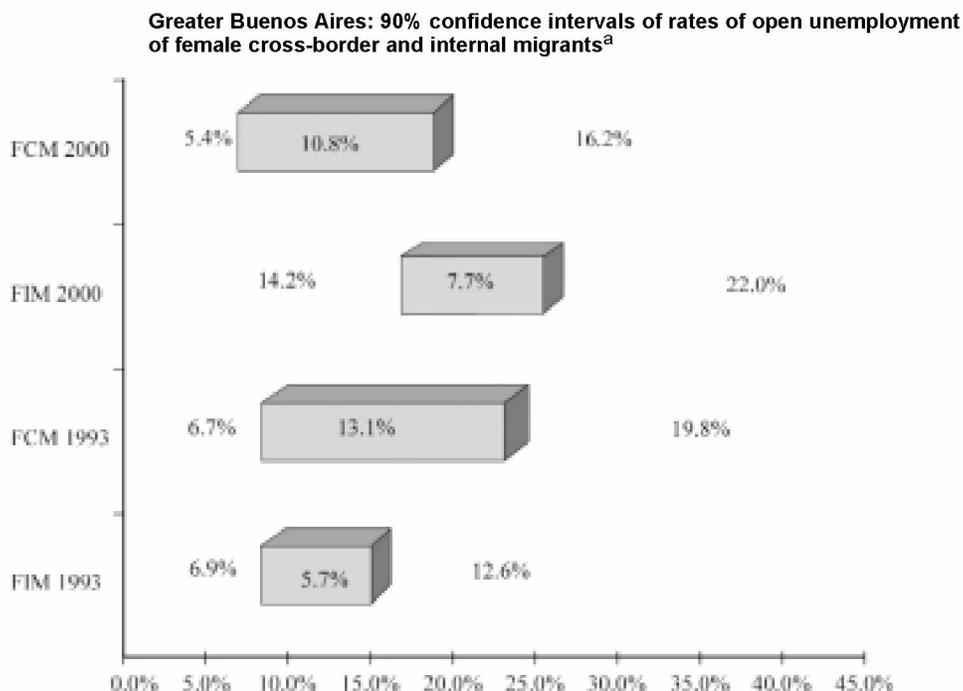
Greater Buenos Aires: 90% confidence intervals of rates of open unemployment of male cross-border and internal migrants^a



Source: Permanent Household Survey, October figures, Greater Buenos Aires.

^a MCM = Male cross-border migrants. MIM = Male internal migrants.

FIGURE A.3



Source: Permanent Household Survey, October figures, Greater Buenos Aires.

^a FCM = Female cross-border migrants. FIM = Female internal migrants.

TABLE A.2

Greater Buenos Aires: Ordinary least squares linear regression analysis^a

Independent variable: Rate of participation of recent cross-border migrants in the economically active population (EAP)

Dependent variables:

- (1) Rate of employment of young recent internal migrants without complete secondary education
- (2) Rate of employment of young non-recent internal migrants without complete secondary education
- (3) Rate of employment of young recent cross-border migrants without complete secondary education
- (4) Rate of employment of older non-migrants without complete secondary education
- (5) Activity rate of young non-migrants without complete secondary education
- (6) Activity rate of young cross-border migrants without complete secondary education
- (7) Activity rate of older non-recent cross-border migrants without complete secondary education

Independent variable	Dependent variable (1)	Dependent variable (2)	Dependent variable (3)	Dependent variable (4)	Dependent variable (5)	Dependent variable (6)	Dependent variable (7)
Participation of recent cross-border migrants in EAP	-13.537 (7.942)	11.241 (6.378) ^b	-21.103 (10.167) ^b	4.654 (2.229) ^b	-9.867 (3.885) ^c	-17.181 (8.030) ^c	13.106 (5.523) ^c
R ²	0.154	0.163	0.212	0.214	0.287	0.222	0.260
Number of observations:	18						

Source: Prepared by the authors on the basis of May and October figures for Greater Buenos Aires from October 1993 to May 2002.

^a The figures in parentheses correspond to the standard error. The age groups were as follows: young (between 16 and 29), adult (between 30 and 44), older (over 45).

^b Significant at 10%.

^c Significant at 5%.

TABLE A.3

Greater Buenos Aires: Ordinary least squares linear regression analysis^a*Independent variable: Rate of participation of recent cross-border migrants in the employed population**Dependent variables:**(1) Rate of employment of young recent internal migrants without complete secondary education**(2) Rate of employment of young non-recent internal migrants without complete secondary education**(3) Rate of employment of adult non-recent internal migrants without complete secondary education**(4) Rate of employment of older non-migrants without complete secondary education**(5) Activity rate of young recent cross-border migrants without complete secondary education*

Independent variable	Dependent variable (1)	Dependent variable (2)	Dependent variable (3)	Dependent variable (4)	Dependent variable (5)
Percentage of recent cross-border migrants in total employed population	-11.170 (7.861)	11.988 (6.031) ^b	7.299 (4.285)	3.911 (2.224) ^b	-18.648 (7.463) ^c
R ²	0.112	0.198	0.154	0.162	0.281
Number of observations: 18					

Source: Prepared by the authors on the basis of May and October figures for Greater Buenos Aires from October 1993 to May 2002.^a The figures in parentheses correspond to the standard error. The age groups were as follows: young (between 16 and 29), adult (between 30 and 44), older (over 45).^b Significant at 10%.^c Significant at 5%.*Pooling of survey data*

The methodological strategy chosen for this part of the study, which consists of forming a pool of survey data, makes it possible to carry out tabulations at a higher level of disaggregation than that which is usual for working on the figures obtained separately in each compilation of data by the Permanent Household Survey (i.e., each “wave” of data), without causing the results of this operation to lose their significance. The assumption on which the use of this procedure is based is that the 1990s was homogeneous in terms of incentives and disincentives and that the changes that could occur in each period are only small and therefore do not alter the final balance. The pooling of data was carried out using the October figures for 1993, 1995, 1997, 1999 and 2001, and between each of them there was a complete rotation of the households responding, thus

avoiding the overlapping of data corresponding to the same individuals.

Migrations from neighbouring countries have traditionally represented only a small proportion of the total population: 2.4% up to 1980 and 2.5% in 1991. The flow of migrants from neighbouring countries, which had grown in the first half of the 1970s, slackened between 1975 and 1980.

Total population growth in Argentina has shown a downward trend: the average annual rates in the 1970s, 1980s and 1990s were 1.8%, 1.6% and 1%, respectively (INDEC, 1970, 1980 and 1991 censuses).¹⁸ As international migrations from non-neighbouring countries went down, the proportion of migrants from neighbouring countries in total migration has increased, amounting to 52% in 1991 (INDEC, 1991).

(Original: Spanish)

¹⁸ For the period from 1991 to 2001, the rate of variation has been estimated on the basis of preliminary data from the 2001 National Population Census.

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Households, poverty and policy in times of crisis. Mexico, 1992-1996

Benjamín Davis, Sudhanshu Handa and Humberto

Before the 1995 crisis, Mexico had registered over a decade of improvements in human development indicators. Using decomposition techniques, this paper measures the benefits of those improvements in terms of allowing households to cope with that crisis. The decline in consumption between 1994 and 1996 is amply explained by the reduction in the returns to household characteristics, with the changes in those characteristics serving to reduce the negative impact of the crisis. Had household characteristics remained at their 1992 levels, rural poverty in 1996 would have been 48% higher than observed. The results of our simulation show that had the PROGRESA programme been in place during the crisis, the rural poverty gap and the squared poverty gap would have been reduced. The conclusion is that social programmes that focus on long term development can also perform an important safety net function during a macroeconomic crisis.

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I

Introduction

In 1995 Mexico sustained one of its worst economic crises in recent history, with per capita GDP falling by 9% and real wages by 25%. Yet this crisis was preceded by over a decade of growth in social and economic indicators and important changes in the structure of the economy. On the eve of the crisis, Mexico was clearly a different society than 10 years earlier. How did these long-term changes in Mexican society influence the ability of Mexican households to withstand the crisis and, ultimately, to recover from it? In answering this question, we return to the core issue of 'growth versus development' which has preoccupied the development community since the early 1980s. During the five years before the peso crisis, Mexico's GDP increased by an average of 3% per year, but even more importantly, this period of growth was accompanied by an even longer period of development, as manifested by reductions in infant mortality and increased access to education, as well as structural changes in the economy. Our goal is to quantify the impact of this 'development' in ameliorating the negative consequences of the macro crisis of 1995. By doing so, we contribute to the state of knowledge on the trade-offs involved in pursuing development strategies that focus on narrowly defined economic growth, in contrast with strategies that pursue growth and development objectives together.

The paper begins with a description of the

Mexican crisis and a review of the country's performance in terms of poverty, growth and social indicators. We then analyze the behavioral response of households to the macroeconomic shock of 1995. This is followed by a decomposition, using standard techniques, of the changes in consumption between 1992, 1994 and 1996, distinguishing between changes due to differences in the environment and institutions, and changes due to differences in the characteristics of households. Finally, we explore the role that social programmes can play in mitigating and alleviating poverty during macroeconomic crises, using two of Mexico's larger social programmes as our examples – the Direct Support Programme for Rural Areas (PROCAMPO) and the Education, Health and Food Programme (PROGRESA), now called the "Oportunidades" programme.

Our analysis is based on household data from three successive (1992, 1994, and 1996) National Income and Expenditure Surveys (ENIGH) carried out by the Mexican government's statistical institute, INEGI (National Institute of Statistics, Geography and Information Processing). These are not panel data surveys but rather repeated cross-sectional surveys which cover all forms of income and expenditures. The 1994 survey was carried out prior to the crisis, so that the impact of this exogenous shock can be captured by comparing the 1994 and 1996 surveys.

The authors wish to express their gratitude for the valuable observations of Marco Stampini, Gabriel Demombynes, Daniel Hernández, Oscar Altimir, and an anonymous referee. We also wish to thank Emmanuel Skoufias for helping to construct the consumption aggregates and Susan Parker for the information provided. We also wish to pay tribute to José Gómez de León (1946-2000), who made some observations on an earlier version of this study and with whom we had the honour of working on the PROGRESA programme.

II

Economic reform and crisis

During the presidency of Carlos Salinas de Gortari (1988-1994), Mexico embarked upon a programme of structural economic reforms. These reforms were a response to the series of economic crises that had hit the Mexican economy since 1976, as well as to the import substitution development strategy that had been followed in Mexico in previous decades. The government signed the General Agreement on Tariffs and Trade (GATT); entered into the North American Free Trade Agreement (NAFTA) with Canada and the United States; privatized most State enterprises; initiated changes in the system of land ownership in the ejido (land reform) sector through the reform of Article 27 of the Constitution, affecting over half of Mexican territory; and modified the role of the State in credit, marketing, and other support services to agriculture.

An overvalued exchange rate and reliance on volatile short-term foreign investment led to a severe foreign exchange crisis during the first year of the Administration of President Ernesto Zedillo (1994-2000). The crisis resulted in a heavy devaluation

(120% between December 1994 and March 1995), high levels of inflation and skyrocketing real interest rates, and macroeconomic instability through 1996. Real GDP dropped over 6% in 1995 (8.6% in per capita terms), as the economy entered a severe recession. By the next year, the economy had bounced back with 5% growth (almost 3% in per capita terms). Despite the rebounding economy, however, average daily real wages dropped 24% between 1994 and 1996 (after having risen 21% between 1992 and 1994), and remained essentially the same in 1997 (Banco de México, 1999; INEGI, 1999).

The crisis had a more severe effect on wage income than non-wage income, which resulted in urban areas being harder hit by the ensuing fall in consumption. While monthly per capita consumption fell in rural areas by 4%, it fell by a stunning 27% in urban areas between 1994 and 1996. The concomitant increases in extreme and moderate poverty rates were more than three times higher in urban areas than rural areas. We discuss these changes in more detail below.

TABLE 1

Mexico: Poverty incidence, by relative poverty line, 1992, 1994 and 1996

	National			Urban			Rural		
	1992	1994	1996	1992	1994	1996	1992	1994	1996
<i>Monthly per capita consumption (1994 pesos)</i>	650	709	535	772	843	617	265	278	266
<i>Percentage of households in poverty</i>									
Overall poor	28	25	31	29	25	36	31	25	28
Extremely poor	12	10	13	12	10	16	15	10	12
Moderately poor	16	15	18	16	15	20	16	15	16

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

TABLE 2

Mexico: Percentage change in incidence of poverty, by relative poverty line, 1992, 1994 and 1996

	National		Urban		Rural	
	1992-94	1994-96	1992-94	1994-96	1992-94	1994-96
<i>Monthly per capita consumption (1994 pesos)</i>	9	-25	9	-27	5	-4
<i>Percentage of households in poverty</i>						
<i>Percentage of households in poverty</i>						
Overall poor	-11	23	-13	43	-20	13
Extremely poor	-18	27	-18	61	-35	21
Moderately poor	-5	21	-9	31	-5	8

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

The government found it difficult to protect those affected by the crisis, due to fiscal constraints. Between 1994 and 1995, government social spending dropped 12% in real terms (Lustig and Székely, 1998), though some emergency safety net programmes, such as temporary work programmes, were enacted. Instead, the government tightened monetary and fiscal policies and continued the structural adjustment of the economy.

1. Long-term trends of social indicators

Mexico has made tremendous progress over the last few decades in terms of improving the wealth and living standards of its population. Since 1950, real per capita GDP has almost doubled, the proportion of illiterate adults has fallen from 45% to 11%, and the proportion of adults completing primary school has risen from 10% to 70%. Infant mortality has fallen from 178 out of 1000 live births in 1930 to 30.5 in 1995, and over the same period child mortality has fallen from 156 per 1000 to 4.4 per thousand. By 1997, over 85% of the population had access to potable water (CONAPO, 1997).

The overall improvement in social and demographic indicators masks significant regional variations, however. Men residing in Oaxaca, for example, on average live 4.7 years less than in Nuevo León (CONAPO, 1997). Similarly, the rates of infant mortality in Oaxaca, Chiapas and Guerrero are more than double that of Mexico City, Nuevo León and Baja California. Confounding the national trend, the rate of child mortality in Guerrero has actually increased from 36.7 per thousand in 1992 to 63.8 per thousand

in 1997. Similar large differences in rates are found when comparing urban and rural areas and when taking into account the age or educational status of the mother (Programa Nacional de Acción a favor de la Infancia, 1998).

While overall adult illiteracy stood at 11% in 1997, the figure varied from less than 4% in Mexico City and Nuevo León to over 20% in Chiapas, Guerrero, and Oaxaca. The proportion of residents with access to potable water in that year ranged from 99% in Sonora to less than 70% in Veracruz, Guerrero, Tabasco, Chiapas and Oaxaca. Similarly, while 99% of residents of Colima had access to sewerage services, less than 50% had such access in Yucatán, Guerrero and Oaxaca (Programa Nacional de Acción a favor de la Infancia, 1998).

Poverty rates, not surprisingly, have followed similar trends. Lustig and Székely (1998) reviewed estimates of poverty rates made by a collection of researchers for the 1960s and 1970s, and while most disagreed on the levels of poverty, all found that poverty rates dropped over this period. Hernández Laos (1990) found that extreme poverty fell from 70% in 1963 to 34% in 1977, while Székely (1998) found a drop from 30% to 18% over the same period.

According to Lustig and Székely (1998), both extreme and moderate poverty, as well as inequality, increased between 1984 and 1989. Little change in national poverty and inequality indicators was found between 1989 and 1994. Again, however, these national figures mask regional variations, as the southern region showed a large increase in the number of poor. As shown in their study and in our data below, poverty is particularly concentrated in the southern region of Mexico.

III

The changing characteristics of the poor, 1992 to 1996

Our hypothesis is that the nature of the 1994-1995 crisis led to a change in the characteristics of households living in poverty, as determined by a consumption-based welfare measure. Given the sharp impact of the crisis on interest rates and real wages, we would expect middle and working class households to have

the sharpest drops in consumption levels. The ranks of the poor would thus be enlarged through the addition of households with relatively higher levels of education, an older demographic structure, and other indicators of greater long-term well-being. We find that while on average the characteristics of the poor evolve

as hypothesized, at the margin these same characteristics, such as household education levels, play an even greater role in reducing the probability of a family falling into poverty.

1. The increase in poverty

Using consumption as the basic welfare measure will almost invariably lead to the conclusion that the proportion of households living in poverty in Mexico increased between 1994 and 1996, given the drop in per capita consumption observed over this period. Wide divergences exist, however, among government and international agencies as to the appropriate poverty line, consequently leading to widely varying estimates as to the number of poor in Mexico.¹ Since our objective is to analyze changes in consumption and poverty between 1992 and 1996, and not to enter into the debate as to the precise number of poor in Mexico, we have chosen as poverty lines, for the purposes of this study, the consumption level corresponding to the 10th percentile in 1994 as the extreme poverty line, and the consumption level corresponding to the 25th percentile in 1994 as the moderate poverty line.

Using constant 1994 prices, we can compare changes in the index of the number of poor across time, and these are reported in tables 1 and 2. Under our definition, 1994 (prior to the shock) appears to have been a positive year in terms of poverty reduction. In both urban and rural areas, the average monthly per capita level of consumption increased between 1992 and 1994, while the proportion of households under the poverty line fell. These gains, however, were more than wiped out between 1994 and 1996, particularly in urban areas, as we mentioned earlier. The proportion of urban households in extreme poverty increased over 60% and the proportion in moderate poverty increased 30%.

2. Poverty profiles

Table 3 shows the mean values for a variety of household characteristics by year, location, and poverty status. Here we find evidence for our hypothesis that the crisis hit relatively better-off families, resulting in a change in the overall characteristics of poor households. Thus, we find an improvement in the characteristics of extremely and moderately poor households, particularly from 1994 to 1996. The urban poor are increasingly better educated, have higher levels of ownership of consumer durables such as stereos, refrigerators and VCRs, have fewer small children, and there is a lower proportion of households with dirt floors. Likewise, in 1996 the rural poor show greater ownership of consumer durables, a lower proportion of households with dirt floors, and an improvement in levels of education among family members.

Probit equations were estimated to determine the probability of a household being poor (combining extreme and moderate poverty) for all three years, by urban and rural areas. The results are presented in tables 4 and 5. We find that while the average effects reflect the changing overall characteristics of the poor, at the margin in 1996 higher levels of education, for example, had an even stronger effect on reducing the probability of living in poverty. Similarly, while poor households, particularly those in urban areas, on average have increasingly fewer children over time, additional children and adolescents significantly increased the probability of living in poverty in 1996.

The role played by labour activities remained relatively constant: in both urban and rural areas non-agricultural wage labour was associated with a lower probability of living in poverty, while the opposite was true for agricultural wage labour. The sign for self-employment activities switched between years, however: for urban households, in 1992 and 1996 self-employment was associated with a high probability of living in poverty, while the reverse was true for 1994. Overall, the results for 1996 show that younger families with greater numbers of children and adolescents, with lower levels of education among both household heads and non-heads, and living in the Pacific South (and for urban households in the Gulf region as well) were much more likely to fall into poverty.

¹ While estimates of the incidence of poverty vary, in general the trends over time are similar: falling poverty rates until 1994, with a spike upward in 1996 due to the crisis, followed by a gradual decline. See, for example, ECLAC (2002).

TABLE 3

Mexico: Characteristics of poor households in urban and rural areas, 1992, 1994 and 1996

	Extremely poor			Moderately poor			Non poor		
	1992	1994	1996	1992	1994	1996	1992	1994	1996
<i>Urban areas</i>									
Number of members without primary education	1.14	1.21	0.95	0.71	0.86	0.57	0.32	0.32	0.24
Number of members with primary education	0.81	0.71	0.83	0.75	0.84	0.61	0.46	0.43	0.35
Number of members with secondary or technical education	0.55	0.45	0.68	0.73	0.75	0.90	0.85	0.90	0.88
Number of members with higher education	0.03	0.02	0.03	0.05	0.04	0.09	0.24	0.25	0.30
Number of family members aged 0 to 4	0.95	1.05	0.94	0.65	0.80	0.58	0.39	0.39	0.35
Share of households with stereo	0.23	0.14	0.20	0.27	0.21	0.33	0.57	0.52	0.51
Share of households with VCR	0.09	0.10	0.11	0.20	0.22	0.25	0.50	0.51	0.50
Share of households with refrigerator	0.28	0.32	0.42	0.56	0.57	0.68	0.85	0.85	0.87
Share of households with dirt floor	0.28	0.26	0.21	0.13	0.13	0.07	0.03	0.03	0.02
Number of observations	704	722	1 404	950	1 081	1 721	4 116	5 405	5 610
<i>Rural areas</i>									
Number of members without primary education	1.65	1.62	1.70	1.45	1.44	1.36	0.98	0.96	0.80
Number of members with primary education	0.39	0.59	0.67	0.56	0.60	0.72	0.59	0.57	0.57
Number of members with secondary or technical education	0.08	0.13	0.16	0.20	0.17	0.27	0.38	0.37	0.47
Number of members with higher education	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
Number of family members aged 0 to 4	1.38	1.36	1.47	0.98	0.95	0.99	0.59	0.56	0.53
Share of households with stereo	0.01	0.02	0.04	0.06	0.05	0.12	0.15	0.15	0.17
Share of households with VCR	0.00	0.02	0.01	0.02	0.02	0.04	0.10	0.11	0.13
Share of households with refrigerator	0.02	0.04	0.05	0.11	0.10	0.17	0.34	0.36	0.42
Share of households with dirt floor	0.76	0.75	0.69	0.66	0.53	0.48	0.34	0.28	0.25
Number of observations	605	482	539	620	721	723	2 712	3 604	3 191

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

TABLE 4

Mexico: Probit estimate of probability of living in poverty (extreme and moderate combined), urban households, 1992, 1994 and 1996^a

	1992		1994		1996	
	coeff	P> z	coeff	P> z	coeff	P> z
Age of head in years	0.001	0.40	-0.001	0.43	-0.002	0.02**
Female head of household	0.001	0.98	-0.026	0.11	-0.011	0.61
Ln (household size)	0.296	0.00***	0.137	0.00***	0.181	0.00***
Head has some primary education	-0.089	0.00***	-0.078	0.00***	-0.119	0.00***
Head has complete primary education	0.139	0.00***	-0.124	0.00***	-0.227	0.00***
Head has some secondary education	-0.182	0.00***	-0.171	0.00***	-0.288	0.00***
Head has some vocational or technical education	0.209	0.00***	-0.183	0.00***	-0.334	0.00***
Head has some higher education	-0.265	0.00***	-0.234	0.00***	-0.407	0.00***
No. of members without primary education	-0.011	0.48	0.056	0.00***	0.080	0.00***
No. of members with complete primary education	0.041	0.01***	0.008	0.51	0.022	0.18
No. of members with secondary or technical education	-0.088	0.00***	-0.053	0.00***	-0.062	0.00***
No. of members with some higher education	-0.152	0.00***	-0.114	0.00***	-0.172	0.00***
Dependency ratio of households ^b	0.353	0.00***	0.064	0.13	0.215	0.00***
No. of household members aged 0-4	0.043	0.00***	0.075	0.00***	0.121	0.00***
No. of household members aged 5-10	0.010	0.38	0.058	0.00***	0.087	0.00***
No. of male household members aged 11-14	0.011	0.47	0.044	0.00***	0.089	0.00***
No. of female household members aged 11-14	-0.008	0.58	0.027	0.03**	0.105	0.00***
No. of male household members aged 15-19	0.067	0.00***	0.030	0.02**	0.096	0.00***
No. of female household members aged 15-19	0.060	0.00***	0.053	0.00***	0.075	0.00***
No. of male household members aged 20-34	0.047	0.00***	0.020	0.05**	0.058	0.00***
No. of female household members aged 20-34	0.037	0.00***	0.003	0.75	0.031	0.02**
No. of male household members aged 55 or more	0.029	0.18	-0.007	0.66	0.014	0.53
No. of female household members aged 55 or more	0.039	0.04**	-0.016	0.26	0.029	0.11
No. of non-agricultural wage earners	-0.007	0.54	-0.027	0.01***	-0.032	0.02**
No. of agricultural wage earners	0.064	0.01***	0.080	0.00***	0.062	0.03**
No. of self-employed	0.051	0.00***	-0.031	0.01***	0.029	0.07*
No. of own farm workers	0.019	0.33	-0.010	0.45	-0.058	0.00***
Own house	-0.076	0.00***	-0.053	0.00***	-0.054	0.01***
Rented house	-0.134	0.00***	-0.082	0.00***	-0.140	0.00***
Head of family works in agricultural sector	0.129	0.00***	0.063	0.02**	0.138	0.00***
Head of family works in manufacturing	0.051	0.05**	-0.026	0.18	0.105	0.00***
Head of family works in transport/utilities/commerce	0.033	0.14	-0.010	0.56	0.093	0.00***
Head of family works in government or defence sector	0.032	0.28	-0.038	0.08*	0.032	0.27
Head works in services sector	0.028	0.27	-0.022	0.23	0.109	0.00***
North	-0.111	0.00***	-0.051	0.02**	-0.064	0.01***
Pacific North	-0.155	0.00***	-0.110	0.00***	-0.162	0.00***
Central	-0.059	0.01***	-0.043	0.04**	-0.049	0.03**
Gulf	-0.101	0.00***	-0.014	0.53	0.017	0.52
Urban metropolitan area	-0.191	0.00***	-0.142	0.00***	-0.148	0.00***
Number of observations		5 723		7 145		8 678

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

^a Coefficients are marginal probabilities derived from Probit coefficients. "No education" is the excluded category for head's education.

*** significant at 1%.

** significant at 5%.

* significant at 10%.

^b Dependency rate of households corresponds to the ratio of the number of employed persons in the household to the total number of persons in the household.

TABLE 5

Mexico: Probit estimate of probability of living in poverty (extreme and moderate combined), rural households, 1992, 1994 and 1996^a

	1992		1994		1996	
	coeff	P> z	coeff	P> z	coeff	P> z
Age of head in years	0.000	0.90	-0.001	0.19	-0.002	0.03**
Female head of household	0.018	0.59	0.034	0.17	0.005	0.85
Ln (household size)	0.201	0.00***	0.207	0.00**	0.111	0.02**
Head has some primary education	-0.094	0.00***	-0.042	0.00***	-0.031	0.06
Head has complete primary education	-0.131	0.00***	-0.084	0.00***	-0.099	0.00***
Head has some secondary or some higher education	-0.178	0.00***	-0.121	0.00***	-0.146	0.00***
No. of members without primary education	0.001	0.94	0.14	0.25	0.037	0.02**
No. of members with complete primary education	-0.068	0.00**	-0.023	0.07*	-0.027	0.10
No. of members with secondary or technical education	-0.081	0.00***	-0.068	0.00***	-0.080	0.00***
No. of members with some higher education	-0.189	0.03	-0.170	0.02	-0.339	0.01***
Dependency ratio of households ^b	0.243	0.00***	0.039	0.46	0.209	0.00***
No. of household members aged 0-4	0.042	0.00***	0.038	0.00***	0.085	0.00***
No. of household members aged 5-10	0.031	0.01***	0.021	0.01***	0.057	0.00***
No. of male household members aged 11-14	-0.014	0.35	0.016	0.15	0.030	0.04**
No. of female household members aged 11-14	0.023	0.13	0.013	0.25	0.030	0.04**
No. of male household members aged 15-19	0.014	0.47	0.009	0.54	0.044	0.02**
No. of female household members aged 15-19	0.017	0.38	-0.020	0.18	0.031	0.08*
No. of male household members aged 20-34	0.009	0.56	0.018	0.12	0.028	0.05**
No. of female household members aged 20-34	0.002	0.92	-0.010	0.38	0.010	0.51
No. of male household members aged 55 or more	-0.017	0.47	-0.007	0.66	0.005	0.83
No. of female household members aged 55 or more	0.027	0.21	0.010	0.51	0.004	0.84
No. of non-agricultural wage earners	-0.009	0.53	-0.062	0.00***	-0.044	0.00***
No. of agricultural wage earners	0.028	0.02**	0.008	0.51	0.027	0.04**
No. of self-employed	0.071	0.00***	-0.002	0.89	0.006	0.69
No. of own farm workers	0.028	0.03**	-0.003	0.79	0.003	0.79
Own house	0.011	0.63	0.034	0.04	0.066	0.00***
Rented house	-0.076	0.30	-0.079	0.18	-0.037	0.56
Head of family works in agricultural sector	0.070	0.02**	0.002	0.92	0.019	0.48
Head of family works in manufacturing	0.029	0.50	-0.001	0.97	-0.012	0.74
Head of family works in transport/utilities/commerce	-0.041	0.22	-0.071	0.00***	-0.031	0.31
Head of family works in government or defence sector	-0.037	0.50	-0.072	0.05**	-0.069	0.11
Head works in services sector	-0.035	0.43	-0.074	0.01***	-0.007	0.86
North	-0.063	0.00***	-0.079	0.00***	-0.109	0.00***
Pacific North	-0.121	0.00***	-0.083	0.00***	-0.123	0.00***
Central	-0.061	0.00***	-0.041	0.01***	-0.050	0.01***
Gulf	-0.074	0.00***	-0.008	0.66	-0.035	0.07*
Number of observations		3 927		4 801		4 438

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

^a Coefficients are marginal probabilities derived from Probit coefficients. "No education" is the excluded category for head's education.

*** significant at 1%.

** significant at 5%.

* significant at 10%.

^b Dependency rate of households corresponds to the ratio of the number of employed persons in the household to the total number of persons in the household.

IV

Behavioral responses to the crisis

In order to understand how households adjusted during the 1995 crisis, we explored whether significant changes in food and general consumption patterns occurred during the period studied. We also analyzed school enrolment rates to see if households systematically removed children from school to help with short-term income earning activities.

1. Consumption patterns

Consumption patterns were explored in four different ways, each exploiting the details of the ENIGH consumption questionnaire. We first analyzed changes in expenditure shares in major consumption groups to see whether there was significant consumption switching among expenditure groups in response to the overall decline in welfare in 1995. Next we calculated the income effects for budget shares, using Engel curve regression equations. We then repeated these two exercises considering only food budget shares.

The Engel curve regression equations are based on the Working-Leser functional form where the budget share is regressed against log total per capita expenditure, log of household size, the number of people in each of 12 sex-specific age groups, and the sex, schooling and age of the household head:²

$$w_i = a + b_1 \ln(x/n) + b_2 \ln(n) + b_3 D + b_4 H + u_i \quad [1]$$

where w_i is the i th budget share, x is total household expenditure, n is household size, D is a vector of 12 demographic variables, H is a vector of household head characteristics, and a and b_i are parameters to be estimated. In this form, positive values of b indicate luxury goods, and negative values necessities.

We begin our discussion of consumption patterns with the proportion of the overall consumption bundle allocated to 10 different groups, shown in percentage

terms for the three survey years in table 6, which also shows the budget shares for the bottom quintile of the per capita expenditure distribution for each year. The same pattern of consumption switching was observed for urban and rural areas between 1994 and 1996. The food share rose by roughly five percentage points in the year after the crisis, while the shares devoted to housing, alcohol and domestic goods (furniture, appliances, etc.) fell. There was also a small decline in the budget shares of clothing in both urban and rural areas. A worrying trend is the decline in the share of education between 1994 and 1996. In rural areas the share of the budget devoted to educational expenses was over 50% less in 1996, and in urban areas the drop was approximately 25%.

Among the poorest quintile, as might be expected, the overall share devoted to food is higher, and the changes in the shares between 1994 and 1996 mirror those found in the full sample. The food share rose by seven percentage points in rural areas (five in urban), with declines in the alcohol, housing, and domestic budget shares. The worrying decline in allocations to education is especially large in this sub-sample, with drops equivalent to 70% (rural) and 50% (urban) relative to the 1994 levels.

Table 7 shows the coefficient of log per capita expenditure calculated from equation [1]. Both the rural and urban estimates of income effects show that food and housing are unambiguously necessities, while education, health and hygiene, transportation, domestic items, and transfers out are unambiguously luxuries. The coefficient for food rose significantly (in absolute value) in 1996, as expected, while the coefficients for transportation, clothing, and health also rose in 1996, indicating that they became more of a luxury good. Housing became more 'luxurious' in 1996 in both urban and rural areas, while in rural areas the jump between 1994 and 1996 for transportation and communication and for clothing was especially large.

² See Deaton and Muellbauer (1980) for a discussion of this functional form.

TABLE 6

Mexico: Mean household budget shares of various expenditure categories, rural and urban areas
(Percentages)

	Total population			Bottom quintile		
	1992	1994	1996	1992	1994	1996
<i>Rural areas</i>						
Food	46	42	47	51	47	54
Alcohol and tobacco	0	3	0	0	1	0
Housing	17	23	22	18	27	25
Transport and communication	7	7	7	3	4	3
Health and personal hygiene	6	7	8	4	5	5
Clothing and footwear	8	5	5	10	5	4
Education	2	3	1	2	3	1
Domestic items	9	8	7	8	7	6
Transfers out	1	1	1	0	0	0
Other	5	1	2	4	0	2
Number of observations	3 911	4 797	4 442	665	823	814
<i>Urban areas</i>						
Food	35	32	36	44	42	46
Alcohol and tobacco	0	2	0	0	1	0
Housing	22	28	26	20	26	24
Transport and communication	8	9	10	6	7	8
Health and personal hygiene	6	7	8	6	7	7
Clothing and footwear	5	5	4	6	4	4
Education	5	5	4	5	5	2
Domestic items	9	7	6	8	7	6
Transfers out	2	1	1	0	0	0
Other	8	3	4	6	1	3
Number of observations	5 739	7 199	8 709	1 193	1 491	1 979

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

The income elasticity for food is lower in urban areas, as is the elasticity of transport and health and personal hygiene. However, all these elasticities increased in absolute terms between 1994 and 1996. One important difference between rural and urban areas is that the income elasticity of education is much larger (almost double) in urban areas. Hence educational expenditures are more sensitive to income in urban than in rural areas in Mexico.

Table 8 shows the mean values of food budget shares over the three time periods under study. There is less switching among food groups than between food and the other broad groups, but some basic patterns emerge. Over 40% of the food budget in rural areas is devoted to cereals and to fruits, vegetables and legumes, and in the bottom quintile these groups account for around 60% of the food budget. During the crisis, households generally responded by increasing the share allocated to cereals and dairy products and reducing expenditures on meat and fish and 'other' foods.

The same shift is observed in urban areas, although here cereals rank only fourth in importance in the food budget, while meat and fish and 'food eaten out' are the two largest food groups, accounting for over 40% of the entire food budget. Urban households in the bottom quintile have food consumption patterns more similar to those of the rural population as a whole, with over 40% of the budget dedicated to cereals and to vegetables, fruits and legumes.

Table 9 gives estimates of the income elasticities for each food group by year and region, using equation [1]. For both urban and rural areas, cereals, vegetables, and other foods were unambiguous necessities, while food eaten out was a luxury. However, meat and fish were a luxury in rural areas only, while dairy products were a necessity in urban areas. Between 1994 and 1996, income elasticities increased (in absolute terms) for cereals and vegetables (i.e., they became more of a necessity), while other foods become more of a luxury (income elasticity increased). Surprisingly, the income elasticity for food eaten out declined in 1996.

TABLE 7

Mexico: Income effects for full household budget shares^a

	1992	1994	1996
<i>Rural areas</i>			
Food	-4.07 (9.82)	-5.73 (15.87)	-6.55 (16.24)
Alcohol and tobacco	0.06 (1.09)	2.14 (10.52)	0.05 (0.92)
Housing	-3.35 (12.18)	-6.95 (22.33)	-5.43 (17.74)
Transport and communication	3.73 (17.16)	1.94 (9.66)	3.66 (17.55)
Health and personal hygiene	2.18 (10.81)	2.50 (11.54)	3.31 (15.40)
Clothing and footwear	-1.48 (7.77)	0.51 (3.61)	0.92 (6.89)
Education	0.45 (3.95)	0.69 (5.80)	0.68 (9.13)
Domestic items	1.25 (5.45)	1.76 (9.22)	0.53 (3.70)
Transfers out	0.96 (9.98)	2.11 (16.19)	1.83 (14.57)
Other	0.28 (2.23)	1.04 (11.40)	1.01 (7.65)
<i>Urban areas</i>			
Food	-8.04 (27.82)	-8.65 (37.21)	-9.26 (38.35)
Alcohol and tobacco	0.04 (1.54)	1.12 (8.05)	-0.01 (0.25)
Housing	-1.30 (5.07)	-2.99 (11.09)	-1.56 (6.75)
Transport and communication	1.16 (7.36)	0.81 (5.82)	1.19 (8.44)
Health and personal hygiene	1.12 (8.42)	1.78 (10.87)	2.41 (15.65)
Clothing and footwear	0.38 (3.60)	0.22 (2.43)	0.61 (7.78)
Education	1.30 (8.45)	1.75 (11.96)	1.94 (17.96)
Domestic items	2.09 (11.54)	1.69 (11.38)	0.65 (6.73)
Transfers out	1.89 (17.93)	1.30 (14.41)	1.36 (16.37)
Other	1.37 (8.46)	2.96 (27.26)	2.66 (23.18)

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

^a Figures correspond to coefficients for log per capita expenditure derived from Engel curve estimates using equation [1] in the text. *t*-statistics are shown in parenthesis below coefficients. Negative coefficients imply necessities, positive coefficients imply luxury items.

2. School enrolment

The ENIGH data set provides very little information on individual welfare outcomes such as health or nutrition. Information on educational attainment, however, including current school enrolment, provides an additional insight into the possible coping

strategies of Mexican households. In general, enrolment rates are high (90%) until the end of primary school, and begin to fall around age 11. We therefore focus on children 12-15 years old, analyzing enrolment patterns to see if the 1995 crisis had any significant impact on possible long-term development through declines in school enrolment rates.

TABLE 8

Mexico: Mean shares of different expenditure items in household food budget
(Percentages)

	Total population			Bottom quintile		
	1992	1994	1996	1992	1994	1996
<i>Rural areas</i>						
Cereals	24	23	24	34	31	34
Meat and fish	14	16	15	8	12	10
Dairy products	14	14	15	13	13	12
Vegetables, fruits and legumes	24	21	21	32	27	27
Food preparation	2	2	1	1	1	1
Food eaten out	11	11	12	2	2	4
Other food	11	13	12	11	14	12
Number of observations	3 911	4 797	4 442	665	823	814
<i>Urban areas</i>						
Cereals	13	13	15	21	20	23
Meat and fish	23	23	21	22	22	18
Dairy products	15	15	17	17	17	19
Vegetables, fruits and legumes	16	15	16	21	20	20
Food preparation	4	4	3	3	2	3
Food eaten out	21	21	19	8	8	8
Other food	8	9	8	9	9	9
Number of observations	5 739	7 199	8 709	1 193	1 491	1 799

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

Table 10 shows mean enrolment rates by region and sex of child, for the full sample of children as well as for children residing in households in the bottom quintile of the per capita expenditure distribution in each year. In general, urban rates are higher than rural rates, and male rates higher than female ones. The role of income seems to be stronger in urban areas, a finding that is consistent with the higher income elasticities for education expenses in urban areas referred to above. The gap between the full sample and the bottom quintile was larger in urban areas (20 percentage points for girls) than in rural ones (where the male-female difference was never larger than 10 percentage points), and this gap increased in 1996. Male enrolment rates remained stable in both urban and rural areas, although there was a small decline after the crisis. According to table 10, the group that suffered most in terms of enrolment was girls in the bottom quintile in urban areas, whose enrolment rate dropped by 14 percentage points between 1994 and 1996, and was actually lower in 1996 (46%) than at the beginning of the study period (61%).

This result is confirmed within a multivariate framework. We stacked the three years of survey data and estimated a Probit equation for the probability of being enrolled in school during the survey. Control variables used in this exercise included age and sex of

the child, education and sex of the household head, log per capita household expenditure, and survey year. We included a dummy variable equal to 1 if the child was a female from the bottom quintile in 1996. The coefficient of this variable was significant in urban areas, and when evaluated in terms of the means indicated that girls from the poorest families had enrolment rates that were seven percentage points lower than other children in the survey. In rural areas this coefficient was not significant.³

As in the case of the analysis conducted earlier for consumption patterns, we estimated Probit models for the determinants of enrolment separately for each year (and by region) in order to understand how these determinants may have changed following the economic crisis of 1995. The control variables were those mentioned above (minus the survey year dummies), although for rural areas we had to aggregate the dummy variables for educational level of the head of household due to the small cell sizes.

The Probit marginal probabilities derived from the underlying coefficient estimates are presented in table 11. We were particularly interested in the pattern of 'income effects' over time, as well as male-female differences. As was to be expected, the 'income effect'

³ Results available from the authors upon request.

TABLE 9

Mexico: Income effects for food^a

	1992	1994	1996
<i>Rural areas</i>			
Cereals	-8.29 (20.72)	-8.15 (22.32)	-8.71 (22.04)
Meat and fish	5.90 (14.37)	4.48 (11.40)	5.38 (13.71)
Dairy products	-0.32 (0.89)	-0.35 (1.15)	0.50 (1.57)
Vegetables, fruits and legumes	-6.89 (17.35)	-6.28 (17.75)	-6.42 (17.93)
Food preparation	1.05 (5.19)	0.81 (6.02)	0.50 (3.48)
Food eaten out	9.60 (17.21)	10.84 (18.89)	9.38 (15.83)
Other food	-1.06 (3.80)	-1.36 (4.51)	-0.62 (2.22)
<i>Urban areas</i>			
Cereals	-5.48 (27.51)	-5.29 (30.46)	-5.68 (31.24)
Meat and fish	-0.42 (1.21)	-0.59 (1.92)	0.34 (1.20)
Dairy products	-2.41 (10.25)	-2.57 (12.22)	-1.90 (9.22)
Vegetables, fruits and legumes	-4.20 (16.76)	-4.23 (19.83)	-3.61 (18.51)
Food preparation	0.81 (4.12)	0.66 (4.14)	0.59 (3.85)
Food eaten out	12.46 (21.95)	12.54 (23.63)	10.60 (22.43)
Other food	-0.77 (4.23)	-0.51 (2.98)	-0.35 (2.25)

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.
 a The figures are coefficients of log per capita expenditure derived from Engel curve estimates using equation [1] in the text. t-statistics are shown in parentheses below the coefficients. Negative coefficients imply necessities, positive coefficients imply luxury items.

TABLE 10

Mexico: School enrolment rates for children aged 12-15, by year and sex
(Percentages)

	1992		1994		1996	
	Male	Female	Male	Female	Male	Female
Rural areas	67	57	66	63	68	63
Bottom quintile	64	48	63	60	57	55
Urban areas	84	81	88	81	88	82
Bottom quintile	65	61	76	60	68	46

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

increased between 1994 and 1996, but the male-female difference actually declined in rural areas immediately after the shock. This is probably due to boys being pulled out of school faster than girls during the crisis. It should also be noted that the 'returns' to head's education did not unambiguously increase in 1996 as we might have expected (the coefficient increased for primary but declined for secondary education), indicating that the decline in enrolment in

1996 did not depend on the level of education of the head of the household.

The income effects in urban areas were roughly the same as in rural areas, with an increase between 1994 and 1996. However the male 'premium' was lower in urban areas, and did not change between 1994 and 1996. An extremely interesting result is the decline in the 'returns' to the educational level of the head of household between 1994 and 1996. Hence, the

drops in enrolment in the aftermath of the shock were systematically related to the head's education, but in a way opposite to what we would expect. However, the rate of dropouts *was* related to overall household well-

being (as measured by per capita expenditure), with poorer households more likely to have lower enrolment rates in 1996 compared with 1994.

TABLE 11

Mexico: Probit estimates of determinants of school enrolment of children between 12 and 15^a

	(1)	(2)	(3)
	1992	1994	1996
<i>Rural areas</i>			
Log per capita expenditure	0.074 (4.57)	0.097 (6.27)	0.114 (6.98)
Male child	0.090 (4.22)	0.082 (4.28)	0.055 (2.83)
Age 13	-0.135 (4.33)	-0.231 (7.74)	-0.149 (4.92)
Age 14	-0.282 (9.17)	-0.354 (12.06)	-0.274 (9.17)
Age 15	-0.484 (15.69)	-0.511 (17.41)	-0.470 (15.47)
Head of household is female	-0.036 (0.83)	-0.082 (2.30)	0.008 (0.21)
Head has incomplete primary education	0.055 (2.28)	0.020 (0.94)	0.034 (1.44)
Head has complete primary education	0.152 (4.51)	0.076 (2.49)	0.111 (3.85)
Head has some secondary education	0.272 (5.45)	0.183 (4.01)	0.145 (3.41)
Number of observations	2 226	2 632	2 417
<i>Urban areas</i>			
Log per capita expenditure	0.083 (7.46)	0.080 (8.23)	0.092 (9.91)
Male child	0.034 (2.61)	0.048 (4.09)	0.048 (4.49)
Age 13	-0.111 (4.44)	-0.093 (4.12)	0.068 (3.46)
Age 14	-0.163 (6.54)	-0.176 (7.75)	-0.175 (8.48)
Age 15	-0.343 (13.00)	-0.339 (13.33)	-0.272 (12.33)
Head of household is female	-0.063 (3.11)	-0.029 (1.67)	-0.022 (1.40)
Head has incomplete primary education	0.060 (3.50)	0.052 (3.45)	0.024 (1.58)
Head has complete primary education	0.119 (7.08)	0.087 (5.72)	0.065 (4.23)
Head has some secondary education	0.118 (6.60)	0.121 (7.48)	0.080 (4.84)
Head has some technical or vocational education	0.101 (4.16)	0.105 (4.72)	0.104 (5.02)
Head has some higher education	0.106 (4.14)	0.094 (4.12)	0.076 (3.43)
Number of observations	2 658	3 126	3 554

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

^a Absolute value of z-statistics is given in parentheses. Coefficients are marginal probabilities derived from Probit coefficients. "No education" is the excluded category for head's education.

V

Decomposition analysis

The sharp fall in private consumption after the crisis came just after a period of economic expansion and strong growth in consumption. Within a longer-term perspective, the crisis also occurred after almost two decades of increasing human capital indicators such as educational attainment and health status, with corresponding declines in poverty rates. On the eve of the crisis, Mexico was clearly a very different society from what it had been 15 years before, in terms of the characteristics of its people and the structure of its economy, and yet almost overnight, private consumption and poverty fell back to levels of 15 years earlier. How did the evolution of the characteristics of Mexican households affect their capacity to absorb the economic shock of 1995 and, subsequently, to recover? In this section we use decomposition techniques to try and understand the role that structural changes related to long-term development (such as changes in the economy and human capital expansion) play in times of economic crisis, and the specific characteristics of households that were associated with the decline in welfare during the crisis.

For each of our three survey years, we relate household per capita consumption (in log form) to a set of household characteristics that we divide into seven groups:

$$\log C_i = \alpha + \beta_1 * \text{MISC} + \beta_2 * \text{HE} + \beta_3 * \text{NHE} + \beta_4 * \text{DEMO} + \beta_5 * \text{EMPL} + \beta_6 * \text{HOUSE} + \beta_7 * \text{SECTOR} + u_i \quad [2]$$

where:

MISC is a set of miscellaneous variables including log of family size, and the sex and age of the household head.

HE refers to the head's education, and is measured by a set of nine dummy variables indicating different levels of attained schooling.

NHE is the educational level of persons who are not heads of household, measured by the number of household members in four different schooling levels.

DEMO⁴ is the number of people in each of 10 different sex-specific age groups, plus the depend-

ency ratio of the household.

EMPL is the number of people employed respectively in agricultural wage labour, non-agricultur-

al wage labour, self employed, and family employment.

HOUSE is captured by two dummy variables indicating whether the household owns or rents the house it lives in (other types of tenancy is the excluded category).

SECTOR is the sector of employment of the household head.

In equation [2], α and β are the parameters to be estimated and u_i is a random error term. Equation [2] is estimated for the households, separately by year and by urban and rural. Using urban and rural estimates from adjacent years, we decompose the change in consumption between the years into the proportion due to changes in the mean level of household characteristics, and the proportion due to differences in the 'returns' to these characteristics—the *beta* values—strictly according to the technique first pioneered by Ronald Oaxaca (1973 and 1998). Thus, for example, the decomposition for the period between 1992 and 1994, using 1992 as the base year, can be written as follows:

$$\Delta \text{Con} = \text{Con}_{92} - \text{Con}_{94} = (C_{92} - C_{94}) + \bar{X}_{94} * (\hat{\beta}_{92} - \hat{\beta}_{94}) + \hat{\beta}_{92} * (\bar{X}_{92} - \bar{X}_{94}) \quad [3]$$

where *Con* is (log of) per capita consumption, C_i is the constant term in the regression for time period i , \bar{X}_i is the mean characteristics of households in time period i , and $\hat{\beta}_i$ is the coefficient vector for the regression from time period i . Equation [3] states that the change in consumption between time periods 0 and 1 can be decomposed into three components. The first is the difference in the estimated constant term between the two time periods. The second is the difference in coefficients (or *betas*) between the two time periods, or the 'returns' to household characteristics. The third is the difference in characteristics of households between the two periods, or the change in endowments. Since the

⁴ The number of males and females age 36-50 is actually not included in the regressions, because these numbers are highly correlated with the number of non-head adults in the four educational groups and the number of adults in the four employment states.

values for the second period are subtracted from those for the initial period, an increase in consumption between the two periods will be reflected in a negative variation in consumption on the left hand side of equation [3]. As we shall see, this is what happened between 1992 and 1994. Likewise, a reduction in consumption will be reflected in a positive variation on the left hand side of equation [3], as occurred between 1994 and 1996.

Traditionally, this decomposition technique has been used to analyse male-female wage differentials; in that context, the portion of the wage differential that is due to differences in betas (or returns to characteristics) is a measure of the unequal treatment that men and women receive in the labour market. In the present study, we are comparing differences in consumption over time, hence differences in betas can be interpreted as differences in the environment between the two time periods, which lead to different returns to characteristics such as the education and sector of employment of the household head, for example. Furthermore, while we will refer to changes in the X variables as changes in household characteristics, it is important to note that some of these changes are endogenous in the short run, as households may split or join in response to economic crisis, or household heads may change sectors of employment. The set of variables most likely to be exogenous in the short run is that describing the education of the household head and other adult household members, and since these are a direct measure of human capital, we will pay particular attention to the contribution of these variables to changes in overall household consumption.

Within this framework, we develop a number of hypotheses and prior assumptions regarding the sources and magnitude of consumption changes between 1992 and 1994 and 1994 and 1996. First, we expect that changes in betas will explain most of the changes in consumption, because the X variables we use tend not to move drastically in the short run, and our time frame is only four years. However, because of the economic crisis, we expect that a larger proportion of the changes in consumption between 1994 and 1996 will be explained by changes in betas, compared with the 1992-1994 period.

Second, as mentioned earlier, the 1995 crisis was preceded by a lengthy period of expansion of human capital, as well as economic restructuring. If these changes in the characteristics of the Mexican population led to increases in consumption, then our decompositions should show changes in X characteristics leading to increases in consumption over time, although the magnitude of these increases will be small since our time period is only four years.

In addition to these main hypotheses, the decomposition analysis permits us to see which group of household characteristics contributed the most to the decline (or rise) in consumption during the period under study. Finally, we can use the estimated coefficients for 1996, along with the X characteristics for 1992, to simulate and quantify the role of structural changes that are part of the long-term development process, as measured by the profile of the X variables, in mitigating the adverse consequences of macroeconomic shocks.

Table 12 presents the results of the decomposition analysis for both rural and urban areas for the two adjacent time periods.⁵ In each case, consumption in the initial period is used as the base. Between 1992 and 1994 consumption increased, so the differences are negative, while between 1994 and 1996 consumption decreased, so the differences are positive. The results indicate that between 1992 and 1994, 95% of the increase in consumption was due to change in returns to household characteristics (including the constant term) while 5% were due to improvements in these characteristics. Between 1994 and 1996, however, changes in returns accounted for 106% of the decline in consumption, while improvement in X characteristics actually led to a 6% increase in consumption. The results for urban areas tell the same story. Changes in betas accounted for a larger part of the change in consumption in the latter period (1994-1996) relative to the former period, and changes in X characteristics actually led to improvements in households' ability to generate consumption, particularly between 1994 and 1996.

⁵ Results available from the authors upon request.

TABLE 12

Mexico: Consumption variation decomposition
(Percentage variation)

	1992-1994		1994-1996	
	β	X	β	X
<i>Rural areas</i>				
Other	-15.30	-1.29*	-18.78	-0.53*
Head's education	-0.78	-0.20*	4.13	-2.60*
Non-head's education	8.30	-0.89*	4.68	-1.27*
Demographic factors	-18.00	-2.44*	14.20	-0.39*
Employment	-15.90	-0.86*	8.40	-1.18*
Housing	12.04	0.07*	-1.30	0.34*
Sector	-11.38	0.21*	-3.29	-0.22*
Constant	-53.62		97.80	
Total	-94.64	-5.40	105.84	-5.85
<i>Urban areas</i>				
Other	17.31	0.00*	7.05	-1.40*
Head's education	1.83	0.34*	-1.14	-2.24*
Non-head's education	10.50	0.60*	-7.00	-0.75*
Demographic factors	-29.83	-0.57*	8.07	-0.34*
Employment	-20.36	-0.26*	9.19	0.33*
Housing	11.67	0.21*	-5.03	-0.08*
Sector	-5.28	0.01*	6.45	-0.07*
Constant	-86.02		86.96	
Total	-100.18	0.33	104.55	-4.55

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

* Joint significance at 1% level.

TABLE 13

Mexico: Decomposition of consumption variation, by region
(Percentage variation)

	North		North Pacific		Central		Gulf		Pacific South		Urban Metropolitan area	
	β	X	β	X	β	X	β	X β	X	β	X	β
<i>1992-1994</i>												
Other	17,31	0,00*	-35,07	0,44*	1,02	0,41*	30,05	-0,53*	-32,68	-10,04*	-51,44	-0,13*
Head's education	1,83	0,34*	-7,89	3,19*	0,02	0,29*	-2,01	1,03*	7,28	-3,16*	-16,58	-2,08
Non-head's education	10,50	0,60*	13,62	-1,78*	17,91	-1,22*	-17,14	-0,72*	13,74	1,43*	14,35	-0,95*
Demographic factors	-29,83	0,57*	-7,43	-1,10*	-31,48	-1,01*	-27,16	-0,94*	-11,09	-1,84*	-0,43	-0,40*
Employment	-20,36	0,26*	4,87	-0,07*	-26,43	0,20*	-26,31	1,18*	-10,52	-0,36*	-3,35	0,11
Housing	11,67	0,21*	10,49	-0,27	19,95	0,61*	29,30	1,52*	3,73	-0,15	11,71	0,01*
Sector	-5,28	0,01*	-14,71	0,63*	-0,85	0,21*	-1,25	1,95*	-10,24	-2,93*	6,34	0,01*
Constant	-86,02		-64,52		-79,61		-88,96		-43,08		-57,19	
Total	-100,18	0,33	-100,64	1,04	-99,47	-0,51	-103,48	3,49	-82,86	-17,05	-96,59	-3,43
<i>1994-1996</i>												
Other	-23,81	-0,84*	-24,08	-0,41*	-5,67	-2,12*	-22,92	-2,91*	24,76	2,89*	1,10	-3,82*
Head's education	15,58	-3,93*	9,64	-4,17*	-0,83	-2,92*	4,44	-8,18*	-5,79	0,57*	9,33	0,42*
Non-head's education	9,50	-0,40*	14,23	0,29*	-8,56	-1,29*	4,91	-0,14*	-18,37	-1,41*	-0,68	-0,34
Demographic factors	14,45	0,18*	1,93	0,32*	13,90	-0,42*	34,99	-0,62*	13,84	1,90*	-4,81	-0,97*
Employment	-1,02	-0,41*	-0,11	0,12*	11,58	0,11*	30,67	0,61*	17,52	0,20*	5,98	-0,18
Housing	2,63	-0,25*	-4,34	0,05*	-5,60	-0,53*	-5,79	-0,36*	-12,22	0,45*	-5,57	-0,13*
Sector	10,29	-0,83*	15,40	0,37*	0,19	-0,42*	7,38	-2,02*	2,01	0,14*	0,23	-0,26
Constant	78,85		90,76		102,58		59,94		78,69		99,69	
Total	106,47	-6,48	103,43	-3,43	107,59	-7,59	113,62	-13,62	96,42	3,60	105,27	-5,28

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

* Joint significance at the 1% level

TABLE 14

Mexico: Simulated percentage changes in poverty indicators, using the 1992 household characteristics^a

Indicator	Rural areas	Urban areas
Mean consumption	-14	-8
Headcount	48	25
Poverty gap	45	33
Squared poverty gap	45	36

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

^a Simulations compare changes between $\beta_{96}X_{96}$ and $\beta_{96}X_{92}$.

The precise characteristics that contribute to positive consumption changes vary across time periods and between urban and rural areas. In rural areas, household demographics accounted for the majority of the increase in consumption among X variables in the former period, while in the latter period the most important contributions came from the education of heads (2.60%) and non-heads (1.27%). In urban areas in the latter period, positive contributions to consumption came from heads' education (2.24%) and the "miscellaneous" category (1.40%), specifically household size. Of course, the majority of the change in consumption derives from changes in the returns to these characteristics. In the 1992-1994 period, large changes in the returns to type of employment and demographic composition significantly improved household consumption, and it was precisely the decline in the returns to these two characteristics that led to the significant decline in consumption during the crisis.

There is significant regional variation in levels of economic development in Mexico, and it is possible that different regions were affected differently by the 1995 crisis. To assess this hypothesis, we divided the country into six regions⁶ and repeated the decomposition analysis by region. The results are presented by time period in table 13.

In every region without exception, the portion of the change in consumption due to changes in betas was larger in the crisis period (1994-1996). Furthermore, in this same period, every region except for the Pacific South showed changes in X characteristics that served to increase consumption from 1994 to 1996, thus reducing or mitigating the negative impact of change in returns to these characteristics. These posi-

tive endowment effects were particularly large in the Gulf (13.6%) and Central regions (7.6%). In both cases, the sources of improvement came from the education of the head and the miscellaneous category (particularly household size). With regard to returns, the pattern was somewhat mixed across regions, although fluctuations in the returns to employment type, demographic composition, and 'others' were key factors in the decline in consumption after the crisis. It is interesting to note that during the crisis period, the proportion of the welfare decline due to changes in returns was lowest in the Pacific South (96.4%) and the Gulf (103.4%), indicating that the impact of the crisis on the economic environment was least in these two areas relative to the rest of the country.

What would the impact of the crisis have been if Mexico had not realized any changes in structural characteristics between 1992 and 1996? To answer this question, we applied the characteristics of households in 1992 to the returns these characteristics provided in 1996, using the estimated coefficients from the 1996 regression function (hence we calculated $\hat{\beta}_{96}\bar{X}_{92}$). The resulting mean predicted level of consumption is 14% lower in rural areas than actual consumption reported in 1996. For urban areas the corresponding decline in mean consumption is 8%. Table 14 presents these simulated changes, as well as those for a set of commonly used poverty indicators. In both regions, poverty rates would have been substantially higher in 1996 had there been no changes in the vector of X characteristics of households. The impact of the improvement in these characteristics is especially large in rural areas.⁷

Another approach to measuring the influence of structural factors associated with economic development would be to simulate the impact of the crisis had

⁶ The regions were defined as follows: North (Coahuila, Chihuahua, Durango, Nuevo León, San Luis Potosí, Tamaulipas, Zacatecas), Pacific-North (Baja California Norte and Sur, Nayarit, Sinaloa, Sonora), Central (Aguascalientes, Guanajuato, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Puebla, Queretaro, Tlaxcala), Gulf (Campeche, Quintana Roo, Tabasco, Veracruz

Yucatán), Pacific South (Colima, Guerrero, Oaxaca, Chiapas), and Metropolitan (Mexico City and Guadalajara).

⁷ A similar analysis was done using data from 1989 and 1996, with similar results. These are available from the authors upon request.

it occurred in 1992. This amounts to comparing $\hat{\beta}_{96} X_{92}$ not with actual consumption in 1996, but with actual consumption in 1992. Using this approach, mean predicted consumption is 26% lower in rural areas and 36% lower in urban areas, compared to actu-

al consumption in 1992.⁸ Using either approach, the results indicate that structural changes associated with the development process can play an important role in mitigating the adverse impact of economic crisis on household welfare.

VI

The role of public programmes

In this section we evaluate the degree to which two of Mexico's largest social programmes, PROCAMPO and PROGRESA, mitigated (or could have mitigated, in the case of PROGRESA) the adverse effects of the macroeconomic crisis in 1995. PROCAMPO is a programme providing a cash transfer to farmers who had cultivated any one of nine staple crops during the 1991-1993 agricultural seasons. The stated objective of this programme, which was established in 1994, is to compensate for the expected negative impact of NAFTA on the producers of these crops, and the programme is to be phased out after 15 years. Uniform payments are provided on a per-hectare basis and are decoupled from current land use. Payments were to remain constant in real terms for the first 10 years of the programme, then phase out over the remaining five years. In fact, however, the real value of payments fell 35% between the inception of the programme in 1994 and 1996. Only in 2001 did payments per hectare, as well as total PROCAMPO expenditures, reach the original 1994 levels in real terms. The per-hectare payment in 2002 was set at 875 Mexican pesos, or US\$ 90. PROCAMPO reaches almost three million producers each year. Of the almost 14 million hectares covered each year, approximately 79% are rainfed (Fox, 2002). The programme had a budget of US\$ 1.24 billion for fiscal year 2002, which represented 60% of the Ministry of Agriculture's total budget (PROCAMPO, 2002). Since the PROCAMPO benefits are distributed on a per-hectare basis, larger farms tend to get higher total transfers. Overall payments are regressively distributed; the 45% of producers with farms smaller than 5 hectares receive only 10% of total PROCAMPO transfers (SAGAR, 1998). Payments are progressively distributed on per-hectare basis, however, as they are uniform per hectare and are thus unrelated to yields achieved and whether households were selling basic crops before NAFTA.

PROGRESA, on the other hand, which is the Mexican government's premier poverty alleviation programme, provides cash transfers to very poor rural households provided they comply with a complex set of 'responsibilities'. These include ensuring that children are enrolled in school and maintain 85% attendance, that children and adults receive regular preventive health check-ups and vaccinations, and that mothers of beneficiary families attend a monthly health talk. In return for compliance, families receive cash payments depending on the number of children attending school and the level of schooling they have attained. For example, in 1998 children in grades 3-6 received from US\$ 7-12 depending on their level. Middle school students received US\$ 20-23 per month, with payments somewhat higher for girls relative to boys. In addition to these educational subsidies, each student received a package of school supplies twice a year, and the family received a monthly income supplement of approximately US\$ 10. Since 1997, these payments have increased in real terms by 47%. As of the end of 1998, over 1.9 million households were receiving PROGRESA benefits, requiring a total expenditure of approximately US\$ 900 million. When the Fox administration took office in 2001, PROGRESA changed its name to "Oportunidades" and expanded its operations to urban and semi-urban areas. By 2002, the PROGRESA budget had reached US\$ 1.9 billion, covering almost three million rural families and over 1.2 million urban and semi-urban families (Fox, 2002).

⁸ Once again, these results are available from the authors.

1. Direct Support Programme for Rural Areas (PROCAMPO)

The 1996 round of household income and expenditure surveys (ENIGH) collected information on the monetary value of PROCAMPO benefits received by rural households. In the rural sample, 16% of households reported receiving PROCAMPO money, and among these recipients the mean level of benefits was 402 Mexican pesos per quarter, while actual monthly per capita expenditure among this same group was 604 Mexican pesos. Did PROCAMPO play an important role in mitigating the effect of the crisis among the rural population?

To answer this question, we first estimated the relationship between PROCAMPO benefits and household consumption by including the monetary

value of PROCAMPO benefits in our consumption regression for 1996. The estimated coefficient of this variable was 0.0002, with a t-value of 7. Using these estimates, we predicted mean consumption as well as three poverty indicators (number of poor, poverty gap, and squared gap) using a relative poverty line set at the 25th percentile of consumption in 1994. We then set the value of PROCAMPO transfers to 0 and simulated the new values for these four measures of well-being. The percentage change in these indicators is reported in column (1) of table 15. Without PROCAMPO, mean consumption in 1996 would have been 1.5% lower, and all the poverty indicators would have been higher. For example, the number of poor would have been 5.1% higher, while the squared poverty gap, which gives more weight to the welfare of the poorest, would have increased by 5.7%.

TABLE 15

Mexico: Simulated impact of social programmes on rural poverty indicators, 1996
(Percentage variation)

Indicator	If PROCAMPO had not existed	If PROGRESA had existed		
		Phase 1 & 2	Phase 1- 4	All phases
Mean consumption	-1.5	0.2	0.8	1.1
Headcount	5.1	-1.1	-6.8	-8.8
Poverty gap	4.8	-3.2	-13.2	-17.1
Squared poverty gap	5.7	-3.9	-17.5	-22.5

Source: Prepared by the authors on the basis of the National Household Income and Expenditure Surveys (ENIGH) for 1992, 1994 and 1996.

2. Education, Health and Food Programme (PROGRESA)

Our analysis of the potential poverty-reducing impact of PROGRESA was more complicated, because PROGRESA only began distributing benefits at the end of 1997. In this case we ask the question “what would the impact on poverty have been had PROGRESA begun distributing benefits in 1996?”

We must go through several steps in order to answer this question. Since there is of course no information on PROGRESA benefits in the 1996 data, we first established the marginal propensity to consume out of cash income by including total per capita household income in our consumption equation for 1996. The coefficient of (log of) per capita income was 0.39, with a t-value of 46. Based on this parameter, we then increased household cash income by the amount of benefits the household would have received had PROGRESA been functioning in 1996.

We decided which households should be assigned PROGRESA benefits by using PROGRESA’s own targeting mechanism. First, each household in the rural ENIGH sample was designated as poor or non-poor, using the exact discriminant analysis model that PROGRESA uses to select beneficiary households.⁹ Next, we compared each locality in the ENIGH sample to the PROGRESA data base to see which localities were eventually incorporated into PROGRESA, and during which phase they were incorporated. Using this method we were able to identify which households in the 1996 ENIGH sample later became PROGRESA beneficiaries, and when. Based on this method, we found that 55% of rural households in the 1996 ENIGH were later incorporated into PROGRESA. Of these future beneficiaries, 15% were incorporated in the first two phases of PROGRESA, and 70% were incorporated by the fourth phase.

⁹ See Skoufias, Davis, and de la Vega, 2001, for a description of this process.

For each of these future beneficiary households, we calculated the potential transfer they would receive based on the age, sex, school enrolment status and grade attainment of their children. The monetary value of the school supply package (*útiles*) was also included in this assessment. Using these potential transfer amounts and the marginal propensity to consume out of cash income, we simulated percentage changes in welfare indicators based on varying assumptions on the extent of PROGRESA coverage in 1996. These results are shown in the last three columns of table 15.

The first assumption we simulated was that by the end of 1996, only the first two phases of PROGRESA had been completed. This is probably the most realistic assumption, given the timing of the macroeconomic shock and the complexity involved in setting up PROGRESA. In this scenario, the number of poor would have decreased by 1.1%, and the squared poverty gap would have decreased by 3.9%. If phase four of PROGRESA had been completed by the

end of 1996, the incidence of poverty would have declined by 6.8%, the poverty gap by 13%, and the squared poverty gap by 17.5%. If PROGRESA had been completely implemented, the decline in poverty indicators would have been even greater (8.8% in the case of incidence, 17% for the poverty gap, and 22.5% for the squared poverty gap).¹⁰ Although this last assumption is unrealistic for 1996, it allows juxtaposition of similar PROCAMPO/PROGRESA total budget figures, and thus a comparison of peso for peso poverty impact. It also provides us with an idea of the extent to which the current PROGRESA programme would serve as a safety net in the case of a macroeconomic crisis such as that of 1995. Note also that PROGRESA has a larger impact than PROCAMPO on the poverty gap and the severity of poverty. This is because PROGRESA is targeted towards the poorest rural families.

VII

Conclusions and policy implications

In this paper we have explored the interrelated factors of policy, structural change and household behaviour around the period of the severe economic crisis of 1995 in Mexico. The results stress the importance of both medium-term development goals and short-term social safety nets in mitigating the negative impact of a macroeconomic shock. We find first a significant and expected response on the part of poor households to a fall in income. Households increased the share of food consumption, and within food consumption, of cereals and fruits and vegetables. Differences in the composition of the food basket between urban and rural households have implications for food price policy. The rural basket is dominated by cereals and vegetables, fruits and legumes, while the urban basket is dominated by meats and fish, and food eaten out. However, the food consumption patterns of the urban poorest (bottom quintile) resemble that of rural households, but not of poor rural households.

Second, we find that the aftermath of the economic crisis led to lower enrolment rates, particularly for poor urban girls. These changes are worrying in that they represent possible long-term costs of the crisis. The fall in enrolment rates was related to house-

hold income for both urban and rural households. Higher levels of household income increased the probability of enrolment.

Third, on the eve of the 1995 peso crisis, Mexico had experienced five years of growth, accompanied by economic restructuring, increases in social indicators, and declines in poverty. The decomposition analysis presented in this paper suggests that changes in the characteristics of the economy and of households between 1992 and 1996 helped to mitigate the impact of the crisis. Simulations show that poverty would have been significantly higher during the crisis without these changes. These results imply that economic strategies focusing purely on growth, without ensuring medium-term development (such as access to education), can be very costly, especially in times of macroeconomic crisis.

Finally, the results from this study also provide some lessons on programme design and impact.

¹⁰ The actual levels of the predicted poverty gap and squared poverty gap are low in 1996, since the predictions using the ordinary least squares method over-predict smaller values of the dependent variable and under-predict larger values.

Mexico's PROGRESA programme, although designed to stimulate investment in the long-run human capital of the poorest, could play an important safety net function during a macro economic crisis. Simulations show that had PROGRESA been operating in 1996, the severity of poverty and the squared poverty gap would have been significantly lower than the levels registered in that year. This is an important result for other Latin American countries considering or imple-

menting demand- side interventions to raise the human capital of the very poorest, such as Nicaragua, Honduras, and Brazil. However, the key to success will depend on accurate targeting mechanisms that ensure that such programmes really do favour the very poorest.

(Original: English)

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The screenshot shows the ECLAC website homepage in Spanish. The browser window title is "http://www.cepal.cl/default.asp?lang=es". The address bar shows "http://www.cepal.cl/default.asp?lang=es". The page header includes the ECLAC logo and the text "Economic Commission for Latin America and the Caribbean". The main content area is titled "Headlines" and lists several news items, including "ECLAC and UNESCO analyze problems and challenges facing education in Latin America and the Caribbean" and "Third Regional Workshop on Fiscal Policy and Environment". The "Highlighted documents" section features "Preliminary Overview of the Economies of Latin America and the Caribbean" and "Social Panorama of Latin America 2004". The right sidebar contains a "News" section with "America to Be Examined" and "Third Regional Workshop on Fiscal Policy and Environment", and a "CEPAL REVIEW" section with "Experiences in social innovation in Latin America and the Caribbean".

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Periodical institutional reports

Preliminary overview of the economies of Latin America and the Caribbean 2003, LC/G.2223-P, United Nations publication, Sales No. E.03.II.G.186, ECLAC, Santiago, Chile, December 2003.

The economies of Latin America and the Caribbean as a whole grew by 1.5% in 2003. This contrasts favourably with the 0.4% reduction in GDP registered in 2002. The recovery was not strong enough to make up for the stagnation of recent years, however, and per capita GDP is still 1.5% lower than in 1997. Gross capital formation has been virtually flat this year and stands at a level 12.5% lower than five years ago. The upturn in economic activity generated a slight increase in the employment rate. Unemployment remains high at 10.7%, however, and poverty has spread to encompass almost 44% of the population of the region. The more buoyant economic performance of Latin America and the Caribbean has been associated with the international economic situation, which has brightened with the recovery in the United States and Japan and the growth of China.

The prices of commodities exported by the region rose by 15.9%, but the variation in the total export price index, which includes manufactures, was lower (2.8%). Despite a 1.5% rise in import prices, this reactivation has been sufficient to halt the 3.3% deterioration in the terms of trade experienced between 1998 and 2002. The combination of volumes and prices has made exports the most dynamic factor of demand. A record trade surplus (US\$ 41 billion) was recorded in 2003. The buoyancy of exports was fairly widespread – of the order of 5% for Central America, the Andean Community and Chile and three times as high for MERCOSUR. Mexico's non-oil exports, on the other hand, stagnated. The trade surplus contributed to an almost unprecedented result in the region's current account: a US\$ 6 billion surplus.

Capital flows did not behave negatively, as they did in 2002. Autonomous capital movements were practically neutral, with the US\$ 3.5 billion in inflows comparing favourably with the outflows of US\$ 14 billion recorded last year. In 2003, the countries of the region were able to access funds at an average cost of 9.6%, which is 300 basis points less than 12 months earlier. Nevertheless, foreign investment has been on the decline. Latin America and the Caribbean received nearly US\$ 22 billion in compensatory funds, with almost half of that sum coming from the International Monetary Fund.

This international environment provided a more favourable framework for the design of national economic policies. Fiscal and monetary instruments once again failed to produce the hoped-for countercyclical effects, however. The region's fiscal policy has been directed towards increasing the government's primary surplus, even though economic growth has been slow. The region's primary balance has risen by almost one percentage point, moving from a deficit of 0.3% of GDP to a surplus of 0.6%.

In terms of the direction of monetary policy, the countries' central banks focused on controlling inflationary pressures. To achieve this, they initially raised rates and restricted liquidity. Once inflation started to subside, they induced a decline in interest rates, taking a more active stance in an effort to reverse the cycle.

Most countries have established and consolidated more flexible exchange-rate regimes and have been phasing out restrictions on foreign-exchange operations. By the end of the first 10 months of the year, the average exchange-rate index for the region showed a slight depreciation (2.6%) compared with the end of 2002.

The design and application of various fiscal and monetary instruments made possible, among other things, a decline in inflation. In 2003, prices rose by 8.5%: four percentage points less than the year before.

Bearing in mind the external situation and domestic economic trends, the prospects for 2004 are for a continuation of the upswing that began this year. Economic activity is expected to climb to an average growth rate of 3.5% for the region, which is well above the average for the last five years. The region is estimated to have achieved a year-on-year growth rate of around 2.5% in the fourth quarter, and its more robust performance in the second half of 2003 will pave the way for the expansion of its economy in 2004.

Other publications

Traffic congestion: the problem and how to deal with it, "Cuadernos de la CEPAL" series, No.87, LC/G.2199-P, United Nations publication, Sales No. E.03.II.G.88, ECLAC, Santiago, Chile, July 2003, 187 pages.

Traffic congestion has such severe effects in both the short and long terms that multidisciplinary efforts to design appropriate policies and measures are called for to keep it under control. There are no easy solutions, but all the evidence points to the need for a package made up of both supply- and demand-side measures in order to rationalize the use of public roadways.

Keeping traffic congestion under control is one component of a long-term strategic vision of how to allow cities to develop in a way that reconciles the pressing need for mobility, growth and competitiveness with the sustainability of urban areas and the quality of their inhabitants' lives. This complex challenge demands a high level of professional skill and leadership on the part of urban planning and transport authorities, combined with ongoing efforts by all the stakeholders involved.

This book discusses the tools that can be used in tackling this crucial issue, some of which are more effective and/or more readily accepted than others. If these tools can be put to use with the active support of the local population, they may well enable the region to find solutions for this increasingly serious problem.

La ciudad inclusiva en los países en vías de desarrollo (The inclusive city in developing countries), "Cuadernos de la CEPAL" series, No. 88, LC/G.2210-P, United Nations publication, Sales No. S.03.II.G.146, ECLAC, Santiago, Chile, November 2003, 313 pages.

In order to address the challenges encountered in the preparation of urban development and housing policies in Latin America and the Caribbean, the

project “Urban management for sustainable development: instruments and strategies” (Spanish acronym: GUDS), financed by the Italian Government and carried out by the ECLAC Division of Sustainable Development and Human Settlements, promoted various programmes and initiatives for the training of professionals and technicians in the human settlements field.

Through these training activities, the project has sought to update and perfect the knowledge and skills of professionals working in the field of human habitat issues, as well as to provide some additional urban management instruments for use in the design and implementation of public urban development strategies and policies. The aim has been to prepare professionals to head or form part of teams responsible for promoting, commissioning, preparing or supervising the preparation of urban and territorial development plans and implementing urban management instruments and strategies.

In terms of the content of the project, emphasis has been placed on a form of training which embraces both instruments and strategies and their theoretical and methodological content. In order to provide Latin American and Caribbean students with theoretical support material that reflects the latest advances regarding important urban issues, it was therefore decided to translate into Spanish the book entitled “The inclusive city”, originally compiled in Italian by Marcello Balvo. This book seeks to make a much-needed systematization of the issues of the city, its management, and its key role in the processes of territorial change and growth, and thus represents a very valuable contribution to training.

The issues analysed in this book include the challenges of urban development, the efficient city, urban poverty, decentralized urban management, land ownership, historical centres, urban services, mobility, sustainable urban development, safety and security, the gender dimension, and urban vulnerability.

Mercados de tierras agrícolas en América Latina y el Caribe (Agricultural land markets in Latin America and the Caribbean), “Libros de la CEPAL” series, No. 74 (LC/G.2202-P), United Nations publication, Sales No. S.03.II.G.99, ECLAC, Santiago, Chile, July 2003, 452 pages.

This book, which forms part of a joint project by ECLAC and the German Technical Cooperation Society (GTZ), seeks to determine, through a series of theoretical essays and case studies, how far the development of land markets can facilitate the access to land of the poorest peasants and smallholders of Latin America and the Caribbean, with the dual aim of progressing towards more equitable distribution of this resource and raising agricultural production and productivity. The findings of the relevant studies, which lasted over four years (1997-2000), are in line with those of other studies, likewise sponsored by ECLAC and GTZ, on the effect that liberalizing reforms have had at various levels of the economic structure of the countries of the region, especially in the labour, financial and technological spheres.

The general conclusion of these latest studies is that the effects of market liberalization have not always been in consonance with the hopes of the promoters of such policies: liberalization of the labour market, for example, has had unsatisfactory results in terms of its failure to reduce unemployment and informal-sector employment; the free play of financial markets has resulted in still greater concentration of resources and even greater difficulties of the weakest agents in gaining access to credit, and finally, the privatization of

research and of the application and dissemination of technology has generally likewise left out these same under-privileged sectors.

Although they have not as yet reached definitive conclusions, the studies documented in this book appear to point in the same direction. Firstly, there are still many elements lacking in the region for land markets to become formally established as such, and even in the very few cases where such markets can be said to be fully operative, there are other elements whose presence prevents the market from acting as an effective mechanism for reallocating land more equitably: thus, the extreme degree of poverty affecting most peasants, together with the unequal distribution of power, knowledge and education and the many flaws in institutional, legal and juridical systems, are probably the factors most responsible for the inability displayed by land markets to fulfill the aspirations of social equity and productive efficiency.

Finally, the studies reported in this book identify the spheres where deeper research is necessary to see what other mechanisms should be established and what other measures should be taken to lay the bases for Latin American and Caribbean agriculture to operate more fairly and fruitfully. For the moment, it cannot be concluded either that land markets are the key to the improvement of the agriculture of the region or that their shortcomings are so serious that they must be ruled out in this respect. The most likely conclusion – and this is the ultimate point of the book – is that the solution lies in the direction of the formulation and implementation of complementary mechanisms whose nature, scope and status are precisely the aspects that must be determined in future studies.

Gestión urbana para el desarrollo sostenible en América Latina y el Caribe (Urban management for sustainable development in Latin America and the Caribbean), “Libros de la CEPAL” series, No. 75 (LC/G.2203-P), United Nations publication, Sales No. S.03.II.G.113, ECLAC, Santiago, Chile, October 2003, 252 pages.

The formulation and application of development policies in Latin America and the Caribbean is a process which has to take place in the space between two forces that are shaping the world of today: global forces, such as the constant and growing economic, cultural and political integration of the countries of the world, and local forces, such as the tendency towards higher degrees of self-determination and of the delegation of power and responsibilities to sub-national communities and localities. All this is taking place in a context of sharp contrasts between growth and recession, equity and inequality, exclusion and integration, and poverty and wealth.

The apparent unsustainability of the cities, with their daily state of chaos, is reflected in demands for development options for the local habitat which have to be analysed day by day in the light of the most variable and complex realities. Poverty is heterogeneous in terms of its characteristics and the severity of its incidence. Vulnerability increasingly affects ever broader social groups living in urban areas, while inequality and lack of access to the benefits of development continue to spread.

At the same time, the available goods and services and their quality and quantity are growing, communications technologies are spreading, and productivity is rising in many sectors of the economy. The mechanisms for the management of public services are being improved, and there is increasing community participation in and identification with the challenges and responsibilities of development.

This book aims to promote reflection on human settlements management and its links with sustainable development in the region, its significance, and its projection or vision in terms of programmes. It seeks to contribute to the design of institutional, methodological and financial instruments that could substantially improve management of the habitat at the national and sub-national level in three subject areas: measures to deal with urban poverty, the management of public services, and the recovery of central areas.

Chapter I, "The city and development in Latin America and the Caribbean", analyses the urban development process as a manifestation and product of economic development, identifies the city as the space for human development, and highlights the links between cities and globalization. It also highlights the role of cities as a factor in economic productivity and an instrument for the trade and financial insertion of the countries of the region in the global economy. In addition, it analyses urban sustainability as the relation between habitability and functionality and refers to the changes and transformations needed in order to improve governance as it relates to urban policies, programmes and projects.

Chapter II, "The new urban management", describes the current situation of the cities of Latin America and the Caribbean and their forms of management, in the light of two phenomena: the high rates of urbanization of the population, and the globalization process. It also analyses territorial development trends and makes some proposals for the management of cities based on changes in the present forms of urban and territorial management.

Chapter III, "Poverty and the city in Latin America and the Caribbean", makes a selective review of various aspects that must be considered in the design of policies and programmes for helping to overcome poverty; analyses the ways in which urban poverty is expressed in terms of exclusion, segregation and informality; and offers a programme-oriented view with respect to national and local policies (economic, social and environmental), as reflected in an agenda that takes account of a number of factors: land use, services, housing, public areas, and employment and income.

Chapter IV, "Public services management in Latin America and the Caribbean", makes an analysis of approaches and practices in the region as regards the provision of public services. It reviews urban management strategies and instruments connected with the provision of public services and suggests new forms of management in a context of closer public-private links. It also makes a systematic analysis that permits the comparison of different forms of management and emphasizes the value of approaching the provision of public services as a factor in greater urban equity and inclusion.

Finally, chapter V, "Recovery of central areas", examines the characteristics of central urban areas as regards their potential for undergoing processes of urban change and conservation from the standpoint of the promotion of local economic development and social inclusion and integration. It also analyses the policies and programme lines that must be taken into account when undertaking, as part of citywide projects, planning and training activities and the integral management of central areas of cities.



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