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Explanatory notes

The following symbols are used in tables in the *Review:*

… Three dots indicate that data are not available or are not separately reported.
(–) A dash indicates that the amount is nil or negligible.
  A blank space in a table means that the item in question is not applicable.
(-) A minus sign indicates a deficit or decrease, unless otherwise specified.
(.) A point is used to indicate decimals.
(/) A slash indicates a crop year or fiscal year; e.g., 2004/2005.
(-) Use of a hyphen between years (e.g., 2004-2005) indicates reference to the complete period considered, including the beginning and end years.

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

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Exchange rate regimes and macroeconomic
performance in Argentina, Brazil and Mexico

Martin Grandes and Helmut Reisen

This paper deals with the ways in which the exchange rate regimes of Argentina, Brazil and Mexico shaped the macroeconomic performance of those countries over the period 1994-2003. The purpose of the analysis is to draw lessons for Latin American and other countries on whether and how the choice of the exchange rate regime can help sustained growth. As it is impossible to isolate the growth effect of the exchange rate regime in a comparative country study, the paper emphasises those macro variables that have been identified in the theoretical and empirical literature as important channels through which the choice of exchange rate regime affects economic performance, namely, investment, trade openness, capital flows and fiscal or institutional rigidities.

Martin Grandes

Research Fellow and

Associate Professor

of Economics,

The American University of Paris

✎ martin.grandes@aup.fr

Helmut Reisen

Adviser,

Development Centre of the

Organization for Economic Cooperation

and Development (OECD)

✎ helmut.reisen@oecd.org

*"Argentina is far from
resembling Mexico"
Domingo Cavallo,
Former Finance Minister
of Argentina, March 1995*

I

Introduction

Mr. Cavallo has a point: While Mexico in early 1995 was in deep trouble, ending yet another failed Latin American episode of exchange rate based stabilization by moving to a managed float of her currency, Argentina was not doing too badly even in the face of the "tequila crisis". Seven years later, however, Mexico had been awarded investment-grade sovereign rating by all leading rating agencies, while Argentina was in deep disarray and selective default.

This paper deals with how the exchange rate regimes of two main Latin American economies, namely Argentina and Mexico, shaped their macroeconomic performance over the period 1994-2003.[1] As Brazil also constitutes a very relevant benchmark case, having moved not long ago from a quasi-fixed regime to a managed floating-cum-inflation targeting scheme, we will assess how it compares with Argentina and Mexico in terms of both regimes. Due to the impossibility of isolating the growth effect of the exchange rate regime in a comparative country study, we will emphasize those macro variables that have been identified in the theoretical and empirical literature as important channels through which the choice of exchange rate regime affects economic performance. Ultimately, we aim to draw lessons for other Latin American and developing countries on how these channels may drive sustained growth in the context of a given exchange rate regime.

Section II gives an overview of the current debate on exchange rate regimes, focusing in particular on the channels linking exchange rate regimes and economic performance. Section III briefly describes the three monetary and exchange rate regimes implemented in the three countries in 1994-2003.[2] Section IV then analyzes the empirical evidence on the transmission channels: i) investment, ii) integration of the tradeables sector into world trade, iii) the mix of capital inflows and iv) fiscal rigidities and public debt sustainability. Finally, section V presents the conclusions.

In a nutshell, we argue that 1998 can be considered as the "breakeven" year when Mexico's managed floating currency regime started to yield a higher payoff relative to Argentina's currency board in the face of successive external shocks —notably the Russian default and Brazil's currency devaluation. The net benefits reported by the recent Brazilian managed float seem more ambiguous, as there was only four years' experience of this at the time of writing this paper. This ambiguity notwithstanding, our analysis suggests that a more open and domestically integrated economy, strengthened public finances, and a dynamic non-traditional export sector, with incentives to allocate FDI mainly to tradeables, can together make the difference in building a road to solvency and sustained growth.

[1] Although 2002 and 2003 are within the sample period, we will as a rule not refer to the Argentine case over those years. In early 2002, Argentina shifted to a flexible exchange rate regime, after abandoning its previous "convertibility regime" (1991-2001), which in general terms was comparable with the fixed exchange rate regimes known as currency board regimes. Due to the shortness of the sample and Argentina's "disorderly" exit from the currency board regime, however (partial default on domestic and external obligations, deposit freeze, a real slump in the economy and political uncertainty), we feel that we do not have sufficient unbiased information to assess macroeconomic performance under the new floating regime against either the currency board (1991-2001) or the regimes adopted by Brazil and Mexico.

[2] See footnote 1 above.

II

Exchange rate regimes and macroeconomic performance

For a while, there was a doctrine —or rather a consensus— holding that either a full float or a hard peg ("dollarization" or monetary unions) was the best exchange rate policy to adopt, and this influenced much of the new literature about currency regimes. This consensus was largely driven by Mundell's "impossible trinity" theorem, in view of increasing world financial integration and full capital account liberalization in most emerging economies (EEs).

On the one hand, the hard peg advocates have argued that independent monetary policy is no longer an effective policy instrument for EEs for a variety of reasons: i) the lack of credibility; ii) the dollarization of liabilities (Calvo, 2000; Hausmann and Powell, 1999) and the "original sin" problem, i.e., the inability to borrow long-term in local currency, which induces currency and maturity mismatches (Hausmann, 2000);[3] iii) excessive *de facto* interest rate and reserves volatility, resulting in "fear of floating" (Calvo and Reinhart, 2002), or iv) the substitution of relative price adjustment by capital market financing (Dornbusch, 2001). They have also ruled out intermediate options due to their non-verifiability (Frankel, Schmukler and Serven, 2001), their loss of prestige (Guidotti, Escude and Powell, 2000) or the assumption of ineffectiveness of capital controls. Thus, importing credibility by anchoring it on a key currency such as the US dollar has been held by the hard peg advocates to be the most suitable move for EEs in order to cope with their global exposure and vulnerability to "sudden stops" of capital flows.

On the other hand, those who support exchange rate flexibility (e.g. Larraín and Velasco, 2001; Schmidt-Hebbel, 2000), have pointed to nominal wage and price rigidities, to the prevalence of real shocks in EEs, and to the moral hazards implicit in exchange rate pegs to make their case. They have sought to prove their case by citing the main shortcomings of hard peg experiences such as wider and more volatile sovereign spreads driven by comparatively growing default risk; heightened output volatility; wage and price stickiness; insufficient fiscal discipline, and non-compliance with other criteria laid down in Optimum Currency Area (OCA) theory to irrevocably peg the exchange rate. Furthermore, revived intermediate options and credibility-building approaches have also been brought back into the arena (e.g. Williamson, 2000; Bénassy-Quéré and Coeuré, 2000; Braga de Macedo, Cohen and Reisen, 2001) to emphasize that different transition paths can be adopted in EEs, without necessarily contradicting the basic tenets of the impossible trinity theorem.

In contrast with this perennial more general debate about the superiority of exchange rate regimes in defined circumstances, theory and evidence on the *channels* through which such regimes impact growth performance is relatively sparse. This may be due to the fact that the policy relevance of mainstream economics has been hampered by its rational expectations framework, where perfect-foresight models suggest that exchange rate regimes should not affect the long-run equilibrium value of real variables, including long-run resource allocation. Let us therefore direct our attention to proxy variables relevant to this comparative study, which have provided evidence of a link between the exchange rate regime and economic growth in theory and practice (figure 1).

First, the strong correlation between investment and growth resulting from the interaction of capital accumulation and technical progress is well established (e.g. Schmidt-Hebbel, Serven and Solimano, 1996). Further, the debt-cycle hypothesis warns that capital-importing countries are bound to run into costly crises unless capital inflows consistently augment investment rather than being diverted into consumption (Ffrench-Davis and Reisen, 1998). What is the evidence, then, that exchange rate regimes impact on investment versus consumption decisions?

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[3] In the 1990s, the opening of the capital account and financial liberalization, in many Latin American economies led to rapid growth of external liabilities and currency mismatches. Both trends increased the vulnerability of these economies to external shocks —whether determined by loss of investment confidence in a specific country or due to contagion. Since, in a context of high vulnerability, improving investment confidence is often sought by increasing interest rates and/or augmenting fiscal surplus, both policies have strong recessive effects on economic activity.

FIGURE 1

**Four channels between exchange rate
regime and growth**
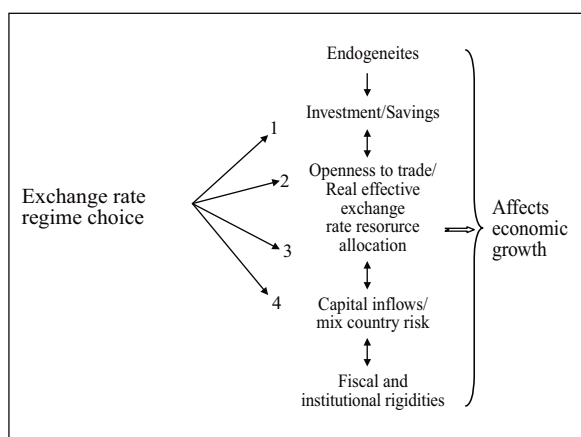
Source: Prepared by the authors.

Exchange rate pegs have often been accompanied by a boom in bank lending, which in turn has fuelled a boom in consumption spending (Sachs, Tornell and Velasco, 1996). Initially, pegs tend to lower inflation, which in turn produces a rise in real-money balances, both as a result of central bank intervention to peg the currency and of higher money demand. The unsterilized intervention on the foreign exchange market is fully intermediated into the banking system, giving rise to a twin bank credit and spending boom. Under flexible exchange rates, in contrast, disinflation results from a lower money supply and exchange rate appreciation. Intermediate exchange rate regimes are characterized by sterilized intervention which aims at reducing the domestic credit component in response to higher foreign exchange reserves. In a context of capital inflows, disinflation and ill-supervised banking systems, therefore, pegs will tilt the allocation of resources more to consumption than will either floating or intermediate regimes.

Second, the endogenous-growth literature has established a positive link between openness to international trade and economic growth, as open economies benefit from their greater ability to absorb technological advances, take advantage of larger markets and boost efficiency as a result of higher competition (Barro and Sala-i-Martin, 1995).[4] Which

kind of exchange rate regime is more likely to foster international trade orientation will probably largely depend on the extent to which flexible rates can avoid excessive volatility and pegs can prevent large misalignments of the real effective exchange rate. Rose (2000) finds evidence that currency unions —i.e., countries that share the same currency— have a positive effect on trade, while exchange rate volatility exerts a negative influence; this result implies, however, that unlike the case of Argentina, the bulk of trade is within the union, as otherwise effective exchange rates can be destabilized by third-currency fluctuations. Pegged rates, in contrast, may be more akin to persistent misalignments and hence less supportive to export growth. Nilsson and Nilsson (2000), using a gravity model for more than 100 countries, find that more flexible regimes favour export growth and, by implication, GDP growth.[5]

Third, although the link between international trade and growth has received more attention in the literature, openness to capital flows can also promote growth, under certain conditions. The structure of capital inflows which the opening process entails will determine its growth impact, as equity and foreign direct investment (FDI) inflows appear to have had a strong impact on growth in developing countries during the 1990s (Reisen and Soto, 2001).[6] Bonds, in contrast, did not produce any significant impact on growth, while foreign bank lending —both short and long term— was negatively associated with future per capita income growth in the recipient country, unless local banks were sufficiently capitalized. As reported in Ffrench-Davis and Reisen (1998), pegs in developing countries have repeatedly induced hot money inflows in view of structural interest rate differentials that were exploited by local banks and other intermediaries. Exchange rate pegs provide an incentive to allocate those inflows disregarding currency and maturity risks, as these are implicitly transferred to the central bank. Flexible exchange rates are thus more likely than pegs

[4] The empirical evidence is not so clear, however. The positive effect of trade openness on growth will ultimately depend on whether

the opening is driven by either exports or imports, on the specialization pattern of the economy which is opening up, on its main trading partners, on the efforts to complete markets, and on other related reasons (see Bouzas and Keifman, 2003; Rodrik, 2001).
[5] The authors follow a six-way classification ranging from single currency pegging to independent floating.
[6] It cannot be excluded that the result of a positive growth impact of equity flows may be based on an incomplete model and may therefore not be robust. Further, the growth impact obtained may be due to cyclical effects that a thorough correction for cycles would cause to disappear.

to produce inflows that entail growth benefits. However, an unstable supply of external funding can be endogenous to the real effective exchange rate, in that it may cause, for example, real misalignment or excess volatility of this variable, thus dampening any positive growth effect from "more benign" capital inflows.

Fourth, the degree of a country's fiscal, institutional, price and wage rigidity, as well as its specific shock exposure, will determine to an important extent the impact of the exchange rate regime on long-run economic performance (Freytag, 2002). In the presence of rigidities (not every economy displays Hong Kong's flexibility), more flexible exchange rate arrangements may foster growth because real shocks can be absorbed more easily, as monetary policy retains a degree of autonomy for an anti-cyclical stance, and costly breakdowns of the exchange rate regime in adverse conditions are less likely than under pegs. In particular, the way fiscal discipline shapes the perception on public debt sustainability may endogenously drive interest rates (sovereign spreads) and real output growth in either sense. Although hard pegs are supposed to bring about more fiscal discipline, due to the loss of inflationary finance and its immediate effect on intertemporal budget constraints, they can also act in an opposite way if they are accompanied by a twin credit and consumption boom that ends up boosting public expenditures (Sachs, Tornell and Velasco, 1996; Sun, 2003).

The empirical evidence on the growth impact of exchange rate regimes in developing countries is inconclusive so far, with a certain bias in favor of flexible regimes. Adopting a three-way classification based on *de facto* regimes, with data taken from the IMF *World Economic Outlook* over the 1960-1990 period (IMF, 1960-1990), Ghosh, Gulde and others (1996) found (weak) evidence on the link between choice of exchange rate regime and economic growth. They found that although pegged regimes have been associated with higher investment, floats have been accompanied by faster productivity growth when measured by per capita GDP growth and controlling for inflation differentials. This result, however, as the authors acknowledge to some extent, might be much biased by the inclusion of the 1960s and early 1970s, when most of the regimes were fixed and inflation was pretty low everywhere. In fact, when they exclude the 1960s the growth differential in favour of floating exchange regimes becomes as much as 1.5% higher in lower income countries. Part of the slightly higher productivity growth under floating rates is reflected in

faster growth of trade and a better allocation of resources, given some relative price rigidity (e.g., in real wages) observed in countries with pegs. One manifestation of the rigidities corroborated by Ghosh, Gulde and others (1996) is the higher volatility of GDP growth and employment, a result recently confirmed by Ffrench-Davis and Larraín (2003). A last but not least interesting result presented by Ghosh, Gulde and others (1996) refers to the output growth gains those countries obtained by switching from a peg to a more flexible arrangement. They calculate an average increase in GDP growth of 0.3 percentage points one year after the switch and more than 1 percentage point three years after it.

Challenging conventional IMF classifications based on *de jure* regimes, Levy-Yeyati and Sturzenegger (2001) regroup exchange rate policies by using a K-cluster methodology that distinguishes high from low volatility environments. This new classification groups the countries according to the actual behaviour of three main variables: i) volatility of the nominal exchange rate, (ii) volatility of the variations in the nominal exchange rate and (iii) volatility of reserves, measured as the absolute average changes in foreign-currency reserves as a proportion of the monetary base (in order to assess the monetary impact of the intervention in currency markets). Using monthly IMF statistics —but only over the 1974-1999 period, in order to exclude the Bretton Woods period, when fixed exchange rates predominated— these authors ran econometric regressions and found that: i) pegs are significantly and negatively related with per capita output growth in non-industrial countries; ii) *de jure* pegs that devalue exhibit faster growth than their counterparts that defend the exchange rate regime; iii) output volatility declines monotonically with the degree of regime flexibility, and iv) real interest rates appear to be lower under fixed exchange rates than under floats, even for those countries with intermediate regimes, and especially during the 1990s.[7]

Finally, based on the regime classification of Levy-Yeyati and Sturzenegger, the Bank of Canada conducted a study investigating the effect of the exchange rate regime on medium-term growth (five-year averages) for a sample of 25 emerging economies

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[7] However, this result only holds more strongly when the IMF classification is used. When the authors look at *de facto* pegs, they find that only some short-lasting pegged regimes display lower real interest rates than in more flexible or intermediate regimes.

over the 1973-1998 period (Bailliu, Lafrance and Perrault, 2001). The study finds evidence that more flexible exchange rate arrangements are associated with

higher growth, provided the countries in question are open to international capital flows and have well-developed financial markets.

III

Hard pegs, soft floats: the bases of the Argentine, Brazilian and Mexican exchange rate regimes

1. Argentina's "Currency Board" regime (R.I.P.)

Currency boards, once designed as a monetary arrangement for British colonies and then disused as countries gained political independence, have been back in fashion recently. Currency boards now exist in Bosnia, Bulgaria, Estonia, Hong Kong and Lithuania, but also existed in Argentina until January 2002.[8] They consist of exchange rates which are strictly fixed, not just by policy but by law. Domestic money can only be issued when it is fully backed by foreign exchange, removing monetary policy discretion from the government and the central bank.

Argentina provided one of the most-debated cases of a currency board regime. In April 1991, after a long history of macroeconomic mismanagement and two episodes of hyperinflation, the currency board —called a "convertibility regime" in that country— started to operate, with the peso pegged to the US dollar at par. The regime was based on the Convertibility Act passed in March 1991 by Congress, which granted the dollar legal tender status and was subsequently supported by comprehensive deregulation of the economy and full liberalization of the current and capital accounts of the balance of payments.

Argentina's foreign exchange regime featured some notable design elements that represent a deviation from a strict currency board. These elements were introduced to accommodate to the loss of a lender of last resort which a currency board entails and which exposes the country to financial crises with insufficient provision of liquidity; this in turn requires strong and liquid domestic banks. In Argentina, first the currency

board was integrated into the Central Bank; there were no designated currency board accounts. Second, 33% of the money-base cover could be provided in the form of dollar short-term debt of the Argentine government, rather than through international reserves. Third, the Argentine system was characterized by demanding capital requirements and a series of liquidity provisions. Banks were obliged to hold 21% of all deposits in liquid international reserves at the Central Bank or at Deutsche Bank New York. The Central Bank also had a contingent line of credit with a dozen international banks, covering 10% of deposits in the banking system.

2. Mexico: from quasi-peg to inflation-targeting

After the collapse of its pegged but adjustable exchange rate regime, late in 1994, Mexico has been floating quite freely. Nevertheless, at different stages the authorities have had to intervene in the foreign exchange market for different reasons. This has meant less exchange rate volatility on the one hand, and more reserves and interest rate volatility on the other, which is not generally observed in pure floating regimes (see Calvo and Reinhart, 2002, among others). Hence, this regime very much resembles a managed float. In all of the cases of intervention, the rule that has always been followed has consisted of complete transparency of the intervention, which has not been designed to defend a particular level of the exchange rate (Carstens and Werner, 1999). The rule has included a two-fold approach in which a put-option mechanism was used to accumulate reserves and a contingent sale was generally used when the Central Bank wanted to minimize a sudden depreciation. Additionally, the Banco de México sterilizes foreign capital inflows

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[8] See footnote 1.

through open-market interventions in order not to affect the primary money supply. Futures currency markets have also been created in order to reduce exchange rate volatility.

While Mexico adopted managed floating, it was gradually converging towards inflation targeting to anchor inflation expectations. Just after the "tequila crisis", there was a brief experience with monetary targeting, but as inflation came down and there was significant evidence of instability in the demand for money, the Central Bank started adopting annual inflation targets (since 1997/1998, according to some important officials). The main elements of the current framework include i) the attainment of the medium-term goal of reducing inflation towards international levels in 2003; ii) annual inflation targets; iii) monetary policy actions based on an assessment of inflationary pressures, and iv) a transparent system based on the publication of a quarterly inflation report. A basic difference of the Mexican approach, compared to other "targeters", concerns the policy instrument. While most inflation targeters use a short-term interest rate target (as in Brazil, for example), the Mexican Central Bank uses a special operating procedure, known as "el corto", for achieving the desired level of reserves. This system induces significant volatility in short-term nominal interest rates, a feature desired by the authorities in order to have a more stable exchange rate and, hence, a more stable inflationary environment.

3. Brazil's exchange rate regimes. From the Plan Real to the January 1999 shift to flexibility

In 1994, Brazil also adopted an exchange rate-based regime after a long period of high inflation. The Plan Real was a four-stage program, including: i) fiscal adjustment, in order to reduce demand pressure as the economy was stabilized; ii) the introduction of a super-indexation mechanism, meant to create a stable set of relative prices using the Real Value Index (URV) as a unit of account; iii) a monetary reform which replaced the cruzeiro, the old currency, with the Real –thus turning the URV into the unit of account, and iv) the administration of stability, which required the avoidance of strong disequilibria between aggregate demand and supply.

Although the Plan Real was initially intended to have a monetary anchor, the subsequent increase in the demand for money was far beyond the level initially planned, leading the government to abandon the

monetary targets.[9] By November 1994, the monetary authorities officially gave up the monetary anchor and allowed the exchange rate to revalue. Since capital and trade account liberalization had already been introduced in the early 1990s, and the reserves accumulated between 1992 and 1994 were significant, the transition from a monetary to exchange rate-based anchor was greatly facilitated by the exceptional liquidity in the international financial markets until 1997.

The Plan Real was successful in several aspects. Inflation declined dramatically in the first two months of the Plan, and stabilized at less than one-digit rates thereafter. Domestic consumption and growth were boosted due to the real-income gains and the rapid process of monetization, which together stimulated the expansion of short-term credit and increasing trade deficits. External vulnerability increased with the buildup of external debt, while domestic financial vulnerability was associated with the increase in public debt, particularly of the central government.[10]

From mid-1998, Brazil started facing a continued attack on its exchange rate regime, which led to a sustained depletion of the international reserves. This attack intensified after the re-election of Fernando Henrique Cardoso, in November 1998, and culminated in the abandonment of the semi-fixed exchange rate and the adoption of a managed floating regime in January 1999.[11] After significant over-devaluation of the Real, from mid-1999 the pressures began to subside, the investment climate became more optimistic, and economic activity showed signs of recovery in 2000. Only in early 2002 did the pressure on the Real resume; thus, the move towards a managed floating exchange rate has so far been considered by most analysts a successful move.

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[9] The government had already imposed significant reserve requirements for the banks, which implied high interest rates.

[10] This increase had to do with several factors, but two of them are of particular importance. First, the central government refinanced and consolidated the debt of the states, as part of a plan to restructure their financial systems. Second, the borrowing interest rate was maintained at very high levels.

[11] We view this regime as a managed float because frequent short-term interest rate hikes are observable (in a pure floating regime there should be no interest rate volatility), and because, as in the case of Mexico, there has been limited variability in the exchange rate (whereas the exchange rate should be the only shock absorber mechanism in a pure float). In addition, in Brazil the inflation target rule followed by the central bank implies an indirect target of the nominal exchange rate, in the light of some degree of pass-through from the latter to domestic prices.

IV

Exchange rate regime and macroeconomic performance: the channels of transmission

This section analyses the channels of transmission between the exchange rate regime and economic performance (growth) for the three Latin American countries considered in this paper (Argentina, Brazil and Mexico). We ultimately seek to explain how Mexico's managed float has built credibility through a sound and less volatile economic performance, whereas Argentina's currency board has failed to deliver the long-term benefits it was supposed to produce. Unlike Argentina, Mexico's managed float has allowed a smooth response to external shocks. As for Brazil, it seems early to conclude that the managed floating regime has delivered a better overall macroeconomic performance. Some improvement in fiscal and monetary management, a trend consolidation of FDI flows on top of other capital flows, and the avoidance of large real exchange rate misalignments after 1999 (compared to the real exchange rate fluctuations over the period of the quasi-fixed regime, i.e. 1994-1998) stand out nonetheless as positive and promising elements of this policy regime.

1.   Real GDP and investment growth

In the post-tequila crisis period (1996-2003), the Mexican growth rate was nearly four times as large as that of Argentina (3.67% against 0.86%, and 4.5% against 1.5% if we consider the sub-period up to 2001), and nearly twice as large as that of Brazil; however, GDP growth figures do not show such a disparity over 1994-2003 (our reference period): 0.98%, 2.5% and 2.76% in Argentina, Brazil and Mexico, respectively. Nor are there sizeable differences when GDP growth is measured over 1994-2001: 1.5%, 2.9% and 3%. Figure 2 shows the higher output volatility in Argentina compared to Mexico and Brazil, turning from a peak of 8.1% in 1997 to a –4.4% downturn in 2001. It is worth noting that Mexico's real output slump in 2001 is fundamentally attributable to the United States recession (just as the 2000 boom was due to the expansionary cycle in that country). So far, we might be tempted to conclude that the more flexible exchange rate regime in Brazil has not paid off, since annual growth rates remained at roughly the same levels

recorded prior to the flotation of the real. However, once we take into account the shorter sample period —in relation to Mexico's managed float—, the political uncertainties surrounding the presidential election in 2002 and the global financial turmoil all emerging economies were facing at that time (1998-2002), it seems more reasonable that Brazil was not able to increase its average growth rates.

Mexico's relatively better performance can be explained by two factors: gross domestic investment which was more dynamic and less dependent on foreign savings, and the increasing share of fast-growing exports in GDP (table 1), partly driven by the maquila industry, which accounted for between 40 and 48 % of total real exports in the period in question. Brazil, however, was not able to raise its output growth in spite of a more robust export performance in 1999-2003 compared to 1994-1998, and despite having stabilized its current account deficits.

The paradox of the Argentine situation lay in the continued boosting of exports required to lessen the dependence on external savings to finance gross domestic investment (GDI), while this dependence increased during the last years of the currency board and GDI plummeted to its lowest level since 1993 (15.6% of GDP in 2001). Figure 3 shows GDI and national savings (NS) as a proportion of GDP in the three countries during 1994-2003 and three sub-periods. The figures reveal a crude polarity: on the one hand, decreasing GDI as a proportion of GDP (back to the levels of the 1995 slump) with increasing reliance on foreign savings in Argentina; in Mexico, in contrast, we see a rising share of GDI together with lower and stabilized shares of foreign saving. Brazil displays an intermediate path, with investment and saving rates quite similar under both regimes.

Summing up, **our first finding** is that Mexico's managed float, as compared to Argentina's hard peg and both the managed float and quasi-fixed regimes applied in Brazil, has displayed: higher and less volatile investment growth rates (see table 1), a higher investment ratio, less dependency on foreign savings, and output growth more driven by external demand.

FIGURE 2
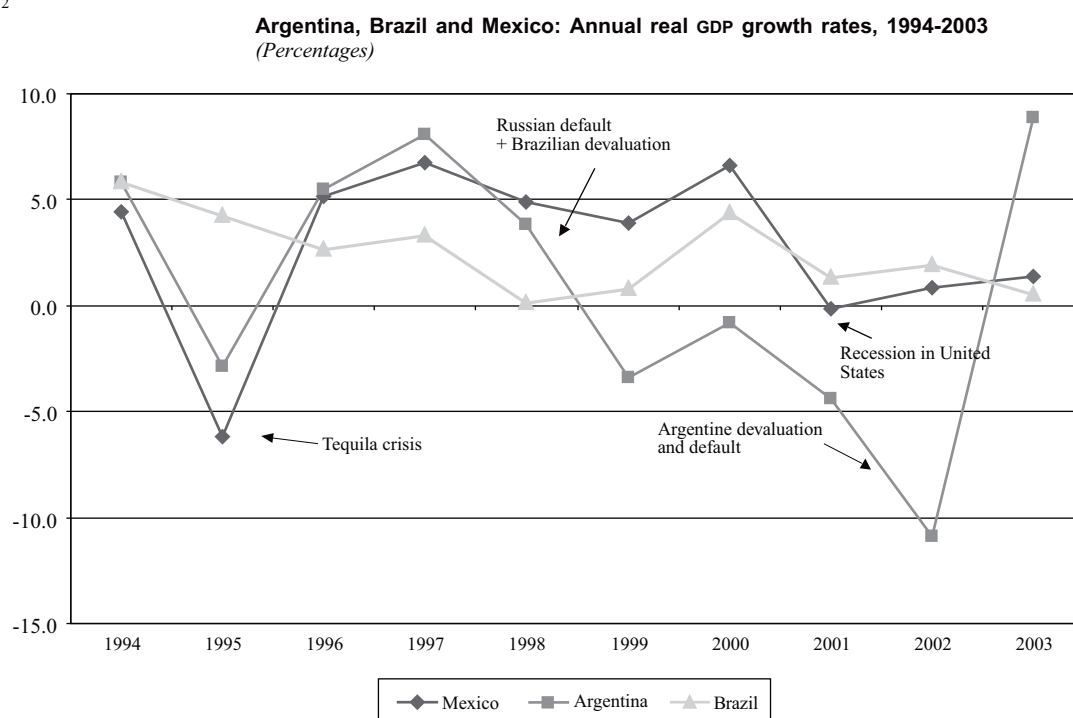
Argentina, Brazil and Mexico: Annual real GDP growth rates, 1994-2003
(Percentages)

Source: Data base of the Ministry of the Economy of Argentina [http://www.mecon.gov.ar/peconomica/basehome/infoeco.html]; Aggregate data base of the Brazilian Institute of Geography and Statistics (IBGE) [http://www.sidra.ibge.gov.br/bda/]; National Institute of Statistics, Geography and Informatics of Mexico (INEGI), "Banco de Información Económica" [http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe].

TABLE 1

**Argentina, Brazil and Mexico: Gross domestic investment
and exports at constant prices, 1994-2003**
(Percentages)

	Argentina			Mexico				Brazil		
	GDI growth	Export growth	Exports as % of GDP	GDI growth	Export growth	Maquila export growth	Exports as % of GDP	GDI growth	Export growth	Exports as % of GDP
1994	13.7	15.3	7.5	8.4	17.8	28.2	15.2	14.3	4.0	9.5
1995	−13.1	22.5	9.5	−29.0	30.2	22.9	17.2	7.3	−2.0	7.7
1996	8.9	7.6	9.7	16.4	18.2	23.7	23.9	1.2	0.6	7.0
1997	17.7	12.2	10.0	21.0	10.7	18.0	26.8	9.3	11.2	7.5
1998	6.5	10.6	10.7	10.3	12.1	20.8	27.8	−0.3	3.7	7.4
1999	−12.6	−1.3	10.9	7.7	12.4	19.5	29.7	−7.2	9.2	10.3
2000	−6.8	2.7	11.3	11.4	16.4	23.2	32.2	4.5	10.6	10.7
2001	−15.7	2.7	12.2	−5.6	−3.8	−5.4	35.2	1.1	11.2	13.2
2002	−36.4	3.1	14.1	−0.6	1.6	2.6	33.9	−4.2	7.9	15.5
2003	38.2	6.0	13.7	0.4	2.7	2.2	34.1	−5.1	9.0	16.4
1994-2003										
Mean	0.03	8.15	10.97	4.03	11.84	15.57	27.60	2.07	6.54	10.52
Std. dev.	21.15	7.13	1.98	14.09	9.83	11.40	6.99	6.82	4.69	3.44
1996-2003										
Mean	−0.03	5.46	11.58	7.61	8.80	13.08	30.45	−0.10	7.93	10.99
Std. dev.	22.90	4.51	1.62	9.06	7.77	11.39	4.03	5.42	3.82	3.70

Source: Data base of the Ministry of the Economy of Argentina [http://www.mecon.gov.ar/peconomica/basehome/infoeco.html]; Central Bank of Brazil (various years); IMF (2004); National Institute of Statistics, Geography and Informa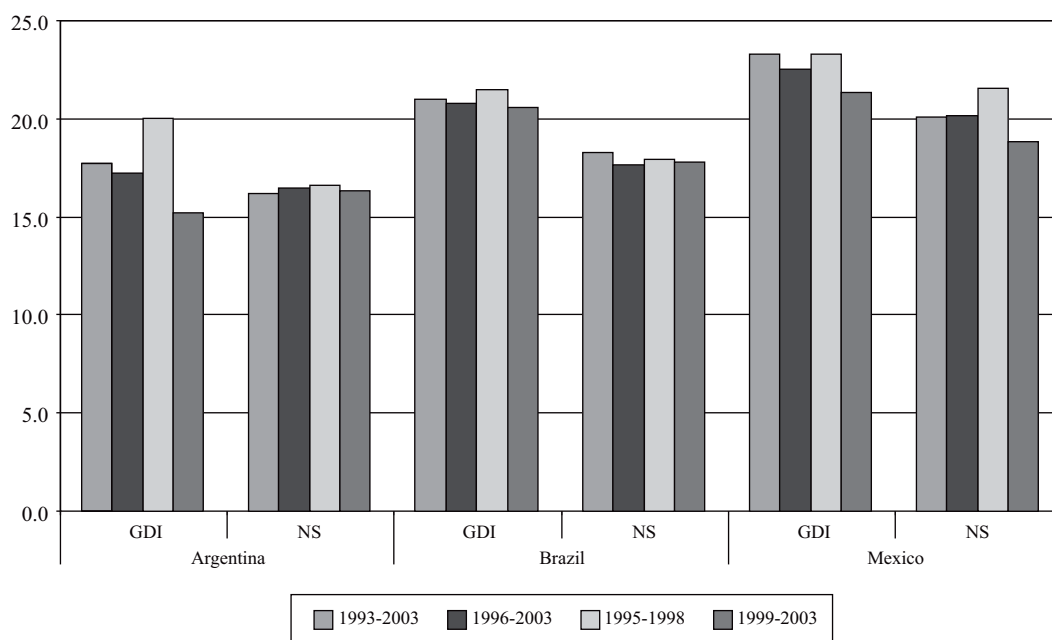tics of Mexico (INEGI), *Banco de Información Económica* [http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe]; ECLAC (1994-2004).

FIGURE 3

**Argentina, Brazil and Mexico: Gross domestic investment
and national savings,ᵃ various sub-periods**
(As a percentage of GDP)

Source: ECLAC (various years).

ᵃ   GDI = Gross domestic investment.   NS = National savings.

2.   Trade openness

Undoubtedly, the process of trade and financial liberalization undertaken by Mexico (in the mid-1980s, when it became a member of GATT), and Argentina and Brazil (in the early 1990s), together with the structural reforms carried out so far, has brought about increasing trade and FDI flows. The enlargement of domestic and sub-regional markets has been a common feature of that process, at least in its first stages. Such a boom in trade and investment was prompted by a number of factors: i) preferential agreements (NAFTA, MERCOSUR); ii) vigorous economic growth of natural partners (e.g., the United States in the case of Mexico); iii) consumption booms triggered by lower inflation and exchange rate appreciation, and iv) confident foreign investors seeking to diversify portfolios in their quest for high returns. The relative quantity, quality and breakdown of these flows have not always been similar, however.

A first distinctive feature has been the degree of openness of those economies (figure 4). In other words,

the speed with which trade flows grew with respect to current GDP marks an important difference in the degree of integration of each country into world trade. Mexico's trade (exports and imports in nominal US dollars) grew at least fourfold during the 1990s, and its imports grew at a fairly similar pace to exports. In contrast, Argentina and Brazil remained relatively closed economies. Argentina's degree of openness rose from about 15% of GDP in 1993 to nearly 25% GDP in 1997, subsequently fluctuating around 20% until 2002, when it almost doubled as a result of the devaluation of the peso —which reduces the denominator and increases the numerator— and the collapse of real GDP. As for Brazil, its degree of openness had fluctuated between 15% and 20% in 1993-1998 (the quasi-pegged regime period), and the average only rose (from about 20% to nearly 30%) after the devaluation of the Real in early 1999.[12]

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[12] A more accurate indicator of trade openness could be the share of internationally tradeable goods in the consumer price index, or net exports or imports as a percentage of aggregate supply or demand.

FIGURE 4

Argentina, Brazil and Mexico: A measure of the degree of trade openness[a]
(Percentages)
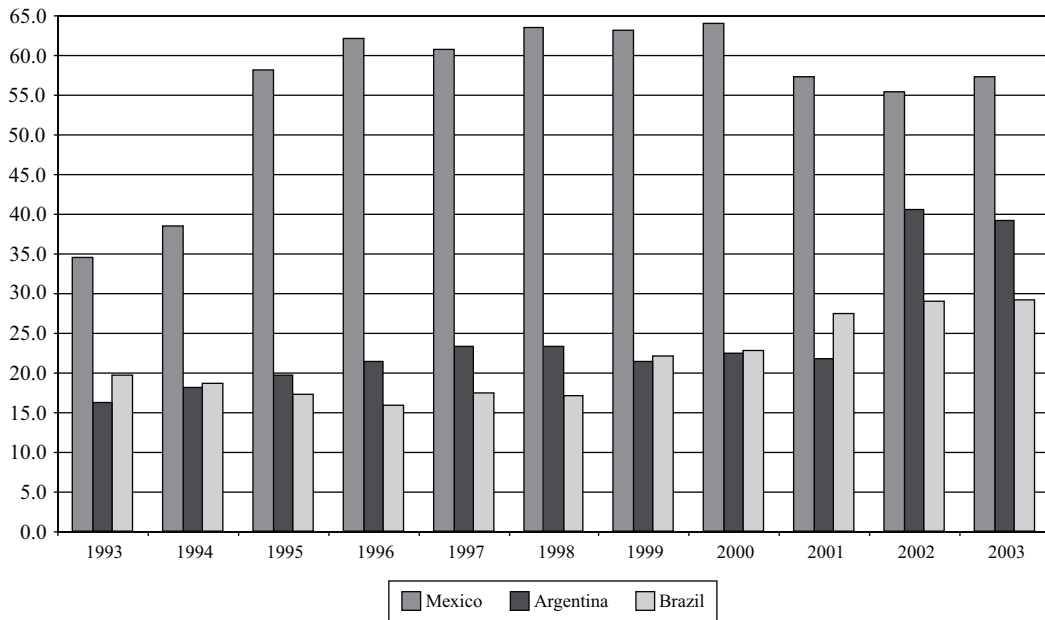
Mexico Argentina Brazil

Source: Database of the Ministry of the Economy of Argentina [http://www.mecon.gov.ar/peconomica/basehome/infoeco.html]; Central Bank of Brazil (various years); IMF (2004); economic information data bank of the National Institute of Statistics, Geography and Informatics of Mexico (INEGI) [http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe].

[a] Trade openness is measured by the coefficient $(x + m)/GDP$, where x is exports and m is imports.

While Mexico has increased its trade exposure, Argentina's trade integration has barely developed over the 1990s (see figure 4). On the export side, the outcome is very clear: Argentine exports only reached a 12.2% share of real GDP in 2001, showing that foreign markets made only a modest contribution to overall growth, whereas about a third of the real demand for Mexican goods and services is accounted for by a fairly dynamic export sector. It is worth noting that (although compared to a lower benchmark) Argentine real exports had grown faster than GDP until 1998, they never caught up with the Mexican export growth rate, as may be seen from table 1 above. As for Brazil, a marked upward trend in export growth was observed in 1999-2003, with average annual growth rates of 10%, well above those recorded in 1994-1998.

Figure 4 indeed hints at an exponential growth of Mexican trade flows (in nominal US dollars). Although the 1995 jump can be partly explained by the peso devaluation (as is the case in Brazil in 1999 and Argentina in 2002), because it reduces the denominator —GDP— proportionally, the subsequent real appreciation along with ever-increasing trade flows casts some doubt on the role of the exchange rate as the main trigger of this "big push". Rather than exchange rate elasticity or permanent terms-of-trade effects, the better performance of Mexico's trade integration may have to do with the benefits associated with NAFTA and, in particular, with the privilege of having metaphorically travelled in a first-class carriage pulled by a US engine growing at a yearly 3% until 2000.

This was not without becoming extremely US-dependent on the export side (nearly 90% of exports went to the United States market), which may partly explain the big slowdown in real growth in 2001 as the US recession deepened. However, Mexico was already considerably dependent on the United States at the beginning of the 1990s, when exports to that country accounted for around 80% of its total foreign sales.

A noteworthy pillar of the impressive Mexican trade performance is the shift in the country's specialization pattern. Oil-based exports, either manufactured (the major part) or at the extraction level

(including gas and derivatives), dropped to 8% of total exports in 2001 compared to 68% in 1985. This is not due to a negative shock to the terms of trade (as we will see below) but to a change in export composition towards non-traditional exports, making Mexico less dependent on raw materials price fluctuations.

A second important aspect related to the trade integration channel deals with price-competitiveness factors affecting the external balances and domestic resource reallocation. Under normal circumstances, a stable and competitive real effective exchange rate (REER) is key to the development of an outward-oriented tradeable sector, to the ability to reap the gains from trade dynamics, and ultimately to the achievement of sustained growth. Here, we analyze the evolution of REERs, the terms of trade and the path of unit labour cost in the three economies.

After the over-adjustment of the nominal exchange rate in the aftermath of the currency crisis, the Mexican REER gradually moved, by 2003, to an even higher level than in 1994 (before the crisis) (figure 5).

Does this move mean that an equilibrium level of appreciation has been reached? There are many qualitative and quantitative reasons for differentiation between the REER values in a recent year (2003) and an earlier moment (1994):

i)   A managed floating regime —along with an inflation-targeting rule— allows some flexibility to face external shocks; in contrast, the previous non-credible peg collapsed amid a currency and banking crisis.

ii) Lessened dependency on foreign savings in 2003 has stabilized current account deficits, so that capital flow reversals are less damaging for the real economy. Moreover, the current account is more solidly financed than it was in 1994, as FDI flows form the highest share of total capital inflows and are chiefly addressed to tradeable sectors.

FIGURE 5

**Argentina, Brazil and Mexico: Real effective exchange rates[a]
and terms of trade index, 1990-2003**
(REER: 1993=100); TT index: 1993=100)[b]
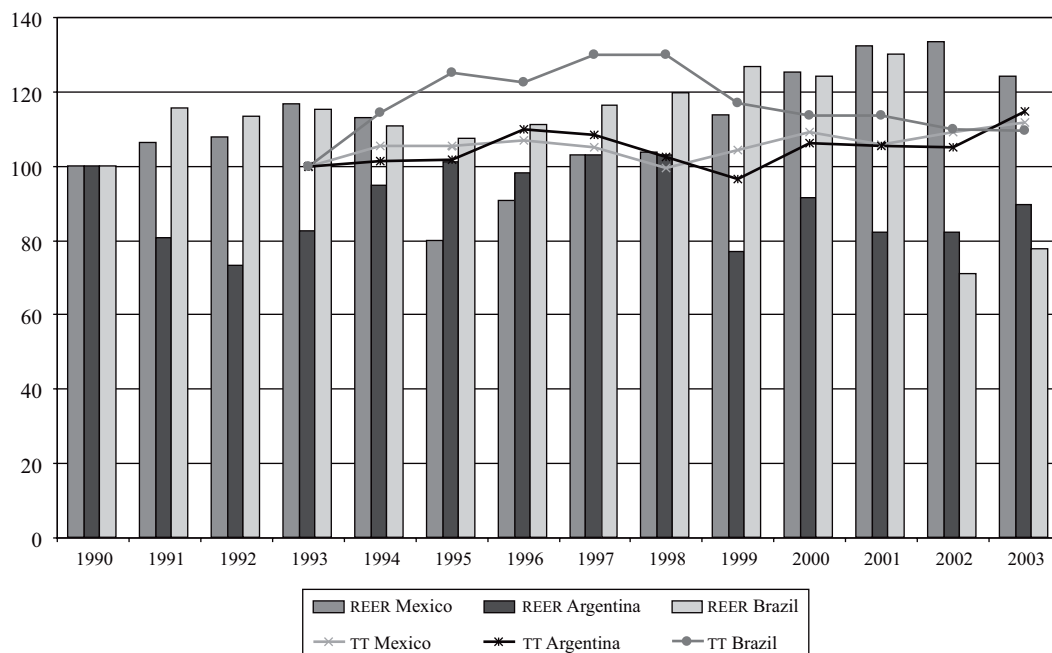
Source: JP Morgan; Database of the Ministry of the Economy of Argentina [http://www.mecon.gov.ar/peconomica/basehome/infoeco.html]; Aggregate data base of the Brazilian Institute of Geography and Statistics (IBGE) [http://www.sidra.ibge.gov.br/bda/];economic information data bank of the National Institute of Statistics, Geography and Informatics of Mexico (INEGI) [http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe].

[a] A fall in the real effective exchange rate (REER) means real effective depreciation/devaluation.
[b] TT = terms of trade.

FIGURE 6

**United States and Mexico: Manufacturing unit
labour cost, 1993-2003**
(1993=100)
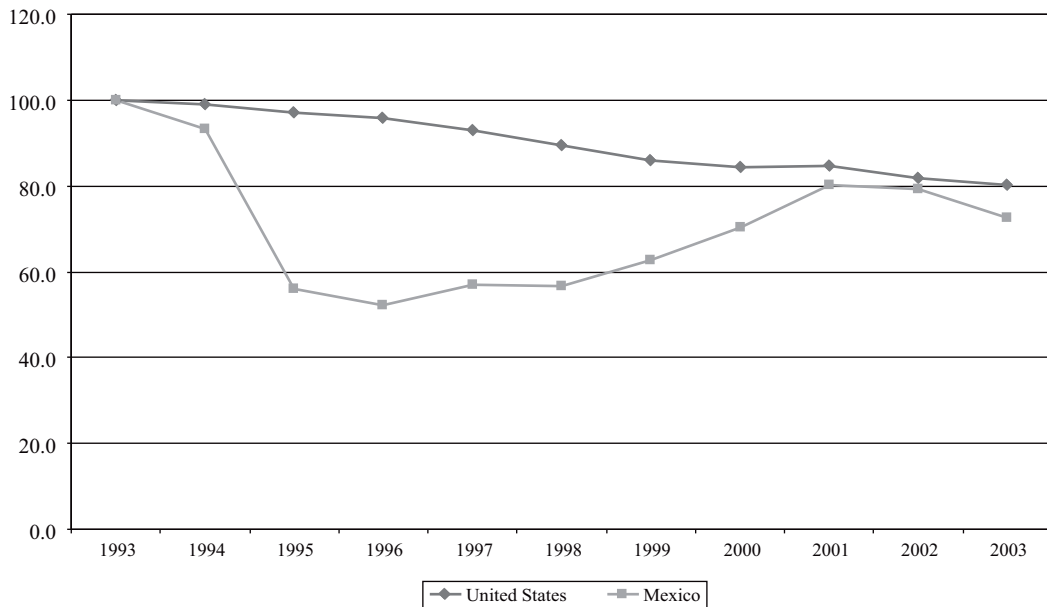
Source: Economic information data bank of the National Institute of Statistics, Geography and Informatics of Mexico (INEGI) [http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe].

iii) The export mix in 2003 includes a higher share of tradeable manufacturing products.

iv) Important sectoral productivity gains have been reflected in lower average unit labour costs than those of the United States (figure 6).[13]

Thus, a positive productivity gap between tradeable and non-tradeable goods (the Balassa-Samuelson effect, see Baldi and Mulder, 2002), lower relative unit labour costs vis a vis the United States, and a lower, stabilized current account deficit may give a rational explanation for equilibrium real exchange rate appreciation. Even so, this is a debatable issue.

It is worthwhile noting that in Argentina the real effective exchange rate appreciation coincided with a rise in industrial productivity, as unit labour costs declined more than 30% in dollar terms during 1993-1998. Notwithstanding, the shrinking share of manufacturing GDP (16% in 2000), as well as the modest contribution of industrial exports (near 4% of GDP), lead to the conclusion that higher productivity had

been insufficient to offset the real appreciation. Moreover, terms of trade fluctuations —roughly similar to those of Mexico but different from those of Brazil— were not cushioned by some degree of exchange rate flexibility and only served to exacerbate external imbalances.

To sum up, our **second finding** is that Mexico's managed float has bolstered higher relative openness, a more diversified export mix (including higher value-added products), and an exponential increase in exports (mainly driven by United States growth and NAFTA). Although Brazil is still a relatively closed economy, there is some indication that its managed float regime might favour similar outcomes in the long run.[14] With respect to the REER appreciation, we view the appreciation of the Mexican peso up to 2003 as an equilibrium appreciation because of: i) Mexico's higher relative productivity (with respect to that of the United States), explained by lower unit labour costs; ii) an increase in the share of tradeable manufacturing goods

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[13] Unfortunately, the time series of dollar unit labour cost in the manufacturing sector has been discontinued in Argentina and is not available over the whole period in the case of Brazil.

[14] The openness ratio in Argentina doubled in early 2002 mainly as a result of the peso devaluation, but it still remains an open question whether this higher ratio is sustainable in the long-run.

in its exports; and iii) more flexibility to cushion external shocks.

3. Capital flows

While Argentina defaulted on its external obligations, and its currency board collapsed in early 2002, Mexico has been enjoying the benefits of the investment grade status supported by NAFTA preferential agreements and OECD membership since 1994. Brazil, too, has fared better than Argentina. A preliminary conclusion which may be drawn from this story is that after the Russian default, markets have been screening more thoroughly the wide spectrum of emerging markets, as shown by the differential sovereign spreads measured by the JP Morgan EMBI+ (emerging markets bond index) and EMBI Global indexes after 1998 (figure 7).

Another major issue related to the global capital market and borrowers' credibility concerns the role of rating agencies in assessing sovereign borrower creditworthiness. Although credit rating downgrades and upgrades seem to lag behind and validate market perceptions, and of course do not move as rapidly as

spreads do, they reflect the same pattern as the latter (see figure 7). Actually, the empirical evidence so far has revealed that they tend to move pro-cyclically, particularly when moving downward. Nevertheless, announcements over possible upgrades/downgrades appear to have some bearing on bond spreads (Reisen, 2003). Moreover, as most institutional investors' placements are constrained by prudential regulation standards, a downgrade towards the speculative notch can modify the demand for a determined sovereign asset class, thus making it more risky and volatile in the eyes of the market.

Rating actions are chiefly based on the sovereign debtor's ability and willingness to pay. That depends in turn on the extent to which solvency and liquidity problems are incorporated into the market's or agencies' assessments about the prospects of the sovereign borrower's performance. Therefore, part of the input into sovereign risk perceptions or ratings relies on indicators which mainly deal with external payments and debt, fiscal stance or monetary and liquidity issues (see, for example, Moody's, 2001). Even though they are necessarily backward looking, the delay in producing and releasing information or

FIGURE 7

Argentina and Brazil: EMBI+[a] spreads relative to Mexico, 1994-2003
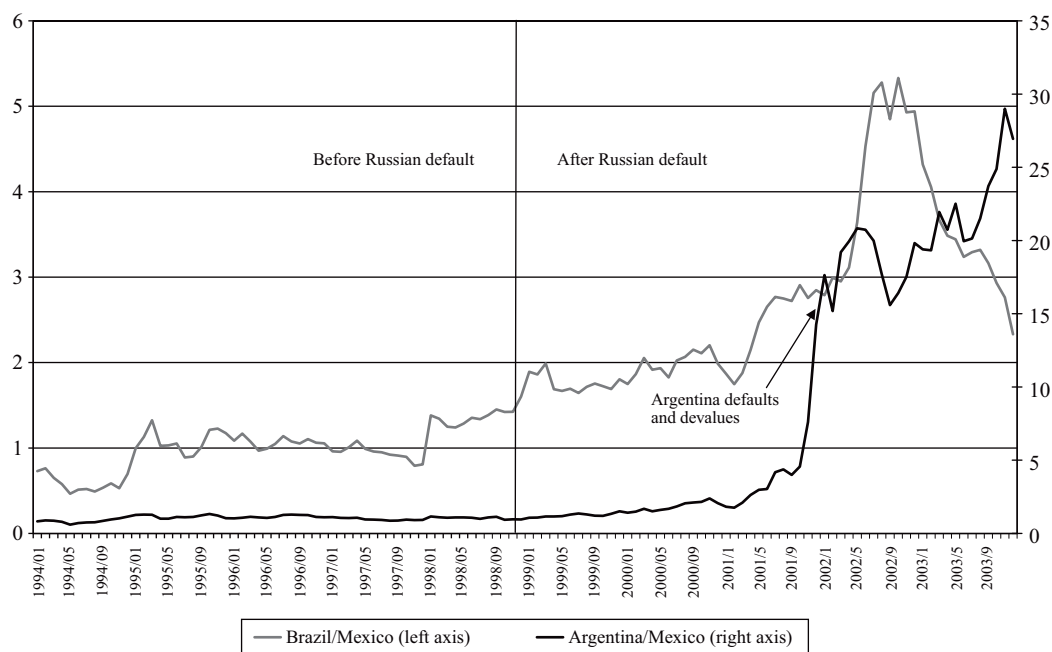
Source: Prepared by the authors on the basis of data from JP Morgan.

[a] EMBI+ = JP Morgan's Emerging Markets Bond Index.

FIGURE 8

Argentina, Brazil and Mexico: Sovereign risk ratings, 1996-2003
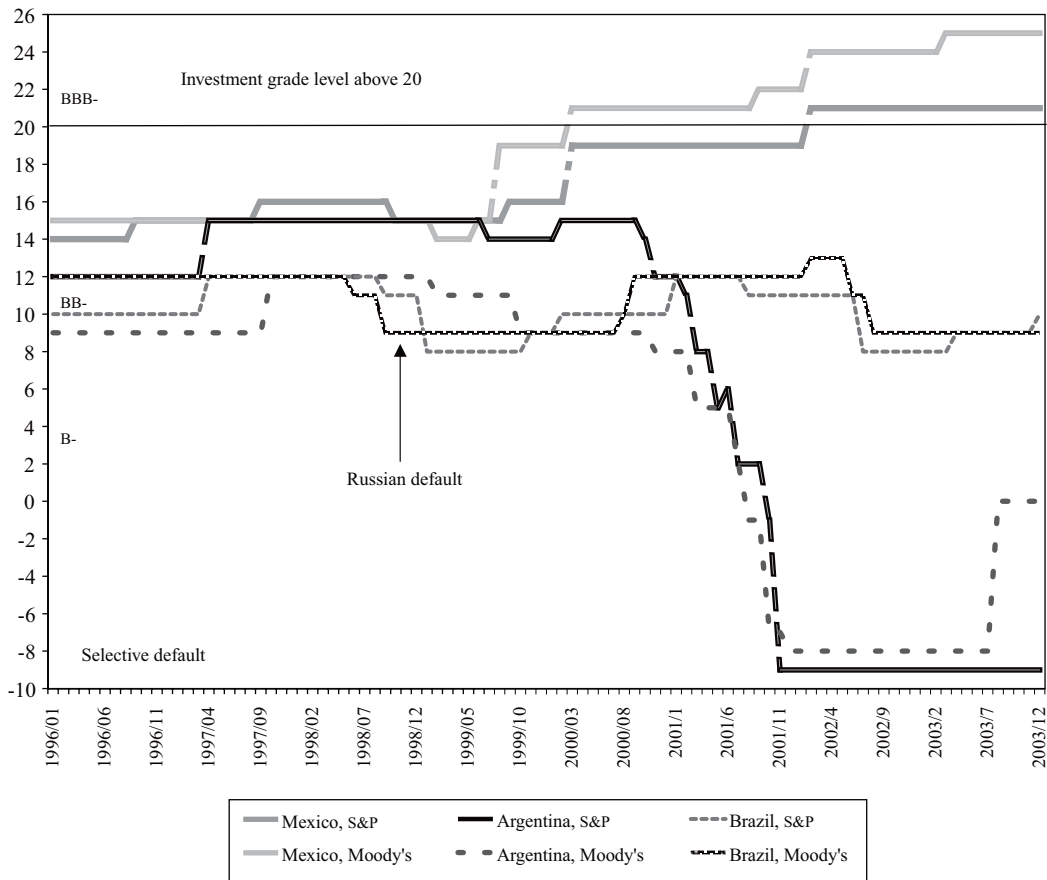
Source: Prepared by the authors on the basis of data from Moody's Investors Service (www.moodys.com) and Standard and Poor's (www.standardandpoors.com).

errors of forecasting (not uncommon in volatile, unpredictable markets) makes them relevant for current assessments.

Accordingly, exchange rate policy is important because it has much to do with the way the economies accommodate a shock or cope with financial turmoil in order to put themselves back on the solvency track or avoid liquidity crunches. From this standpoint, we argue that the managed floating regime has seemed to pay off in Mexico since the aftermath of the East Asian crisis and the onset of the Russian default. In contrast, the ineffectiveness of the Argentine currency board and the inappropriate policies pursued to resume economic growth in 1999-2001 or to try to smooth out external shocks did cast additional doubt on the sustainability of the economic regime, pushing default and currency risk up to unprecedented levels.

Figure 8 shows the ratings assigned by the two main rating agencies (Standard and Poor's (S&P) and Moody's) for the period from 1996 to 2003. We have transformed both scales into numerical equivalents, assigning a number not only to each risk category (for example, AAA) but also to each concept used in the category (e.g., BB positive=16, BB stable=15, BB negative=14). From the figure in question we see once again how the process of divergence only started since the Russian default.

As explained in section III, the composition and volatility of capital inflows is a well established channel through which exchange rate regimes impact on growth. Two major facts stand out in this respect:

First, the breakdown of gross capital inflows over the period shows substantial differences across countries and regimes (figures 9, 10 and 11). These

FIGURE 9

**Mexico: Gross capital inflows,
1995-2003**
(Percentages)

3.9
−11.5
11.7
7.1
88.9

☐ Foreign direct investment (FDI)   ☐ Bank loans
☐ Portfolio investment   ■ Other investment
☐ Bonds
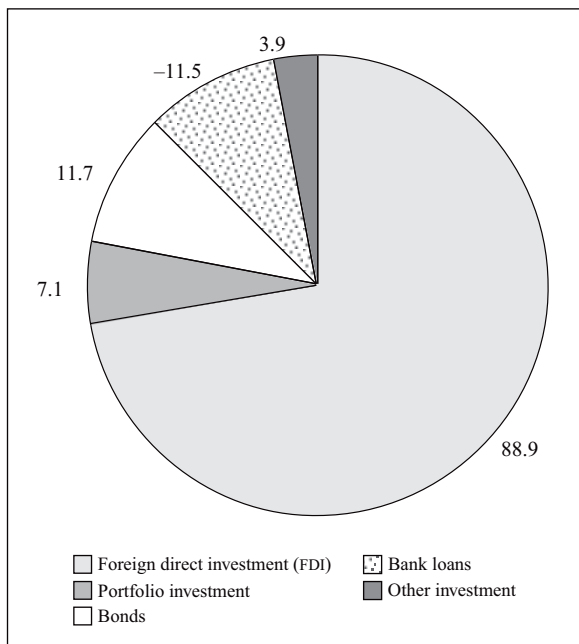
Source: IMF (2004), CD ROM version.

FIGURE 10

Argentina: Gross capital inflows, 1993-2001
(Percentages)

4.1
7.4
42.2
47.9
-1.6

☐ Foreign direct investment (FDI)   ☐ Bank loans
☐ Portfolio investment   ■ Other investment
☐ Bonds
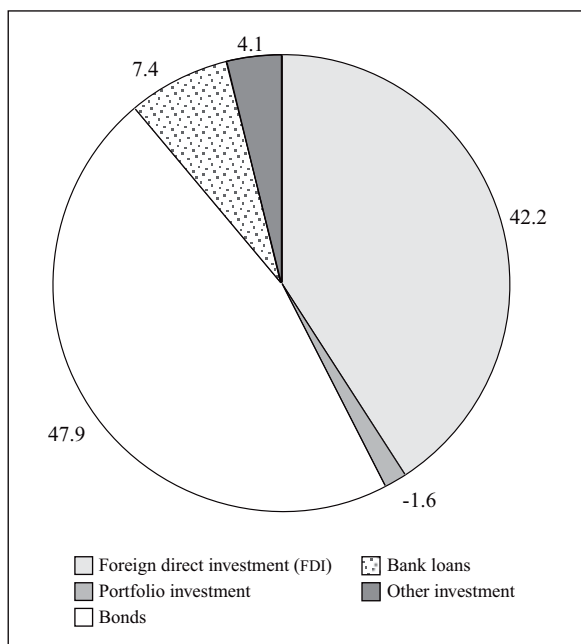
Source: IMF (2004), CD ROM version.

FIGURE 11

Brazil: Gross capital inflows
(Percentages)

A. 1995-1998

-30.2
1.9
50.7
13.7
64

B. 1999-2003

-31.6
-8.6
0.4
14.8
125.0

☐ Foreingn direct investment FDI   ☐ Bank loans
☐ Portfolio investment   ■ Other investment
☐ Bonds
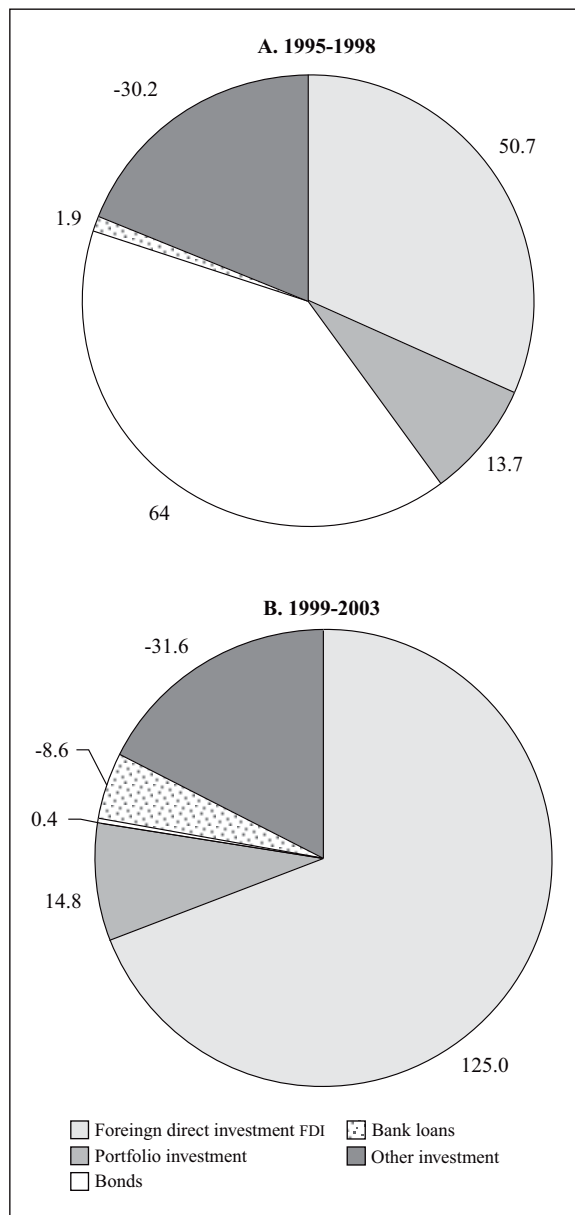
Source: IMF (2004), CD ROM version.

figures clearly show that Mexico has received more finance through FDI flows, as also has Brazil after 1998. In contrast, Argentina depended heavily on short-term flows (or official flows when those were absent) to finance its current account deficits. A high share of FDI in capital inflows reinforces the link between investment and growth, instead of fuelling a perverse debt-cycle (as in the case of Argentina's currency board, or Mexico's peg before 1995).

Second, Brazil has been the biggest recipient of FDI flows (except in 1999, 2001 and 2003), followed by Mexico. As well as determining the share of FDI in total inflows or accumulated flows, it is also crucial to know to what extent current account deficits were financed with FDI. This ratio between FDI and the current account position registers a value of 0.9 in Mexico, 0.8 in Brazil and 0.9 in Argentina (all based on 1994-2001 averages.[15] In 2002 and 2003 there were current account deficits in Mexico but surpluses in Argentina and Brazil (only 2003). On the other hand, Brazil roughly doubled this ratio between the 1995-1998 and 1999-2003 periods, when it let the exchange rate float, though in absolute terms the FDI turnover remained at similar levels. Finally, Mexican FDI inflows have been directed more to the production of internationally tradable goods. While the Mexican manufacturing sector (including the maquila segment) absorbed 61% of total FDI receipts over the 1995-1999 period, Argentina's industrial sector absorbed only 34% of total FDI and Brazil 47%.[16]

Summing up, our **third conclusion** is that Mexico's managed float has paid higher dividends since 1997/1998 than Argentina's hard peg and Brazil's quasi-fixed regime before 1999: a fact which was reflected in the shape of better sovereign ratings and lower spreads. Although it is not independent of the effects of NAFTA, Mexico's managed floating regime has favoured long-term capital flows, that is to say, FDI mainly directed towards tradeables production (which represents sustainable backing for current account deficits). These capital inflows have also been less volatile.

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[15] Argentina's coefficient falls if windfall FDI flows in 1998 and 1999 are excluded (privatization of public utilities and the formerly State-owned oil producer YPF).

[16] See *Foreign investment in Latin America and the Caribbean* (ECLAC, various years). According to these studies, FDI in services sectors —notably financial services— has gained considerable ground, reaching an extraordinary 70% of total FDI inflows during 2001 (as a consequence, this FDI is not directly reflected in gross capital formation).

4. Fiscal and institutional rigidities

Here we explore how the need to finance fiscal imbalances and outstanding debt repayment has shaped each solvency profile. An economy becomes insolvent if the discounted flow of expected net revenues is lower than the outstanding debt. By bringing about more sustainable debt dynamics —i.e., stabilized and relatively low debt to GDP (or to exports) ratios— countries can influence the perceptions on sovereign risk, interest rates and, in consequence, real GDP. Therefore, one should look carefully at indicators such as debt to GDP or debt to exports of goods and services ratios and the primary and total fiscal balances as a percentage of GDP (table 2).

Table 2 shows that both Mexico and Brazil improved their public finance stances (the former more impressively) by 2001, while Argentina's fiscal imbalances were never corrected and kept worsening until 2002. Although Brazil has been able to generate increasing primary surpluses, its external debt to GDP ratio has continued to rise. This is, however, attributable to an increase in private sector indebtedness over the 1997-2001 period. In the case of Mexico, both the debt to GDP and debt to exports ratios have been steadily falling since 1997.[17]

The perception of a link between a peg and fiscal discipline is intuitive: pegging the exchange rate may reduce the revenue from money creation (inflation tax), so in some circumstances a decision to peg may require a fiscal adjustment to ensure sustainability. Indeed, if money creation can be replaced with public debt issues (assuming finance is available from capital markets), governments could thus smooth their spending so as to lower the need for budget adjustment. When capital markets shrink and real output comes down in order to compensate for other rigidities in face of a shock, however, fiscal "indiscipline" can pave the way to insolvency, as seems to have been the case in Argentina in 2001. Furthermore, some authors (Sachs, Tornell and Velasco, 1996; Sun, 2003) have argued that pegs may actually lead to less fiscal discipline, if combined with disinflation and if a dual boom in credit and consumption results in higher government expenditures (generally on non-tradeables), as we saw in section II.

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[17] A comparison with Argentina in 2002-2003 would not be in order, as this country defaulted on part of its obligations in early 2002 and the data are therefore not comparable.

TABLE 2

Argentina, Brazil and Mexico: Solvency indicators
(Percentages)

Indicator	Year	Argentina	Brazil	Mexico
External debt/GDP	1994	33	30	32
	1997	43	25	35
	2001	52	42	24
External debt/exports of goods and services	1994	4.43	3.03	1.90
	1997	4.05	3.38	1.15
	2001	4.53	3.11	0.88
Primary fiscal surplus/GDP	1994	1.11	0.27	2.43
	1997	0.50	–1.02	3.51
	2001	0.54	3.68	2.58
Fiscal deficit (operational)/GDP	1994	–0.40	0.39	–0.03
	1997	–1.56	–0.65	–1.07
	2001	–3.27	–0.98	–0.72

Source: Database of the Ministry of the Economy of Argentina [http://www.mecon.gov.ar/peconomica/basehome/infoeco.html]; Central Bank of Brazil (various years); Ministry of Finance and Public Credit of Mexico [http://www.shcp.gob.mx/english/eofp/index.html].

V

Conclusions

Argentina's dismal performance from the late 1990s ended in the abolition of its currency board system introduced in 1991, while Mexico has gradually moved to restore credibility and has been awarded investment grade by all major rating agencies. While this comparative country study can not provide a rigorous test about the independent role of the exchange rate regimes that have led to such divergent fortunes, it has nevertheless confirmed the channels emphasized in the sparse literature linking the choice of the currency regime to growth performance.

This paper has highlighted four criteria that will help to guide the choice of the appropriate currency regime in emerging-market countries:

— How does the regime impact on the incentive to invest and save rather than to consume? Does it foster productivity growth by keeping GDP volatility in check?
— How does the regime impact on the tradeables sector and add to its integration into world trade, namely by providing sustainable and competitive exchange rate levels and by avoiding misalignments from the equilibrium rate?
— How does the regime impact on the mix of capital inflows? Does it encourage flows that carry positive growth externalities or does it encourage flows that raise a country's vulnerability to financial crises?
— How does the regime cope with a country's given rigidities (for example, in the fiscal area), and to what extent can such rigidities safely be assumed to display a sufficient degree of endogeneity to the regime choice?

During the last two decades, failed attempts with hard pegs have been discontinued in favour of more flexible exchange rate arrangements, as witness Chile in the early 1980s, Mexico in the mid-1990s, Brazil in the late 1990s and Argentina since 2002. It is to be hoped that Argentina will be able to emulate those fairly successful regime switches and will start to grow again at sustainable rates.

APPENDIX

Data sources

Rating histories were taken from Moody's Investors Service (www.moodys.com) and Standard and Poor's (www.standardandpoors.com). The EMBI + or EMBI Global indexes and the real effective exchange rates (REER) are from JP Morgan. Nominal exchange rates, portfolio investment and FDI flows were taken from *International Financial Statistics* (IMF, 2004), CD-ROM version.

Other country data:

— *Argentina:* external debt stocks (total and non-financial public sector-central government), fiscal deficit (non-financial public sector balance), current account, exports and imports of goods and services, current and real GDP (base year 1993) and terms of trade index were taken from the Ministry of the Economy database at http://www.mecon.gov.ar/peconomica/basehome/infoeco.html. National savings and investment rates are from the statistical appendix of the *Economic Survey of Latin America and the Caribbean* (ECLAC, 1993-2004) .

— *Brazil:* data on external debt stock (total) and nominal GDP were taken from the Central Bank's *Boletim do Banco Central – Relatório mensal* at http://www.bcb.gov.br/?BULLETINCR. Real GDP (base year 1990, average index), and the terms of trade index are from the Banco de Dados Agregados (aggregate data

bank) of the Brazilian Institute of Geography and Statistics (IBGE), at http://www.sidra.ibge.gov.br/bda/. Data on the fiscal deficit (non-financial public sector balance), the current account, and exports and imports of goods and services were taken from IMF (2004), CD-ROM version. National savings and investment rates are from the statistical appendix of the *Economic Survey of Latin America and the Caribbean* (ECLAC, 1993-2004) .

— *Mexico:* data on the external debt stock (total and public), and non-financial public sector balance (including privatization revenues, which were not very important for the period studied) are from the Budget Planning Office at http://www.shcp.gob.mx/english/eofp/index.html.[18]

The data on the current account, exports and imports of goods and services, terms of trade, current and real GDP (base year 1993), and manufacturing unit labour costs (including the comparison with the USA) are from the National Institute of Statistics, Geography and Informatics of Mexico (INEGI) economic information data bank at http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe. National savings and investment rates are from the statistical appendix of the *Economic Survey of Latin America and the Caribbean* (ECLAC, 1993-2004)

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[18] The series excluding privatization revenues were not fully available in IFS but since mid-1999.

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Decentralization, territorial
transfers and local development

Iván Finot

Concerted action by political, social and private actors at the local level can be very useful for promoting economic competitiveness, but in order for it to become a reality it would be essential for the local communities to have greater autonomy and resources, as well as equal opportunities. This article begins by investigating the conditions required in order to ensure that the deeper political decentralization needed for local development will promote efficiency and equity, as well as the ways in which transfer systems can become decisive means for increasing equity and generating greater efficiency. Within this theoretical framework, an analysis is then made of the basic transfer systems used in the older and/or more advanced decentralization processes of the region, and some guidelines are proposed not only for making local development viable in the conditions in question but also for progressing in building fuller citizenship.

Iván Finot

Expert in the Local and Regional

Development Management Area,

Latin American and Caribbean Institute

of Economic and Social Planning (ILPES)

ECLAC

✐ ivan.finot@cepal.org

I

Introduction

Political decentralization in Latin America forms part of the democratization processes begun in the 1980s, which took as their starting point the historical territorial organization of each country. The main aim of decentralization —with differing types of emphasis in each country— was to generate new spaces for citizen participation, tackle problems of fiscal imbalance, and organize the State apparatus at the local or territorial level in order to implement social policies that would make it possible to address the problem of the social debt. In the countries where this territorial reform was started earliest, this was of decisive importance for broadening or focusing those policies, although it was only possible to channel citizen participation in a constructive manner in the cases where suitable social capital already existed. Decentralization has often failed to give positive results, however, in terms of aiding fiscal balance, and this has undoubtedly hindered the progress of these processes.

Political decentralization is taking on renewed importance today, not only for promoting fuller citizenship and social inclusion, but also in terms of economic development. Thus, it is now generally agreed that competitiveness depends not only on the firms themselves, the macroeconomic balances and active national policies, but also on the capacity of each locality to tackle its own development through processes of concerted public-social-private decisions and action. In order for this to take place, it is essential that local areas should have greater autonomy.

An essential aspect of decentralization is that of the transfers needed to make up for the different income-generating capabilities of the different political and administrative divisions. In Latin America, such transfers are the main source of income for most of the subnational levels of government —especially the municipalities— and in some countries they account for a substantial proportion of public expenditure.

In terms of equity, the transfer systems which have accompanied the decentralization processes in Latin America have involved, in all cases, substantial initial progressive territorial redistribution, although this has often subsequently proved to be insufficient to offset the inequalities generated by the decentralization process itself.

It would have been desirable for the transfer systems to have been designed in such a way as to make the objective of equity compatible with stability, but in most cases, as the territorial transfers involve fixed shares of national taxes, they prove to be procyclical (Ocampo, 2001), and when, in addition, they encourage expenditure that does not depend on the corresponding tax efforts, they help to generate pressures that give rise to imbalances (Finot, 1996 and 2001).

In order to counteract these pressures, there is a tendency to adopt controls on spending and limits on subnational indebtedness. Examples of this are the Fiscal Responsibility Act in Brazil (Federal Republic of Brazil, 2000) and, in the case of Colombia, the Indebtedness Control Act (Colombia, 1997), the Territorial Expenditure Rationalization Act (Colombia, 2000a) and the Fiscal Responsibility Act (Colombia, 2003). While these measures aid fiscal balance, they may restrict the autonomy of local bodies. Yet, as already noted, making local economic development viable calls for more, not less, local autonomy. Furthermore, it is necessary to continue progressing in terms of social equity and citizenship-building, while maintaining efficiency and stability. How can the objective of strengthening local autonomy be reconciled with those of equity, efficiency and stability?

In order to answer this question, section II of this article analyses the conditions needed to attain deeper political decentralization while at the same time promoting efficiency and equity; with this aim, a summary updated version of the conceptual framework that has been developed since earlier studies is presented. In section III, an analysis is made of the main autonomy-related financial aspects of the older and/or more advanced decentralization processes in the

region: those of Argentina, Brazil and Mexico, among the federal countries, and those of Bolivia, Chile and Colombia in the case of the unitary countries.[1] Finally, section IV presents some conclusions and guidelines that may be useful for the countries of the region in pursuing the objectives in question.

II

Conditions for efficiency and equity

The economic aspects of decentralization are undoubtedly essential in these processes, but it would appear that in the Latin American region we have not yet taken sufficient account of that branch of the economy whose field is the provision of public goods at the different territorial levels, nor are we developing it sufficiently to allow us to progress in line with our needs.

This may have occurred partly because the founder of that branch, Wallace Oates, called it "fiscal federalism" (Oates, 1972), which may have given the impression that it referred only to federal countries.[2] The theory based on that branch is perfectly suitable, however, for analysing the economic aspects of decentralization, especially when this is aimed at the levels closest to citizens themselves, since reducing the ambit of demands could facilitate the processes of determining collective preferences.

This section thus begins by analysing the conditions whereby political decentralization aids efficiency and then going on to deduce the requisites for ensuring that transfer systems aid both efficiency and equity.

1. Decentralization

Decentralization refers to the provision of public goods, in which two types of decisions may be distinguished: i) what part of income is to be used to provide those goods, who should provide them, and what amount should be provided, and ii) how are the publicly provided goods going to be produced. Generally speaking, in Latin America both types of decisions have been decentralized to the subnational levels of government, but some decisions of the second type have also been decentralized to the market.[3] The necessary conditions for efficiency can be analysed for both forms of decentralization, but in view of the objectives of the present article, these conditions will be analysed here only for the case of the decentralization to subnational levels of government of the responsibility for providing public goods.

Generally speaking, the concept of decentralization to lower levels of government has been associated with the idea of greater political autonomy (see Palma and Rufián, 1989, for example). All the processes, however, involve the assignment of functions to subnational governments not only in their capacity as the heads of autonomous units but also as agents of the national government: they execute different combinations of decisions adopted at the local level and other decisions taken at the central level. In the first case, this is political decentralization, and in the second it is operational decentralization,[4] each of which has different requisites for efficiency, so that it is important to be able to distinguish which tasks each level of government carries out as the head of an autonomous unit, and which it carries out as an agent of the central government.

We will now analyse what those requisites are, with the main emphasis on political decentralization, which is more closely linked with autonomy.

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[1] In order to have comparable data, the quantitative analysis is based on figures from the International Monetary Fund.

[2] Oates himself (1999) admits, on looking back, that it was probably unfortunate to call the theory he founded "fiscal federalism", because this would tend to restrict it to the narrow fiscal field, whereas the subject of that theory was rather the entire vertical structure of the public sector. Moreover, according to Afonso (2003), since "fiscal federalism" is based on a methodology of individualism, it would not be suitable for studying federalism proper, which by definition is an agreement among communities, not individuals.

[3] In the sense assigned by Bennett (1990): a process which we have called "economic decentralization" (Finot, 1996).

[4] I prefer to use the term "operational decentralization" rather than "delegation" (as some authors call this situation) because, as Palma and Rufián (1989) explain so well, delegation can be suspended by the principal at any moment. The concept of decentralization, in contrast, implies a definitive transfer of authority and freedom to take decisions (in this case, administrative decisions).

a)   *Political decentralization*

Political decentralization may be understood as the transfer of democratic decision-making processes on expenditure and financing for the provision of given public goods from one political/administrative level to another lower level.

There are three main conditions for ensuring that this transfer contributes to greater efficiency: i) that the ambits of the local decision-making processes correspond to geographical differences in demand; ii) that citizen preferences are effectively revealed; and iii) that the gains generated by the foregoing conditions are greater than the possible losses in terms of economies of scale.

i) *Adaptation to differences in demand.* Oates (1972) noted that the main problem in decentralization is to decide to what level each type of provision best corresponds.[5] The fundamental problem would be that, generally speaking, political/administrative maps do not coincide with geographically differentiated demands. Indeed, there is no reason why they should: the former have been configured as a function of political/administrative control of the territory, while the latter are the result of such factors as the location of natural resources, access facilities, and investments in infrastructure. Trying to modify the former could give rise to conflicts between local areas, whereas the latter undergo constant modification without any limits other than the respective local regulations (including those on international relations).

What can we do about the lack of adaptation between decision-making processes encompassed by the political/administrative maps and those subject to the corresponding geographical/economic maps? In principle, the solution could be to deepen decentralization down to the levels closest to the citizens and promote association among local governments in respect of shared differentiated demands through transfers.[6]

ii) *Effective revelation of preferences.* In the provision of local public goods, each community should be able to reveal its preferences, in full knowledge of the cost of the alternatives, and should be able to opt for a mix of goods in the light of what it will cost them.[7]

In order to stimulate the economic mechanisms of efficiency, then, the communities to which authority is decentralized should have the power not only to define expenditure but also to determine the level of the taxes whereby they will help to finance that expenditure. In order to avoid the multiplication of taxes, the tax bases should be established nationally but the subnational communities at which political decentralization is aimed should have the faculty to modify the respective tax rates (within a certain range). The most desirable situation would be for these decisions to refer to direct taxes (in principle, on immovable property), since modifying indirect tax rates would directly affect the system of prices (as well as requiring the keeping of accounts on inter-territorial imports and exports).[8] This would also be desirable in the case of taxes with shared bases, where the subnational levels of government should have the power to fix their own rates.

On the other hand, for reasons of equity it would not be a good idea for the royalties received for the exploitation of non-renewable natural resources to be shared with the subnational levels (Musgrave and Musgrave, 1989), or at any rate not in substantial percentages. Moreover, strictly speaking these sources of income cannot be considered as taxes.

An assumption which is not explicitly stated in Oates's work is that the local mechanisms for the revelation of preferences must be at least as efficient as those at the central level. If decentralization tended to strengthen undemocratic —or still worse, corrupt— assignment processes, it could turn out to be less efficient than assignment through centralized processes.

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[5] Ostrom, Tiebout and Warren (1961) had already noted that, for a metropolis, a "polycentric" system in which the provision of public goods whose demand is geographically differentiated corresponds to locally elected governments, while only the provision of goods with uniform demand is left in the hands of the central metropolitan government, would be a more efficient solution than a system in which the provision of all services is centralized. This finding was subsequently formalized by Oates (1972) in his "decentralization theorem".

[6] Furthermore, to the extent that this adaptation of territorial organization to differentiated demands was achieved, this would reduce externalities, which are another typical aspect involved in decentralization.

[7] This process can be clearly seen, for example, in the decisions taken by innumerable social organizations of the region, which very often make an important contribution to the provision of public goods and externalities. As we have been proposing since 1990 (Finot, 1990), these contributions should be considered as "quasi taxes".

[8] It is generally agreed that the best local taxes would be those based on property and also, increasingly, that the way to increase subnational income might be to share in income taxes, as Bird (2001) notes. As the same author warns, however —quoting Shome (2000)— few Latin American countries have really solid income tax systems.

The electoral system based on proportional representation —which prevails in the region at the municipal level—[9] would not be the most suitable for expressing citizen preferences at the local level, since it means that representatives are answerable to the politicians who included them in their lists, rather than to the population represented, and in the final analysis it is those representatives who, when approving the relevant budget, decide what goods are to be provided publicly, in what amount, and with what local contributions.

Even if the electoral system is changed from proportional representation to a system based on territorial representation,[10] however, it is obvious that both politicians and administrative officials have their own interests, so that it is important to offset these through other forms of citizen participation. Direct political participation (referenda, citizen consultations, revocation of authority) and social participation, through social organizations, are forms which should be facilitated in this respect in order to generate and clarify easily understood information —both basic information and information on management performance.[11]

It is not enough, then, for democratic decision-making processes on allocation merely to correspond as accurately as possible to differences in demand: in order for political decentralization to promote more efficient allocation it is essential that decisions on local expenditure should be linked with local contributions and that there should be suitable systems of citizen representation and participation so that the citizens' preferences may be effectively revealed.

iii) *Economies of scale.* The weighting given to this factor may have gone down more recently: the flexibility of present-day production processes may help decentralized solutions to be more efficient, but for this to be so there must be access to new technologies, and above all, availability of suitably skilled staff. At all events, the ambit to which the provision of each decentralizable public good should be transferred should always correspond to a level where the benefits of decentralization outweigh its costs, including among the latter the costs deriving from an increase in the number of administrations involved.

b) *Operational decentralization.*

Operational decentralization occurs in cases of the provision of public goods where decentralization does not include the decision-making power over what goods are to be provided, in what amount, and with what contributions from citizens, but only matters connected with the implementation of decisions adopted in that respect by a central government. According to Heymann (1988), the benefits of this form of decentralization mainly derive from the better information possessed by the local levels of government, while the costs stem from the risk that the agents may take advantage of the situation to the detriment of the interests of the principal.

In this case too it would be desirable to assess whether the benefits of having the local governments as agents are higher than the costs of enlisting them for this purpose. Just as, in the case of political decentralization, the basic criterion of efficiency would be to achieve the greatest possible correspondence between effectively expressed geographically differentiated demands and the existing political and administrative divisions, so in the case of operational decentralization the criterion would be to achieve the best possible combination between the benefits of taking advantage of the capabilities of the local governments (either individually or in association) and the costs generated by losses of economies of scale and the installation of control mechanisms.

Within each sectoral policy, an evaluation should be made of what should be decentralized politically and what should only be decentralized operationally. In school education, for example, it would be appropriate to politically decentralize the definition of part of the compulsory minimum curricula, but income redistribution policies designed to give equal opportunities to all the inhabitants of the country, whatever their place of residence, should only be decentralized operationally.

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[9] An exception is Panama, where the Municipal Councils are made up of representatives of the "corregimientos" or districts which make up each municipality.

[10] Using a system providing for the election of single representatives or, what would be preferable (as I have been proposing since 1990, on the basis of Duverger, 1970), a system providing for one representative per district defined in line with the existing historical and geographical situation, plus an additional number of representatives depending on the population of each district.

[11] Porto Alegre's experience with regard to participative budgets shows the advantages of social participation for revealing preferences better and increasing citizen input. Harnecker (2003), who followed up the process from the beginning, notes the "consternation" initially caused among those taking part in "participative budgeting" when they realized that, in order to achieve what they were proposing, they would have to pay taxes. It can now be seen that participative budgeting has not only led to more efficient resource allocation but also to an ongoing increase in revenue collection (Prefeitura Municipal de Porto Alegre, 2003).

c)   *Responsibility (accountability)*

Just as, in political decentralization, information systems on the actions of the authorities should be aimed primarily at the local communities, in the case of operational decentralization the local levels of government should be primarily accountable to their principal: the respective central government (Silverman, 1992). Apart from the difficulties inherent in the agent-principal relationship, however, the practical problem in this case is that the accounts of the local administrations do not usually make any clear differentiation between tasks carried out on the basis of local decisions and those carried out in line with central government decisions, or regarding the origin of the resources with which those tasks are executed, so that it is not possible to distinguish clearly to what authority the local governments are primarily accountable in each case.

In short, in both situations it would be essential to have suitable management information systems: in the case of political decentralization, in order to render accounts primarily to the community, and in the case of operational decentralization, in order to render accounts to the central government. It would be highly desirable for citizens to be properly informed in both these cases, but in order for there to be effective responsibilities, this difference between principals should be clearly laid down in the accounts themselves.

2. Transfers: how to reconcile efficiency with equity

Generally speaking, the specialized literature distinguishes two basic types of territorial transfers: unconditional and conditional transfers. If it is accepted that one of the requisites for efficiency is that decisions on expenditure should be linked to those regarding the respective contributions to be made by the citizens, however, the first question to be asked about territorial transfers is whether or not they are designed to support local expenditure decisions linked with local contributions of resources.[12] Completely unconditional transfers would not help to ensure fulfillment of this condition for efficiency and would give rise instead simply to a political decentralization only of the expenditure. Furthermore, expenditures which do not involve citizen contributions would disincentivate citizen participation (which is already made more

difficult by the prevailing electoral systems) and would facilitate the use of resources for private purposes.

The situation would be different in the case of transfers which, while not conditional upon local contributions, are conditioned in respect of the use to be made of them, since if such conditions were imposed, this would make it possible to introduce controls like those of operational decentralization. Finally, if transfers were conditional upon both the use to be made of them and the provision of local contributions (for example, co-financing funds), the operational decentralization elements would exceed those of political decentralization.

Table 1 gives a summary of this analysis. Only transfers which are freely disposable but are proportional to local contributions (those of type 1) would help to generate conditions of efficiency in political decentralization.

If transfers are to depend on local contributions, however, how will it be possible to attain the primary objective of those transfers, which is to make up for differences between local areas? The theoretical solution —already proposed some years ago (Finot, 1996; ECLAC/ILPES, 1998)—would be for territorial transfers to be proportional to the respective local contributions, measured not in absolute terms, however, but as a proportion of the levels of income of the inhabitants of each community.[13] The principle

TABLE 1

Conditions for transfers and types of decentralization

Conditions		**Conditional on local contribution?**	
		No	**Yes**
Conditional on use to be made of resources?	**No**	2 Political decentralization of expenditure	1 Political decentralization
	Yes	3 Political decentralization ≥ operational decentralization	4 Operational decentralization > political decentralization

Source: Prepared by the author.

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[12] In line with the pioneering proposal by Wiesner (1992 and 2002).

[13] A more equitable alternative to the present situation would undoubtedly be for the municipal expenditure per inhabitant to be brought up to a standard level through transfers, as proposed for Brazil by Prado, Cuadros and Cavalcanti (2003): this involves an important difference from the proposal made in this article, because in that case the transfers would not be linked to local efforts.

of taxing individuals *in proportion to their respective capacities, that is to say, in proportion to the incomes they enjoy*, which was proposed by Adam Smith (and cited by Musgrave, 1959), should also be applied to local communities.

This transfer system should coincide with the expansion of the taxation powers of the subnational levels, in order for the various local communities to be able to determine, by democratic processes, the level of the taxes whereby they will help to finance the expenditure they decide upon.[14] This would reconcile the objectives of equity with those of efficiency and stimulation of citizen participation.

3. Territorial redistribution and social redistribution

A system in which territorial transfers were freely disposable but proportional to the relative local contributions would make it possible to deepen political decentralization under conditions of both efficiency (including fiscal efficiency) and territorial equity, but it would not ensure social equity. Achieving this latter objective is the primary *raison d'être* of conditioned transfers. This has led countries such as Mexico to make a clear differentiation between freely disposable transfers and transfers designed exclusively for such purposes as health and education services.

Generally speaking, the decentralization processes in Latin America are marked by the expansion of powers for the local provision of basic infrastructure services and —in particular— by the transfer of authority in respect of education and health services; initially (except in the case of Mexico, as already mentioned), both types of goods were treated similarly.

The characteristics of social services are very different, however, from those of basic infrastructure services: whereas in the case of the latter demand is clearly differentiated geographically (especially by physical factors), in the case of post-Welfare State social services the demand is differentiated geographically in its qualitative aspects, but in quantitative terms all citizens have an equal right for the State to give them similar access, regardless of their place of residence.

This differentiation, already postulated as early as 1996 (Finot, 1996; eclac/ilpes, 1998), should provide a clear distinction between two systems of redistribution: one based on purely territorial transfers, with free availability of resources but only in proportion to the corresponding relative local efforts,[15] whose aim is to subsidize local initiatives and efforts to provide infrastructure services, and the other, based on social transfers and operated by the local government authorities, designed to ensure that all the inhabitants of a country have access to a minimum basket of "social" goods and services.[16]

III

Fiscal decentralization in Latin America

Initially, Latin American decentralization processes could be classified according to whether they take place in federal or unitary countries. In federal countries, decentralization was initially focused on the states or provinces making up such countries. This was also the case in Brazil in 1941, but since the entry into force of the 1988 Constitution, the Brazilian process has been focused not only on the states but also on the

municipalities, and there has even actually been greater emphasis on the municipal level. The municipalities are considered to have the same autonomous status as the federated states, and it is laid down that the relations between the two levels should only be relations of coordination (Federal Republic of Brazil, 1988).

In the unitary countries, in contrast, decentralization focused on the municipal level prevails, although there are also cases of different extents of decentralization to the intermediate level: in Bolivia and Chile, for

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[14] This would make it possible to equalize, for all the communities, the marginal benefit of the expenditure with its respective cost in terms of taxes, in a similar manner to the (theoretical) case in which the whole of local expenditure is financed with local taxes, which is a condition for efficiency emphasized by Tanzi (1995) and Oates (1999).

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[15] Relative fiscal efforts: basically measured as a function of the level of income (or poverty) of each local community.

[16] Whose financing should, however, be aided by contributions by the local areas with higher incomes, as José A. Ocampo points out.

example, designated authorities share powers with representatives elected by the municipal councils,[17] while in Colombia both the Governors and the members of the Departmental Assemblies are directly elected.

In the following sections, the framework thus defined will be applied both to the countries studied and to their systems of basic transfers from the national level.

1. Tax bases, by levels

Table 2 gives a summary of the tax bases for each level of government in six Latin American countries,

TABLE 2

Latin America (six countries): Main sources of tax income of each level of government[a]

Taxes	Argentina	Brazil	Mexico	Colombia	Bolivia	Chile
Income tax (corporate and personal)	Profits tax: N_1 Personal income tax: N_1	Income tax: N_1 Additional income tax: I	Corporate income tax: N_1 Personal income tax: N_1 Personal income: I	Corporate income tax: N_1 Personal income tax: N_1	Profits tax: N_1 Personal income tax: N_1	Corporate income tax: N Personal income tax: N
Wealth and assets tax	Wealth and assets ax: N_1	Large fortunes: N^b Death duties and donations: I	Corporate assets: N		Asset transfers: N_1	Net wealth: N
On foreign trade	Trade and transactions: N	Imports and exports: N	Imports and exports: N_1	Foreign trade: N_1	Imports: N	Imports: N
Sales taxes	VAT:[c] N_1 Gross income of enterprises: I	GSST:[d] I_1	VAT: N_1	VAT: N_1	VAT: N_1	VAT: N
Other indirect taxes	Electric power: N Fuels: N	TIP:[e] N_1	Production and services: N_1 Agriculture, industry and commerce: I	Gasoline: N Liquor and cigarettes: I Gasoline: I	Transactions: N_1 Specific consumption: N_1 Special tax on hydrocarbons: N_1	Transactions: N Specific consumption: N
On exploitation of natural resources	Royalties: I_1	Royalties: N_1			Royalties: N_1 Complementary tax on hydrocarbons: N_1 Royalties: I	Royalties: I
On vehicles	Ownership: I_1	Ownership: I	Ownership and use: N_1	Registration: I	Ownership: M	Use: M_2
On real estate	Property: I_1	Rural property: N_1 Urban property: M Transfers: M	Transfers: I Property: M	Registration: I Property: M	Property: M	Urban property: M_2
On operation of businesses		Services: M	Industry and commerce: M	Licences to operate businesses: M	Licences to operate businesses: M	Licences to operate businesses: M_2

Source: Finot (2001), updated.

[a] N = national or federal; I = intermediate level; M = municipal; $_1$ = contributes to the system for compensating units of government at a lower level or levels; $_2$ = contributes to the system for compensating units of government at the same level.
[b] Envisaged in the 1988 Constitution, but not yet instituted.
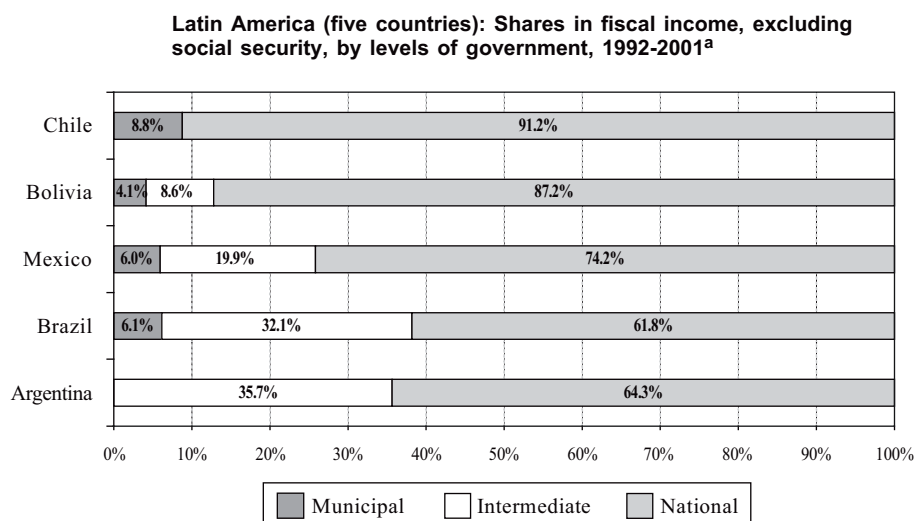[c] VAT = Value Added Tax.
[d] GSST = Goods and Services Sales Tax.
[e] TIP = Tax on Industrial Products.

[17] In both these countries there is now strong pressure for these representatives to be directly elected, which would be in keeping with the view that each subnational level should be independent of the others, as in Brazil.

FIGURE 1

Latin America (five countries): Shares in fiscal income, excluding social security, by levels of government, 1992-2001[a]

Source: Prepared by the author on the basis of data from the International Monetary Fund (IMF, 2001 and 2002).

[a] For Brazil, the period studied was 1991-1998, and for Mexico, 1991-2000.
[b] In the percentage shown for the intermediate level in Argentina, five percentage points are estimated to be generated at the municipal level.

indicating also which taxes are shared (i.e., help to finance basic transfers) and with which level of government.

In Argentina and Brazil, the main sources of tax income at the intermediate level are sales taxes; in Mexico, the main source is personal income tax and corporate income tax (not levied in some states), while there are no important sources of such income in Venezuela. In Bolivia, the main tax income of this level comes from departmental royalties on hydrocarbons (11% of the wellhead value); in Chile there is no important source of such income, while in Colombia the tax income of the departments comes only from taxes on property registration and on liquor and cigarettes.

At the municipal level, the main tax bases are the authorization of economic activities (licences to operate), corporate income tax, real estate and, to a lesser extent, ownership and/or circulation of vehicles (in Brazil, these latter taxes belong to the states). The fact that Argentina is practically the only country where the municipal level has no direct tax income shows that in that country decentralization is focused primarily on the provincial level.[18]

Figure 1 shows the importance of the contributions of each level to public income in the countries for which comparable information is available.[19] Table 2 and figure 1 show the preponderance of the national level —and to a lesser extent of some intermediate levels— in resource generation, in contrast with the low weight of the municipal level. It should also be taken into account that the municipal share corresponds largely to a minority of municipalities which have the most valuable economic activities and real estate.

2. The financing of basic transfers

Figure 2 shows the share of the autonomous decisions of subnational levels of government in total fiscal expenditure. Obviously, in this case the share of the subnational levels is higher because it includes

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[18] In Chile, urban real estate taxes are not officially municipal either, but almost the whole of the revenue from those taxes goes to that level.

[19] The following tables have been prepared using the database of the International Monetary Fund (IMF). In this database, corresponding data are not available for Colombia, in the case of Argentina the amounts corresponding to municipalities are not separated from those for the provinces, and the accounts for Brazil and Argentina were prepared on the basis of classification criteria which do not coincide with those used for the countries in question. In the fiscal accounts for Brazil, for example, for legal reasons "social contributions" include income which would actually be earmarked taxes according to other criteria. For making comparative analyses, however, the IMF data are the only ones available which are calculated on the basis of common criteria.

FIGURE 2
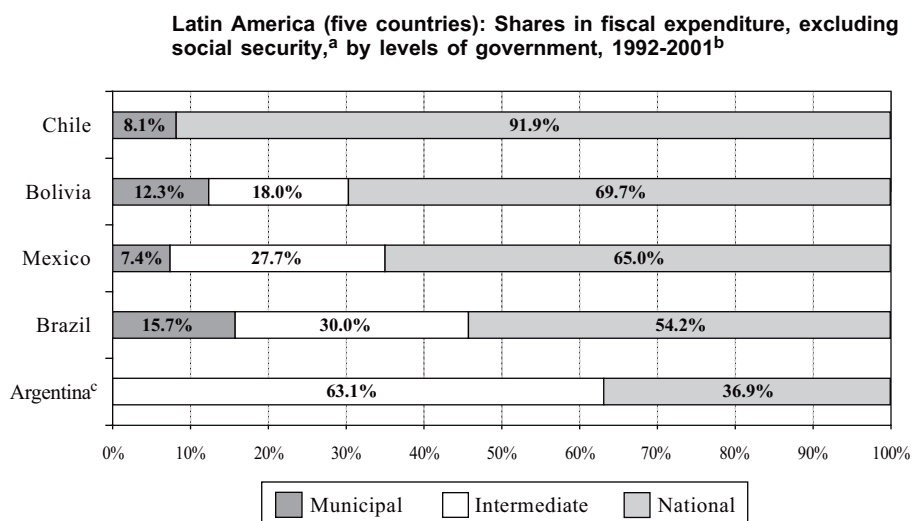
**Latin America (five countries): Shares in fiscal expenditure, excluding
social security,[a] by levels of government, 1992-2001[b]**

Source: Prepared by the author on the basis of data from the International Monetary Fund (IMF, 2001 and 2002).

[a]   According to Afonso (2004), the distribution of expenditure for the same years, but including social security, would be: municipalities:
      16.1%; states: 27.3%, and national level: 56.7%.

[b]   For Brazil, the period studied was 1991-1998, and for Mexico, 1991-2000.

[c]   In the percentage shown for the intermediate level in Argentina, ten percentage points are estimated to be generated at the municipal level.

transfers.[20] Noteworthy is the importance of the intermediate levels in the decentralized federal countries and, once again, the markedly lesser importance of the municipal level. This shows the ample space that still exists for deepening decentralization in Latin America.

In the following paragraphs, the analysis will concentrate on basic transfers: that is to say, those designed to support autonomous subnational decisions. These transfers typically come from shared taxes. Table 3 gives an updated summary of the sources of financing of basic transfer systems in each of the countries studied.

It can be seen from that table that, whereas in most cases basic territorial transfers come from national taxes almost as a whole, in Brazil they come mainly from only two federal taxes (income tax and the tax on industrial products), while in Chile they come exclusively from municipal taxes. The advantage of the Brazilian system is that, since the transfers come from only a few taxes, the federal government has ample leeway to apply its fiscal policy, while the advantage

of the Chilean system is that it involves sharing out sources of income that are usually very unequally distributed, whereas its obvious disadvantage lies in the small amount of resources generated by that source.

3. Distribution criteria

In both Argentina and Brazil, basic transfers are determined in line with fixed coefficients which were originally determined on the basis of criteria taking account of population and, to a lesser extent, poverty.[21] In Brazil, however, the Interstate Participation Fund is focused primarily (85%) on the relatively less developed states, while the Municipal Participation Fund is distributed in the light of the number of inhabitants of each municipality. In Bolivia, population is the main criterion, whereas in Colombia and Chile there is a tendency to try to make up for social inequalities (table 4).

Colombia has recently decided on a major transformation of its transfer system (Colombia, 2003): under Act No. 715, all the previous systems (municipal participation, fiscal subsidies and development funds)

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[20] Comparing figures 1 and 2 does not give any idea of the vertical imbalance at each level, because they are not based on absolute values.

[21] For more details on the transfer systems of Brazil and Argentina, see respectively Afonso (2004) and Cetrángolo and Jiménez (2004).

TABLE 3

Latin America (six countries): Financing of basic territorial transfers[a]

Country	Administrative level	System	Percentage of taxes	Taxes
Argentina	Provinces	Co-participation System	Approx. 30% Approx. 30% Approx. 47%	Value Added Tax (VAT) Profits Tax Consumption and other taxes
Brazil[b]	States	State Participation Fund	21.5%	Income Tax Tax on Industrial Products
	Municipalities	Municipal Participation Fund	22.5%	Income Tax Tax on Industrial Products
Mexico	States	Participation System	20%	Income Tax Tax on Production and Services External Trade Tax Tax on Vehicles
Bolivia	Municipalities	Participation in Taxes	20%	All national taxes except Special Tax on Hydrocarbons
		National Dialogue	–	External Debt Relief (transfers from rest of world)
Colombia	Departments and municipalities	General Participation System	Fixed amount, depending on GDP growth	On total current income
Chile	Municipalities	Common Municipal Fund	Approx. 50%	Taxes on real estate, vehicles and licences to operate businesses

Source: Prepared by the author on the basis of official information of each country.

[a] This table does not include basic transfers from the intermediate to the municipal level, which in the case of Brazil amount to 25% of the Goods and Services Sales Tax, each state being obliged to distribute 75% of this amount as a function of the gross domestic product of each municipality.

[b] Other territorial participation systems in Brazil are the Compensation Fund on Exports of Industrial Products (FPEX) —10% of the revenue from the Tax on Industrial Products— and the Rural Territorial Tax.

were unified in a single General Participation System and a clear differentiation was made between a "multi-purpose" transfer system (17%) —which would now consist of basic transfers to be used primarily for the provision of basic infrastructure services— and two other systems, the amounts of which are calculated in the light of needs and costs. The latter two systems are designed to provide family income subsidies so that all inhabitants can have the same access to a certain minimum level of education and health services, thus representing a social redistribution system to be operated by the subnational levels of government (83% of all transfers).[22]

In Mexico, a clear differentiation was made from the beginning between freely disposable transfers to the states ("shares", of which 20% would be for the municipalities) and transfers aimed exclusively at financing specific social programmes, especially infrastructure and education and health services ("contributions" to the states and municipalities). The Mexican Participation System is the only one in the region in which the subnational fiscal effort predominates (45.17%), followed in this respect by Colombia, where 10% of the general-purpose resources depend on local fiscal efforts. In Chile, using a strictly redistributive criterion, the amount of transfers is

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[22] On the basis of the Colombian experience, Shah (2002) proposes the more general use in Latin America of "conditioned" transfers, in order that all citizens may have equal access to a certain minimum level of services. In this case, however, these would not be

conditioned territorial transfers but social transfers operated by the subnational levels of government. This author does not explain how local autonomy would be promoted under this system.

TABLE 4

Latin America: Distribution criteria for basic territorial transfers

Countries/ criteria used	Brazil (states)	Brazil (municipalities)	Mexico (states)	Bolivia (municipalities)	Colombia (general purpose)	Chile (municipalities)
Territory	85% for the northern, northeastern and centre-west regions	10% to municipal capitals				9%, equally shared
Number of inhabitants		86.4% to municipalities with more than 156,000 inhabitants; 13.6% to those with less than 156,000	45.17%	100% of shared resources	40%	13.5%
Poverty				100% of resources from External Debt Relief	40% according to level of unsatisfied basic needs	27% according to number of properties exempt from real estate taxes
Own efforts (directly or inversely)			45.17% according to increase in own income 9.66% in inverse relation to the shared resources received per inhabitant		10% according to increase in own income	31.5% according to lower per capita fiscal income
Administrative efficiency					10%	5%
Provision for emergencies						5%

Source: Prepared by the author on the basis of each country's legislation.

calculated as an inverse function of per capita municipal income.

4. Conditioning of expenditure

Table 5 gives a summary of the conditions imposed on the use of basic transfers in each of the countries studied. Neither Argentina nor Mexico apply conditions on the use of these transfers.

In Brazil, the Fiscal Responsibility Act adopted in the year 2000 (Federal Republic of Brazil, 2000) lays down that states and municipalities can only spend a maximum of 50% on personnel costs, or 60% in the case of the federal government. Furthermore, according to the 1988 Constitution, at least 25% of the expenditure of states and municipalities must be devoted to education.

Brazil has an ongoing policy of seeking to reduce territorial differences in the levels of provision of social services. With this aim, since 1988 health services receive additional compensatory financing through the Unified Health System, and in 2000, through a constitutional amendment, it was decided to gradually increase transfers and the conditions imposed on expenditure for the benefit of this sector. In addition, in order to reduce territorial differences in school education services, the Fund for the Maintenance and Development of Basic Education and the Upgrading of Teaching Staff (FUNDEF) was established, mainly financed through a 15% share in the State Participation Fund, the Municipal Participation Fund, the Goods and Services Sales Tax and the Export Promotion Agency (APEX), for the purpose of ensuring a certain minimum level of public expenditure per pupil.

TABLE 5

**Latin America (seven countries): Conditions on the use
of basic territorial transfers**

Argentina	Brazil	Mexico	Venezuela	Bolivia	Colombia	Chile
None	a) Maximum of 50% for staff costs[a] b) 25% for education[a] c) 12% (states) and 15% (municipalities) for health[a]	20% for municipalities	50% for investment 20% for municipalities	Shared resources: i) Maximum of 25% for operational expenses ii) 7.5% for health iii) Participative preparation of municipal plans Resources from External Debt Relief: i) 10% for health, 20% for education ii) Subject to meeting targets	41%: sanitation 7%: sport 3%: culture	None

Source: Prepared by the author on the basis of each country's legislation.

[a] Limitation on expenditure, not only on the transfers.

Generally speaking, the unitary countries apply more conditions to basic transfers in line with the size of the latter. In Colombia, 51% of the "general purpose" transfers must be spent in sectors defined by the central government (41% on drinking water supply and sanitation). In Bolivia, although there are fewer conditions on basic transfers, in most of the municipalities these are used as local contributions for gaining access to resources from the Regional Development Fund (loans) and the Investment Fund for Production and Social Activities (transfers), which are assigned at the central level.[23]

Finally, in Chile basic transfers (coming from the municipal level itself) are freely disposable but, since they are only small, in most cases they are used almost entirely for operational expenditure (including that arising from the operation of the system of social transfers) and for the provision of some services such as refuse collection and disposal; for investment, the municipalities depend on various other sources, the most important of which is the Regional Development Fund, where local contributions are usually required and transfers are decided on a project by project basis at the intermediate level.[24]

**5. An overview of the transfer systems**

Using the analytical framework designed in the first part of this section (see table 1), figure 3 classifies the different transfer systems analysed and schematically outlines their characteristics and evolution. This figure shows that —except in the Participation System of Mexico and, to an incipient extent, that of Colombia—[25] the basic transfer systems adopted in Latin America do not help to encourage expenditure

[23] Although it is not among the countries studied, it is important to mention the case of Guatemala, where it was recently decided that resources from the Integral Municipal Development Programme will be distributed to municipalities and associations of municipalities "in direct proportion to their respective local contributions with regard to their respective levels of poverty and their population density, taking into account both the amount of local taxes collected and the value assigned to their citizens' contributions in terms of labour, kind or money for the provision of public goods" (Guatemala, 2002).

[24] In the case of primary health attention and school education in Chile and health attention and school education in Bolivia, there is decentralization —in principle, political decentralization— to the municipalities of responsibility for the provision of infrastructure, equipment and supporting personnel, but there is only operational decentralization of responsibility for specialized personnel (both the terms of employment and the financing of such personnel are decided at the national level). The particular feature of Chile is that the financing of specialized personnel is effected, in the case of education, through subsidies to municipalized and private schools according to the number of students who attend classes in them, and in the case of health services, through demand subsidies assigned through a system of evaluation of beneficiaries by the municipalities. Colombia has adopted the main lines of this system, but has applied it to the total cost of the services in question.

[25] And the Integral Municipal Development Programme in Guatemala.

FIGURE 3

Latin America (six countries): Transfer systems Autonomy of expenditure
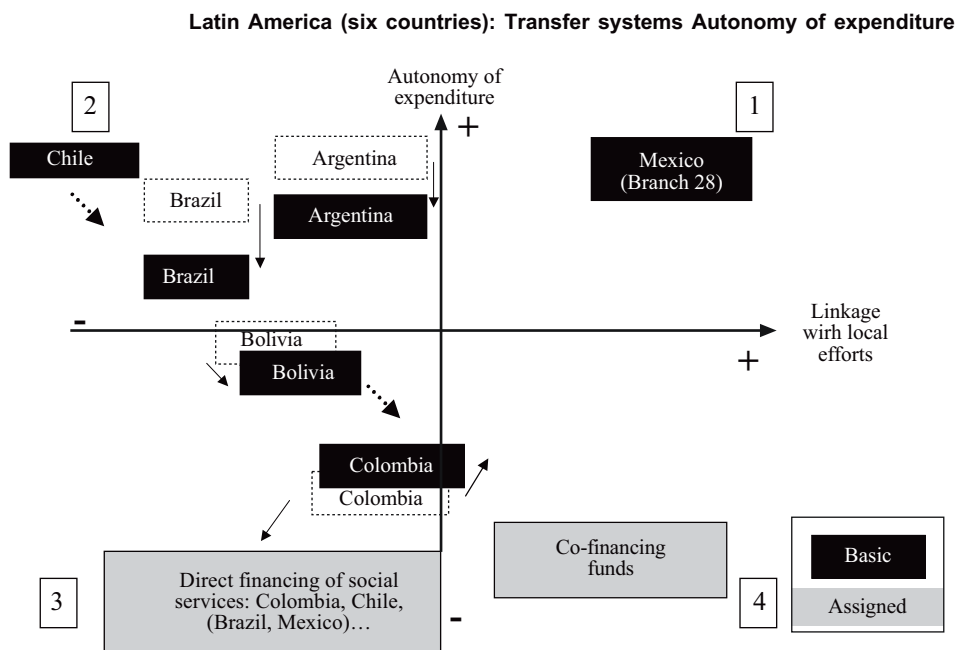
Source: Prepared by the author.

to depend on local contributions. Consequently, in the absence of this automatic control mechanism, there is a tendency to increase administrative control mechanisms, which is standard practice in the programmes financed with assigned transfers. At all events there is a clear tendency to move out of the quadrant corresponding to political decentralization of expenditure, including the cases of Chile and Bolivia mentioned in the previous paragraph (this situation is represented in figure 3 by the bold arrows).

Although the Mexican system promotes fiscal efficiency, it does not appear to give corresponding results in terms of equity: the fact that transfers are proportional to increases in revenue collection may act as a multiplier of disparities, as local governments with fewer resources would find it more difficult even to make investments in the improvement of their revenue collection procedures.[26] Furthermore, the Mexican

system is focused on the states, and reaches the municipalities only through them. Finally, the amounts of these freely disposable transfers are still markedly below those of the assigned transfers, so that there is a good deal of room for improving this system and even establishing a similar one aimed at the municipalities while maintaining the basic mechanism for ensuring efficiency.

The fundamental explanation for this situation would be that —as already noted on other occasions— in the political context in which these processes were initiated, the necessary distinction was not made between territorial distribution, on the one hand, and social distribution, designed to guarantee certain levels of access to the whole population, on the other. The present tendency all over the region, however, is precisely to make such a distinction, although this is more difficult in the case of the federal countries. This may be seen in the case of Brazil, and more clearly in that of Chile, but it is in Colombia that the distinction has been most clearly marked, as already noted.

So far, decentralization processes have been aimed mainly at the implementation of social policies. This tendency is evident even in the conditions imposed on the use of multi-purpose transfers under the new system introduced in Colombia. What is to be

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[26] In the European Union, territorial transfers are also subject to decisions which take account of the respective local (by the intermediate and /or municipal levels) and national contributions. Unlike the Mexican case, however, these transfers are exclusively for regions and localities whose per capita GDP is below the European average, and in principle they are proportional to that difference. At present, 41% of such transfers is for infrastructure and 34% for production development.

done, however, when increasing local autonomy is of decisive importance for enhancing economic competitiveness and incorporating small and medium-sized producers into this effort, so that they can increase their income? And what can be done to give all localities equal opportunities?

IV

Some guidelines

The transfer systems adopted in most of the countries of the region involve various combinations of political decentralization and purely operational decentralization of decisions taken by the central government. Both types of decentralization are of value, depending on the characteristics of the different types of public goods whose provision is decentralized, but generally speaking the transfer systems are causing the dividing line between the two types of decentralization to depend not so much on the demand characteristics of the goods in question as on the capacity of each local district to generate its own resources. This means that the right of citizens to provid themselves with local public goods depends on the level of wealth of the district in which they live: the poorer the district, the lower its level of autonomy in this respect.

Except in Brazil, the great majority of Latin Americans have very little autonomy for deciding, initiating and controlling the execution of local development strategies, and moreover this autonomy is tending to grow still smaller. Not only is the share of municipal expenditure in total public expenditure still quite small, and generally depends to a large extent on territorial transfers, but those transfers are tending to be increasingly subject to conditions on their use. In each case, local autonomy depends more and more on the capacity of the local area to generate income of its own —specifically, to receive tax revenue— and in Latin America this capacity is extremely unequally distributed, since the generation of value added is concentrated in a relatively small number of localities. All this gives rise to a situation of growing inequality as regards a citizen's right to receive local public goods.

The transfer systems prevailing in the region are inadequate not only in terms of equity but also efficiency. Even within the limited amounts of autonomy they allow, they tend to separate decisions on expenditure from those on the generation of local income (and this occurs even in Brazil, the only exception in the region being the Participation System applied in Mexico). They thus impede the process of

revealing geographically differentiated preferences, which is essential if decentralization is to contribute to efficiency.

There is undoubtedly a need for transfer systems which are not linked with local fiscal efforts, especially in the case of social services. In Latin America, however, the main design problem is that, in the attempt to "devolve" to local levels of government the functions which they previously exercised, the financing of services such as education and health — in which the State must ensure that all persons have a similar level of access, regardless of their place of residence— has been treated in the same way as the financing of basic infrastructure services, the demand for which is clearly differentiated by physical factors. In the first case, the autonomy of local governments should be limited to the definition of qualitative aspects, and as far as financing is concerned, those governments should act primarily as agents of a national social redistribution system. In the second case —basic infrastructure services— however, it would be extremely desirable to transfer the whole process of their provision, including the decisions on their financing, to the subnational level whose territorial area of authority best corresponds to the common characteristics of the demand for each such public good.

A clear distinction should be made, as in Colombia, between social transfers designed to give all individuals equal opportunities and territorial transfers proper, which are designed to give equal opportunities to subnational communities in terms of the goods consumed by all, the major part of which, from the financial point of view, would correspond to basic infrastructure services.[27] In order to reconcile equity with efficiency, in this second case the transfers should

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[27] A given level of drinking water consumption should form part of the "basket" of social goods. As we proposed elsewhere, subsidies for such consumption would be added to the income flow that local communities should receive in order to provide their inhabitants with drinking water and sanitation (Finot, 1999).

be freely disposable but proportional to the relative fiscal efforts of each local community.

These changes in the system of territorial transfers could be accompanied by changes in local decision-making processes designed to promote the effective identification of preferences: that is to say, to promote effective citizen participation in decisions not only on "what" and "how much" to provide, but also on how much of their income they should contribute for that provision. The systems of decision-making, representation and participation should be adapted to this purpose.

The present system for electing citizens' representatives at the municipal level —proportional representation— would not appear to be the most suitable for securing better expression of local citizens' preferences: the "preferences" represented under this system could easily correspond to those of the political leaders who put candidates on their lists rather than to those of the citizens they are supposed to represent. The opposite could be expected if a system of territorial representation were adopted in which representatives were obliged to collect information from the people they represent, and inform the respective electoral districts accordingly, on pain of losing their seats. This change should be accompanied by the installation of easily understood systems of basic and management information and social participation and representation policies designed to equalize citizens' capacity to exert their influence. Furthermore, in order to clearly establish who is responsible for controlling expenditure, a clear distinction should be made, both in budgets and in the accounts, between items corresponding to autonomous decisions of the local communities and those corresponding to actions executed by the local governments as agents of the central government.

In order for the citizens thus represented to be able to decide what part of their income should be used for the provision of local public goods, as a function of the benefits offered by different options for such provision, it would be essential —as I have been proposing since 1996— to increase citizens' powers to levy taxes on themselves, and specifically, to decide the rates of local taxes directly affecting their property and income,[28] incorporating in the calculation of the local contributions for the generation of public goods the amounts that citizens contribute through their organizations in the form of labour, kind or money.[29]

Territorial transfers, then, should be subject to these local decisions. In the interests of stability, however, the national authorities should periodically define the factors by which the subnational fiscal efforts are multiplied for determining the amount of such transfers.

Within this institutional framework, one crucial aspect remains to be settled: to what level should the provision of each local public good be decentralized? Obviously, the closer the correspondence between the area of demand for each local public good and the ambit of the respective political decisions on resource assignment, the more efficient the latter decisions will be. On the one hand, decisions on the provision (and financing) of local goods should be decentralized to the levels closest to the citizens (the sub-municipal levels), while on the other hand territorial association in line with the different ambits of demand should be promoted through the new transfer system (Finot, 2003).

In the case of habitat-related public goods, many decisions could be taken at sub-municipal levels. With regard to production development, however, the municipal area is often insufficient. In order to stimulate local economic development under conditions of efficiency and equity, then, both in unitary and federal countries it should promote —through territorial transfer systems like that proposed above (freely disposable but proportional to the respective relative contributions)— the formation of municipal consortia configured as a function of physical, biological, cultural and/or economic factors common to the members of the consortium (but different from other areas of the country).

This form of territorial organization could be expected to correspond better to geographical differences in demand for public goods, such as the planning of land use, the organization of the supply of services, and the provision of basic infrastructure services, and it would have the additional advantage of generating economies of scale, not only for creating favourable conditions for local and/or regional development but also for managing the provision of social services and subsidies better. In order to facilitate these functions, such consortia should be of a public

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[28] This does not mean decentralizing the tax collection process. In many cases it is preferable to have a single tax collection system serving all levels of government. It would also be appropriate, in order to reduce moral hazard, to externalize the valuation of real estate used as a basis for calculating property taxes.

[29] As currently provided for in the Regulations of the General Decentralization Act in Guatemala.

nature but should only be temporary, so that the districts represented can keep on adapting to the way the geographical configuration of demand evolves over time.[30]

Through a system of territorial transfers like that proposed above, the formulation of local/regional development strategies involving commitments for local contributions could be promoted through processes of concerted decision-making and action between public, social and private actors and the various levels of the State. These strategies would serve as the basis for land use definition and a multi-year budget programme for the provision of infrastructure services and advanced services. The levels above the purely local ones would be responsible for complementing these decisions with the provision of such services in their own respective ambits and with

policies in the areas of the environment, production development and support for small and medium-sized enterprises.

These broad guidelines are aimed primarily at providing some basic elements for progressing efficiently towards equality of opportunities for local communities and creating suitable conditions for local and/or regional development as a function of real current economic development needs. Obviously, however, in so far as citizens are better represented and can participate effectively in decisions on their contributions, the fact of achieving deeper decentralization like that required for local development will also help to reduce corruption, to develop citizenship, and to broaden social inclusion.

(Original: Spanish)

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[30] Coinciding with our proposal, the Brazilian Congress has just adopted an Act giving the status of public organizations to all inter-territorial consortia, for as long as the members of the consortia deem appropriate.

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Is there room for
local development in
a globalized world?

Sergio Boisier

This article seeks to answer the question asked in the title: no easy task, as we shall see. To this end, it will be necessary, firstly, to clarify what "globalization" means in this context; secondly, to identify the relations between the globalization process and local areas: a matter which some people consider to be ambiguous or (falsely) solved through the "death" of the local dimension and of geography in general; thirdly, to determine whether something like "local development" belongs in the logic of globalization, clarifying in the process the different interpretations made of this concept, and finally, to examine the contributions (if any) made by the universities and local development itself to globalization, to the functioning of supranational blocs (such as MERCOSUR, for example), to competitiveness, and to development itself.

Sergio Boisier

Economist,

Executive President,

Centro de Anacción,

Territorio y Sociedad.

Former Director of Regional

Planning and Policies of the

Latin American and Caribbean

Institute for Economic and

Social Planning (ECLAC/ILPES)

✎ sboisier@vtr.net

I

Globalization: a Pandora's Box?

Globalization is an important item in the debate which has arisen on the nature of the international order since the end of the Cold War. It is not a concept linked with a clearly articulated theory, but at all events it has become a powerful metaphor for describing a number of worldwide processes currently under way. From our point of view, one of the most important characteristics of globalization lies in the multiple dialectics to which it gives rise: in political geography, for example, it gives rise diachronically to forces that tend to promote the creation of supranational quasi-States and subnational quasi-States, or to changes in the geographic location of manufacturing, leading to the creation of a single global market which contrasts with the enormous range of discontinuous production locations scattered all over the world. The first dialectic, at the macro level, produces a kind of schizophrenia at the micro level among individuals, by subjecting them to the tension between needing to be universal and the simultaneous need to be local, while the second dialectic gives rise to a networked form of production and a discontinuous type of physical and economic geography at the manufacturing level.

As is well known, there are at least two ways of referring to globalization: one metaphorical and the other more scientific; this is not to say that metaphors cannot have a scientific nature, but they are always "circumloquial" and sometimes it is necessary to look for the hidden or concealed truth in the language used. From the metaphorical standpoint, García Canclini (1999) has brilliantly described globalization as an "unidentified cultural object"; Baumann (2000) has referred to it as "a fetish, a magic spell, a key designed to open all the doors to all mysteries, present and past"; Boisier, recalling film-maker Luis Buñuel, has called it "an obscure object of desire" and "the discreet charm of the bourgeoisie", and once again, García Canclini (1999) has said with incisive humour that "everything that is not the fault of the Corriente del Niño is the fault of globalization".

As we all know, the world is already divided between anti-globalists and pro-globalists: the former are more radical, with charismatic leaders like Michel Bové or Ignacio Ramonet, while the latter, whose leaders are organizations like the World Bank, the International Monetary Fund (IMF) and the World Trade Organization (WTO), are more conservative. The former are idealists who want to swim against the current, while the latter want to impose an ideological and political framework based on the ill-named Washington Consensus. There is a great deal of picturesque dramatization, a lot of ignorance, and a large amount of authoritarianism in this wide range of attitudes. From a structural point of view, appropriate to a more scientific standpoint, and in the space available in this article, it can only be said – and this is perhaps the most important aspect —that the term "globalization" is a descriptor of the present technology— and knowledge-based phase in the development of capitalism, and as such it forms part of the logic of the capitalist system, above and beyond any simplistic presumptions regarding the "evil" or "perversity" of specific personalities: speculators such as Soros, intellectuals such as Stiglitz, techno-industrialists such as Gates, politicians such as Bush, Blair or Chirac, or, at a much more modest level, intellectuals of the most varied type.

As everyone knows, the system of social production relations called "capitalism" —which is precisely that, and not an ideology— was born in the sixteenth century as predominantly commercial "proto-capitalism", which developed above all in Holland (Maddison, 1991), and it was in mid-eighteenth century England, through the Industrial Revolution, that it was to open the way for an "industrial" form which, in turn, would make room for a "financial" variety which would finally enter the era of "the end of history" (to paraphrase Francis Fukuyama) as a "techno-cognitive" form based on technology and knowledge. Each of these stages or forms coexists with the others, but one of them dominates at any given time. The central feature of the techno-cognitive stage of capitalism is the simultaneous existence of two phenomena which may be imagined as two curves in a quadrant: first, an ever-shorter life cycle for each generation of products, and second, ever-higher costs in terms of research, development and innovation in order to pass from a product of generation n to one of generation $n+1$. Thus, there is one curve which is exponentially decreasing, and one which is exponentially growing. The speed of generation of new knowledge naturally lies behind this.

The capitalist system, like any biological or social system, has a more than Kantian absolute need: its constant reproduction. To meet this need, it must recover as quickly as possible the resources spent on the invention, design, manufacture and marketing of the product of generation $n+1$, and in view of this need, the system does not and will not tolerate frontiers, customs posts, tariffs, prohibitions, or any other mechanisms that hinder trade: the system needs a single unitary space for trading.[1] In the light of this argument, it is easy to understand the frantic race to sign all kinds of agreements between countries and to understand what ECLAC means when it speaks of "open regionalism" —a game played with enthusiasm by, for example, Chile, which as a small economy must place its bets on all the gaming tables of this sort of world casino.

To sum up, it may be noted that external openness, which is perhaps the most visible manifestation of globalization, obliges countries and regions to use that openness to place their tradeable products in two niches of international trade: the niche corresponding to the modernity of the products traded, and that corresponding to their competitiveness.[2] It may be noted in passing that "modernity of production" is something which is intrinsically associated with "innovation", which in turn, like "competitiveness" is now increasingly linked to territorial location.[3]

Globalization and territorial location form a duo whose interaction and even its very existence are the subject of diametrically opposed positions between those who hold that globalization reduces the importance of territorial location and those who consider that, on the contrary, it leads to a new enhancement of that dimension. According to Simmies (1997), the specialists in this matter tend to fall into two groups: those who are concerned with the increasingly important role played by big corporations and those who are more interested in the smaller firms, while both groups are interested in the causes of the spatial agglomeration of innovative economic activities.

One side of the argument —supported, for example, by Froebel, Heinrichs and Kreye; Henderson and Castells, and Amin and Robbins— is that a global economy dominated by the great transnational corporations has arisen. The decisions of these corporations on the location of production or research and development (R&D) activities determine to a large extent what type of economic activity will grow up and where. Thus, the local territorial level becomes a kind of "dependent variable" in the innovative growth function.

The other side of the argument, however, represented by authors such as Piore and Sabel; Porter, Scott and Storper; Stöhr, Vásquez-Barquero, Garofoli, Cuadrado-Roura and many specialists from Latin America —including the present author— and from the Third World in general, is that the local level is becoming more and not less important in terms of its contribution to innovation and high technology.

The "globalizers" base their argument on the obvious fact that an important proportion of capital is becoming concentrated and centralized at the level of the international economy, as is confirmed by abundant data. It follows from this line of argument that local areas, regions and even whole countries are being redesigned in line with the global economy and its main actors: the transnational corporations. The "localists", in contrast, point to the supposed reaction of consumption to the homogenization of the goods and services traded and the fact that many enterprises have responded by "flexible specialization": a strategy of permanent innovation that seeks to adapt to incessant change rather than trying to control it. Flexible specialization goes hand in hand with small scales of production and with the need for "collective learning", which is greatly facilitated by geographical proximity: one of the reasons for the enhancement of the local level.

The fact is that both arguments share the truth. Globalization affects the size (and inevitably the location) of production units in two opposing and simultaneous ways. Economies of scale favour large size and territorial concentration, while the economies of flexibility demonstrated by Storper (1997) and those of differentiation favour small size and dispersion, but as small production units working in isolation have a high probability of failure, those economies also favour the formation of what are called "new industrial districts".

From another point of view, it may be noted that there are at least three arguments in support of the theory of the enhancement of the local level, precisely within the context of globalization.

Let us begin with a sociological argument. As Edgar Morin once pointed out, modernity has given

[1] But, paradoxically, multiple spaces for production. Naturally, the logic of the system does not fully coincide in the short term with the logic of the defence of national economies, but it is easy to guess which of the contenders will finally succeed in imposing its form of world organization.
[2] See, for example, the excellent study by Silva (2003).
[3] These interrelations were analysed by the author in Boisier (2003a).

rise to a metastasis in Man's ego which has led him to believe in a new form of citizenship, that of "citizen of the world", devoid of any atavistic links identifying him with his "native soil", whether large or small. "I've Been Moved" —the well-known fanciful interpretation of the initials IBM— is an expression of this vanity (not being from here nor from there, nor being of any particular age or identifying colour, as in the song by the Argentine singer/composer Facundo Cabral), because the truth is that most of us are not even full citizens of our own nations (except in the legal acceptance of the term). In most cases, we are merely "local citizens", never straying far from home and living a limited everyday life.

A small empirical survey would be sufficient to show that the vast majority of people live their lives in a geographical space with a radius of not more than 500 kilometres. Within that space they live, form a family, work, obtain education and health, pass their spare time, and generally end up being buried there, in this space where everyday life goes on. It is easy to infer that, for any given individual, his possibility of realizing his own life project depends to a crucial extent on what happens over time in his everyday environment. It is therefore of vital importance for all of us that our everyday environment should function in the best possible conditions, since this increases the probability of successfully realizing our individual life projects in the area where we live. This is obviously a very good reason for involving ourselves as citizens in the way our own local areas are run. The same is true for micro-, small and medium-sized enterprises. The use of systemic "recursion" in this argument should also be noted, so that causes and effects change places over time.

From the technical and economic standpoint, the enhanced importance of the local dimension is clear and extremely significant. One of the most powerful effects of the scientific and technological revolution is that it makes possible, through microelectronics and other means, the functional and territorial segmentation of production processes without any loss of efficiency or profitability. This is a key question, because as it is now possible to break down a production process into component parts, an enterprise (now almost a holding) that plans to locate those parts of the process in different non-contiguous places in the world must carefully examine the characteristics of each place if its plans are to have a positive outcome. The location selected can make all the difference between success and failure in post-Fordist production, networked

production, or however it may be called. This is why globalization now requires detailed social analyses —as well as economic and technological studies— of the multiple locations where production activities are to be undertaken.

It is important, therefore, not to confuse the inevitable de-nationalization of industry referred to by Reich (1993), the former Secretary of Labor of the United States, with a decline in the importance of the local dimension. These are two different things: industries may have no homeland, but they do have vitally important territorial locations.

The importance of the local dimension has also been enhanced from the point of view of culture and identity, albeit within a globalizing dialectic due to the confrontation between the tendencies towards technological and cultural homogenization and defence of the individual and the community. Who could remain unmoved by total loss of identity and its replacement by total alienation? Who could remain indifferent to the loss of nationality and its replacement by imaginary corporate citizenship? Who would prefer to be a citizen of Coca Cola or Mitsubishi rather than being, say, a Chilean or an Argentinean? Between total alienation and complete marginalization lies syncretism and the "hybrid" culture of García Canclini. Contrary to what Bauman claims, being local in a globalized world is *not* a sign of poverty and social degradation. The happy mean is expressed rather by Robertson's neologism "glocal": thinking global and acting local (for the enterprise) and thinking local and acting global (for the local area). Although Aristotle reminds us that Man is a "political animal", it is no less true that he is also primarily a "territorial animal", and this characteristic of human beings is strongly evident now. For good reason, exile is considered to be an extreme punishment. If anyone still has any doubts about whether we are confirmed "territorial animals", merely ask the Israelis and Palestinians whether their territory "matters" to them or not.

But even so, the above considerations do not exhaust all the implications of the links between globalization and the local level.

As we all know, knowledge is perhaps the main pillar of globalization or of the techno-cognitive phase of capitalism and the gradual formation of a "knowledge society". We now know that there are new and complex links between knowledge and the local level, in such areas as innovation and the local level, collective learning, tacit and codified knowledge, and the generation of knowledge-based regions: a broad

category which includes such notions as learning regions, intelligent regions, and innovative environments (Boisier, 2003b and 2002).

The conclusions of this section are thus twofold: globalization corresponds to a phase in the development of capitalism, and as such it operates in a systemic manner that transcends individual or collective wills, but this characteristic does not make it ungovernable: in globalization, or in this stage of capitalism, the local dimension plays a more important role than in the past. The local dimension must not be confused with distance, nor must geography be confused with what appears on the map. As Bateson (2002) so rightly said: "the name is not the thing named, nor is the map the same thing as the territory itself".

II

Local development: is there something behind the tautology?

The word "development" denotes a concept which has "completude":[4] it does not need anything else in order to be fully understood. In this sense, we must contradict Bateson and say that in this respect "the name is the same as the thing which is named", and we must add that all the adjectives that usually accompany this noun only create redundancies, for, as we will see below, development can only be local, so that it cannot be anything but "human" or "sustainable" or "endogenous" or whatever, because otherwise, what kind of entelechy would it be?

This is not the place to repeat the lengthy arguments which have been presented in support of such assertions; these tautologies probably stem from the growing need to make a distinction between the notions of "growth" and "development" (Boisier, 2003b) or at best they serve to indicate an emphasis, but not to make a distinction.

We must look back and acknowledge the enormous wisdom of Perroux (1950) when he wrote that the plain but honest truth is that growth does not appear everywhere at once; it appears with varying intensity in growth points or poles; it spreads through various channels and has varying end-results for the economy as a whole (these words were underlined in the original). An observation like this, no matter who it comes from, should be sufficient to show without any doubt that development (and it should be noted that

Perroux was talking about growth, which is a much simpler question than development) is clearly a local and not a national phenomenon in both a geographical and systemic sense, and the concept of global development is merely an abstraction based on averages. Furthermore, what is usually called "a developed country" is rarely developed all over its area, and it might be more accurate to say that a developed country is one in which a high proportion of its territory and population is in that situation.

If pure reason were not enough, then the question may be posed: is development a phenomenon which is uniformly present throughout a given country? No? Then we must admit that we are talking about a local phenomenon: that is to say, one which is localized and established in the economic, technical, social and cultural characteristics of particular places. Hence, it may be held that development is a path-dependent phenomenon[5] that evolves over time and, as such, always begins in one place (or several, but never in all places at once) and is always an essentially endogenous process (although its material base may be quite exogenous), always decentralized, and always has a capillary-type dynamic "from the bottom up and from the centre outwards" which will eventually produce, as a function of the territorial dialectic and of modernity itself, a development map which is rarely uniform but is usually in the form of an archipelago or, taken to an extreme, reflects a centre/periphery dichotomy.

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[4] "Completude" might seem a linguistic sacrilege, but if Octavio Paz used this word when he said "*we are incomplete beings, and the desire for love reflects our eternal thirst for "completude""* (Paz, 1993, p. 41), then all we mere mortals are fully entitled to use it.

[5] The concept of path dependence is associated with the irreversibility of time, something which is typical of non-Newtonian physics.

There is an important study (UNDP/ILO/UNOPS/EUR, 2002) which highlights some important points regarding local development: i) the development of a local area is strongly conditioned by the will and capacity of the local actors; ii) the development of such an area revolves around the enhancement of local potential; iii) the importance of small and medium-sized enterprises has been clearly shown everywhere; iv) development depends on the capacity to integrate business initiatives; v) the local area must be provided with appropriate instruments, and vi) the secret of success lies in the capacity for active interaction between the local, national and international levels.

If we acknowledge the territorially local or localized nature of development, then we must ask ourselves: what do we really mean when we use the expression "local development", other than merely emphasizing obvious and tautological aspects? Is there something substantive and worthwhile in using that expression? Yes, there is.

A review of the literature on this matter reveals that there is a good deal of confusion about this concept. Perhaps Guimaraes (1997) was partly right when he commented that "local development" describes a practice which does not have much theoretical basis. In a quick search through that literature, the definition given by Buarque (1999) is particularly interesting: *Local development is an endogenous process observed in small territorial units and human settlements which is capable of promoting economic growth and an improvement in the quality of life of the population. Although it is a movement with a strong internal content, local development forms part of a broader and more complex reality, with which it interacts and from which it receives both positive and negative influences and pressures. The general concept of local development can be applied to different kinds of small territorial areas and human settlements, from local communities ...to municipalities and even small micro-regions. Municipal development is therefore a particular case of local development whose area of action is determined by the administrative area of the municipality"*. Buarque goes on to say: *Local development under globalization is a direct result of the capacity of the local actors and society to organize themselves and mobilize their efforts on the basis of their potential and their cultural matrix, in order to define their aims and explore their priorities and special characteristics to obtain greater competitiveness within a context of rapid and far-reaching change.*

Other important references on this subject are to be found in the studies by Antonio Vásquez-Barquero, José Arocena, Augusto de Franco, Pierre Muller, Pierre Veltz and Michel Savy, Francisco Alburquerque and others.

Globalization is a highly complex techno-socio-economic matrix, both because of the number of elements involved and the number of interactions and dialectics it contains. As already noted, to some extent it is more a currently used metaphor than a well-established theory. In the field of activities that require economies of scale, it favours mergers, the formation of huge enterprises, concentration and homogenization. In the field of activities that require economies of differentiation, it favours small-scale enterprises, flexible networked production, multiple locations, and local roots.

It is in this latter respect that a space is opened up for local development in globalization. There are three complementary approaches to this development which are not necessarily independent of each other but which involve substantially different forms of local development, beyond the undeniable geographical dimension: the approach which sees local development as a matrix of diverse industrial structures, the approach which sees it as an endogenous process of structural change, and the approach which envisages the "empowerment" of local society.

1. Local development as a matrix of industrial structures

Krugman (1991) speaks of the "resurrection of economic geography" due to the recognition of the existence of increasing returns, which leads to the reformulation of localization theories on the basis of the study of the economic advantages provided by processes of spatial agglomeration of economic agents.[6] Another part of this resurrection is the re-reading of Alfred Marshall and the rediscovery of "industrial districts" and the "industrial atmosphere", the growing importance of ensuring the global "competitiveness" of industrial activities —a subject obviously associated with Porter— and the evidence supporting the importance of a territorial "environment" which facilitates innovation, starting with the work of Pierre Aydalot.

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[6] The Spanish journal *Investigaciones Regionales* reproduces a notable dialogue, in a relaxed and informal tone, between P. Krugman and M. Fujita which is worth reading carefully (see Krugman and Fujita, 2004).

The local development approach centered on the industrial structure has given rise to three views on analysis, research and dissemination, based respectively on i) industrial districts "Italian style"; ii) an environment which facilitates innovation, as in France, and iii) clusters "American style".

I imagine we are all pretty well familiar with the content of these views. In industrial districts, as may be seen empirically in Northern Italy, the main element is specialization and "coopetition", a neologism invented in order to describe a form of business conduct in which there is cooperation in certain links of the value chain and competition in others. The strong cultural basis for these forms of collective conduct and the importance of social capital have been extensively proven.[7]

With regard to the "innovative environment", a concept invented by the GREMI group (Groupe de Recherche Européen sur les Milieux Innovateurs), it is claimed that the "environment" is a collective operator which reduces the static and dynamic degrees of uncertainty faced by enterprises through the tacit and explicit operation of functional interdependence between the local players (actors), by way of such functions as research, transmission, selection, decoding, transformation and control of information. The notion of the "innovative environment" or local setting has three characteristics, according to Vásquez-Barquero (1999): i) firstly, it refers to a territory which has no precise boundaries but which forms a unit and which is the place where the actors organize themselves, use material and non-material resources, and produce and exchange goods, services and communications; ii) the local actors also form a network through their relations and contacts, thus establishing links of cooperation and interdependence; and iii) the local environment contains collective learning processes which enable it to respond to changes in the environment through labour mobility in the local market, exchanges of product, process, organizational and marketing technology, provision of specialized services, all kinds of information flows, or the strategies of the actors.

The concept of clusters was introduced into territorial economic analysis by Michael Porter (1998), who defined clusters as geographic concentrations of enterprises and institutions interconnected in a particular field (or sector). According to that article by Porter, such concentrations do not have well-defined geographical limits in a political sense (they are "blotches" of activity on the map and as such spread across national or international frontiers) and their two most important characteristics are that they make possible the emergence of simultaneous attitudes of business competition and cooperation, and they allow each member of the agglomeration to benefit as if he were operating on a larger scale or as if he were associated with others, but without sacrificing his flexibility. Porter himself cites the examples of the concentrations of enterprises in wine production in California, leather in Italy, or the chemical industry in Germany and Switzerland.

According to Helmsing (2000), the strength of concentrations of small and medium-sized specialized enterprises lies in their external economies of scale and scope. That author cites recent studies which show, firstly, the great variety of agglomerations which already exist, and secondly, their internal heterogeneity. Indeed, some of them are connected with activities controlled by big transnational corporations, such as a potential copper-mining agglomeration in Chile.

Ramos (1997) considers that the formation of clusters, which he calls production complexes, has a good deal to do with the fact that the competitiveness of an enterprise is further enhanced by the competitiveness of the set of enterprises and activities operating in the vicinity. This competitiveness of the group as a whole derives from substantial externalities, economies of agglomeration, technological spillover and innovations arising from the active interaction of firms which are in the same location. Thus, the concept of clusters forms part of the wide field of theories on industry location.

A study by ECLAC (Buitelaar, 2000) contains one of the clearest and most exhaustive reviews of this concept and presents an interesting classification of clusters, originating in a study by Roelandt and den Hertog (1999). This classification distinguishes the national-macro, sectoral-macro and enterprise-macro levels and three corresponding concepts of clusters: sectoral links within an economic structure, inter- and intra-industry links, and contacts between enterprises, respectively. For Buitelaar, clusters are therefore geographical concentrations of interlinked groups of enterprises and institutions which form a value system and whose position in the market is explained by the learning capacity of the whole.

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[7] For a critical view on the replicability of the Italian districts, see Bianchi and Miller (1999).

2. Local development as an endogenous process of structural change

The concept of endogenous development is just as popular nowadays as that of local development. It is not easy to distinguish between the two, but it is almost essential to do so.

First of all, it is necessary once again to make a distinction between the concepts of growth and development, since in mainstream thinking on economic growth theories, starting with the work of P. Romer, R. Lucas, X. Sala-i-Martin and others, the concept of "endogenous growth" has gained currency for describing a global process in which spending on scientific and technological research —the main factor in progress through knowledge— obeys an economic rationale, that is to say, money is spend on R&D because it is profitable, as illustrated so eloquently by the case of research on the human genome. Solow's residual factor is internalized in the production function. Without any need to assume the exogenous growth of any variable, models of this type generate positive long-term economic growth rates.

Global growth, then, is now considered to be an endogenous process, but extrapolating such a global situation to a smaller geographical scale, such as a locality, is obviously confusing because, at least from the point of view of decision-making (and it must be allowed that an economic growth process is necessarily the result of a matrix of decisions taken by various different agents), local growth (whatever its exact scale) inevitably takes on an increasingly exogenous aspect in globalization, because of the increasingly alienigenous nature of the decision-makers. In other words, although decision-makers may act in line with the purest economic rationality, they are mostly and increasingly not inhabitants of the place in question. In this sense, then, it is reasonable to speak of exogenous subnational growth.

It is quite true, however, that every development process is by definition an endogenous process whose conception, design and implementation only belong to the community inhabiting the given locality. This does not appear to be disputed by any specialist, but it is necessary to be very careful and precise in the language used and, of course, to get away from the synonym between growth and development.

Garofoli (1995), who is one of the most notable exponents of the "new regionalism" in Europe, defines endogenous development as follows: "In reality, endogenous development means the capacity to transform the social and economic system; the capacity to react to outside challenges; the promotion of social learning, and the capacity to introduce specific forms of social regulation at the local level which favour the development of the foregoing characteristics. In other words, endogenous development is the capacity to innovate at the local level".

From another point of view, it could also be asserted that the endogenous nature of processes of territorial change should be understood as a phenomenon which operates on at least four levels that intersect and cross each other.

Firstly, that endogeneity refers to or occurs at the political level, where it is identified as increasing local capacity to take important decisions on different development options, different styles of development, and the use of the corresponding instruments: that is to say, the capacity to design and execute development policies, and above all, the capacity to negotiate on the elements that define the setting of the local area. Behind this capacity, there must necessarily be a political arrangement that favours decentralization.

Secondly, endogeneity also exists on the economic level, where it refers to the appropriation and local reinvestment of part of the surplus in order to diversify the local economy and at the same time give it a permanent base for long-term sustainability. On the economic level, endogenizing local growth means in practice seeking to reconcile the long-term strategic objectives of the local area with the long-term strategies of the non-local capital present in the area. Local reinvestment will naturally depend on the economic expectations in respect of the local area and on the pact, agreement or political project of the social forces which are interested in the future and act accordingly.

Thirdly, endogeneity is also interpreted, at the scientific and technological level, as the internal capacity of a system —in this case, an organized territory— to generate its own technological drives for change, capable of bringing about qualitative changes in the system itself. The existence of a local science and technology system —in line with Sábato— is an essential condition for this.

Fourthly, endogeneity also exists at the cultural level, as a kind of matrix that generates a socio-territorial identity, which is now considered to be of fundamental importance for development in the true sense. Local culture, whether recovered or newly built, requires an Aristotelian collective rhetoric: an *ethos*, a *pathos* and a *logos*.

Thus, the approach to local development as an endogenous process of change straddles both growth and development. It therefore shares elements of exogeneity associated with local growth and endogenous elements associated with development, since growth and development, although structurally different, are not independent phenomena, even though their linkages are complex and not fully known. Consequently, institutions, organizations and actors —all categories belonging to the local area— become important elements from the point of view of policy design.

3. Local development as the empowerment of local society

The Organization for Economic Cooperation and Development (OECD, 2001) has come up with a new local development proposal based on the devolution of executive authority to the local levels. It considers that globalization calls for the devolution of capabilities to the local ambit.

People usually view devolution and globalization as two opposite phenomena. One is seen as a process of increased local decision-making power; the other as a process of increased internationalization of economic interactions. The two tendencies are interdependent, however, since in order to compete successfully in a globalized economy, the local levels increasingly need policies that will help them to construct and exploit endogenous capabilities.

Globalization implies growing international flows of capital and technology and the expansion of international markets and competition. This is creating a need for more rapid and profound economic adjustments than in the past. At the same time, the performance of regions and cities is less closely linked to the fate of the national economy and more affected by international events. Globalization is changing the rationale of public intervention in terms of how to regulate the economy and how to put public policies in the right place, that is to say, how to recognize subnational levels of authority.

The door has been opened for local society to assume (or recover) areas of authority which will enable it to intervene in its own processes of social change (growth or development). It is interesting to note that the hypothetical curves of (social) demand for local autonomy and of the (State) supply of such autonomy are already intersecting here and now, and not at an almost infinite point in time. The importance of this phenomenon in processes of forming supranational associations (such as MERCOSUR, for example) is clear. Nothing is automatic, however, and everything requires collective "intelligence", which must be strengthened.

It may be concluded that globalization, as a process which simultaneously seeks to form a single marketing space but multiple production locations, contains forces which promote the local dissemination of segments of various value chains, while also giving rise to forces that promote not only decentralization but also centralization and concentration. In view of this combination of effects, it may be said that while globalization stimulates processes of local growth, this does not mean that it also stimulates processes of local development. The location of segments of value chains in a discontinuous manner all over the world can strengthen latent structures or it can create structures from which industrial districts, innovative environments or clusters can be formed, but there does not seem to be anything automatic in this. Whether they are strengthened or created, phenomena like these become environmental conditions for sustaining development processes, which require intelligent social interventions more than growth processes do. Whether or not globalization stimulates highly endogenous processes of social change in some local areas will depend on the dialectics that come into play, and this will be linked with the devolution of capacities and areas of authority that the demands of competitiveness will tend to make the responsibility of the State. What also seems clear is the need for informed and motivated local societies which have the minimum level of knowledge needed to understand the globalization process and which are capable of forming consensuses in order to act in a pro-active manner: i.e., they must be socially organized.

Haddad (undated), basing his views on Boisier (1991), says in a report on human development in MERCOSUR that this *capacity of a region for social organization is the endogenous factor par excellence for transforming growth into development, through a complex network of development institutions and agents linked together with a regional culture and a political project.*

III

The formation of supranational spaces in Latin American globalization: their effects on local growth and development processes

As from the 1980s, Latin American economic integration has registered a notably vigorous resurgence. This process has taken place in a national and international economic context which is radically different from the past. Thus, whereas previously priority was given to an import substitution strategy in a world setting where protectionism was a relatively important phenomenon, now the countries are bent on increasing the openness, deregulation and privatization of their economies, in an external context of growing globalization. Against this background, in the early 1990s Argentina, Brazil, Paraguay and Uruguay set up MERCOSUR with the aim of forming an economic space by the end of 1994 in which there would be free circulation of goods, services and factors of production among the member countries, together with a system of common external tariffs, with coordination of macroeconomic and sectoral policies and harmonization of the laws of those countries. Thus, in 1994 they signed the Treaty of Ouro Preto which formally set up MERCOSUR: a customs union which is only semi-complete (95% of intra-regional trade circulates without paying customs duties) and is also not yet perfect (the common external tariffs cover nearly 85% of the products traded by the bloc with third countries). In 1996, MERCOSUR and Chile signed an Economic Complementation Agreement which added to the tariff exemption programme for trade in goods complying with the origin requirements a Physical Integration Protocol aimed at promoting the development and use of the physical infrastructure, with special emphasis on the establishment of bioceanic corridors.[8]

Obviously, the immediate result most sought for by the various types of agreements which have been signed under globalization is to increase the trade flows of goods and services in the new economic spaces

opened up. As barriers are removed and the market is unified, three sets of prices are changed or may be changed: the relative prices of tradeable and non-tradeable goods, the price of foreign exchange, and that of real wages. When the market has been unified, trade in corresponding goods and services will depend strictly on their relative competitiveness, which is partly based on static and partly on dynamic comparative advantages. For example, it is difficult for the meat sector of Chilean agriculture and the regions where it operates to compete with the products of the wet pampa region of Argentina if such competition is based solely on static advantages, but competition is easier or broader when some dynamic advantages are brought into play, such as meat quality classification or the capacity to control foot and mouth disease, as occurs in actual fact.

At all events, it is clear that the emergence of a new trade pattern, which is not only the result of expanding existing trade relations but also, and especially, of introducing new products and changing the proportions of mutual trade, has a definite impact on the "old" regions and their process of reconfiguration, by generating new spaces for trade and obliging many regions to face production adaptation processes which were not envisaged for the immediate future. It would be hard, for example, for the Chilean rice-producing areas to stand up for long to the competition of Uruguayan producers.

Here, the range of effects involves simultaneous processes of growth and reduction of production. Once again, as in the case of the emergence of a new territorial arrangement, what is taking place —driven by the thrust of the capital that is competing in an expanded space— is a generalized exogenous process of production adaptation. This again raises the question of whether the countries concerned will accept this generalized adaptation reactively or pro-actively.

An aspect which is of particular interest with regard to the local effects of MERCOSUR in some countries is the fact that the elimination of trade

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[8] The implementation of bioceanic corridors has considerable local territorial impacts in itself, but progress has been slow in this field because of financial and other restrictions.

barriers tends to bring about the full integration of border regions[9] and to change the forces, and their magnitude, which promote agglomeration within national frontiers. Small and peripheral regions can join and form part of larger spaces, which operate as centres of agglomeration. In this respect, says Vaillant (1997), "the evolution of production specialization progresses freely … so that other considerations begin to take on importance when deciding where to locate activities". It is hardly necessary to note that in the special case of Chile, all its regions are close to its national borders, but this has not been internalized much in the vague official pronouncements on regionalization and development.

Globalization gives rise to new questions, as though it were a kind of Pandora's Box. For example, it gives rise to new codes and a new geography (already described above), new trade patterns, new languages (or, rather, the consolidation of the mega-language of English), and new techniques for interconnection. As commonly understood, "code" is both a set of rules and precepts on some matter and also a book in which there is a list of words (in this case, the words most commonly used in trade), with an arbitrary set of letters or numbers placed opposite them. It serves for communication … but in secret. In each of these meanings, it seems clear that globalization is introducing a new code —that of globalization itself— and without understanding or decoding this code it is not possible to benefit from this process.

In the light of the new codes of globalization, special attention must be paid to the role of teaching and education, in order to train people to understand the new types of logic involved, which is the only way to become the subject and not just the object of globalization: the only possibility of making globalization inclusive instead of exclusive, as it has been so far. Globalization produces more wealth than poverty, it is true, but it also produces more poor than rich.

A subtle but very important consequence of globalization is the incorporation of countries, regions, enterprises and persons into a world network which is taking shape as the main function generating economic growth in the twenty-first century: if you are in that network you grow, and if you are not in it, you do not grow. But such a general assertion should be qualified by a more subtle aspect: it is not only necessary to be in the network, but it is also necessary to know how to behave there.

The internet is a clear illustration of that argument: you must be connected, beyond any doubt, but you must know how to use that connection. Whatever the form in which a local area is organized (commune, province, region), being institutionally connected to the internet is vital, but unless that area has the ability to create a web page it will be wasting almost all the potential of globalization.

The formation of new supra-national spaces under globalization involves a confrontation between two opposing tendencies in location. Haddad (undated) cites various arguments in favour of spatial reconcentration: i) faster innovation and shorter product cycles stimulate closer spatial proximity between R&D and manufacturing activities; ii) economies of labour in flexible production make wage costs a less important factor for possible transfer to areas with cheaper labour; iii) versatile and highly skilled labour is concentrated in the most complex centres, and iv) the need for physical proximity between producers and sub-contractors stimulates concentration. But Haddad himself also presents arguments in favour of transfers to peripheral areas: i) the disadvantages of distance have been reduced as a by-product of the scientific and technological revolution; ii) for historical and trade-union-related reasons, the labour force in more complex areas is more reluctant to accept labour flexibility; iii) there are potential markets in the less developed areas; iv) the big firms that locate plants in peripheral areas attract suppliers who locate their activities close to them, and v) the high level of international competition forces firms to seek lower and lower costs, including labour costs.

In short, it is difficult to make medium-term forecasts about the new geography that will result from supra-national agreements. As we already noted, there are tendencies which could be seen as supporting the generation of localized growth processes which could be assimilated to the forms of local growth analysed earlier, which would in turn form the basis for future local development, but there are also tendencies which favour increased concentration where it already exists, in line with the old principle that "concentration generates concentration", which is all the more valid when there is clear evidence of increasing returns.

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[9] With regard to the subject of border regions, see for example Boisier (1987) and Torrijos (2000).

IV

What can the universities contribute to these processes?

Metaphorically, it could be said that globalization is a "black box", and that in order to gain a good position in it, it is essential to have the key. This key is a cognitive framework —a framework of knowledge which is largely new and changes at a dizzy pace. Jacques Boudeville, the well-known French geographer, used to say that the university is the brain of every region, thus pointing even at that early stage to the need for every local area to receive, adapt and create knowledge. Today, when we speak of distributed knowledge, we would probably have to make the university share its leading position with a whole local system of knowledge and innovation (Méndez, 1993). At all events, however, the role of local universities continues to be of fundamental importance for supporting the development of their local environment.

Globalization is challenging the position of many institutions (norms, legal arrangements, laws and informal traditions) and organizations. Peter Drucker has said, perhaps exaggerating a little but nevertheless with a good deal of truth, that the universities will not survive the passage of the twenty-first century. This could be due to the enormous magnitude and exponential growth of knowledge in virtual networks; the use of virtual environments and platforms, such as computer programmes for the design of digital educational material; the use of distributed portfolios and equipment which make it possible to study at a distance, especially in the case of post-graduate courses, and above all – in my opinion – the very slow response to change displayed by these institutions, which go back to the eleventh century in the West.

Brunner (2002) says in this respect: *"The great risk is that in reality Latin America will be left out of the emerging global order of a knowledge-based economy and the information society, simply because we have been unable, in one of the key sectors for our incorporation into this new order, not only to make the necessary changes but also to make those changes quickly enough. Because today it is no longer a problem of saying whether we are going to change or not. Changing ten years after it was necessary is no longer any use; the situation is dramatic, and today,*

for the first time, the world is connected in such a way that the speed of processes of change is of vital importance. In the final analysis, there is only one test for this, and that is whether or not, in the higher educational institutions and the universities, there is a dynamic of change which prevails over a dynamic of conservation or corporate obscurantism, or a sense of fear of society" (quoted in Medina, 2002).

Brunner's concern is confirmed by what I have called the universal law of decentralization: the efficacy and speed of decision-making of every public body is inversely proportional to the square of its distance from the national decision-making centre; this is an ironic way of referring to the fatal reluctance to change displayed by organizations – especially universities – which are located on the "periphery of the periphery", that is to say, in distant provinces. There can be no doubt that in the context of globalization, any organization which is on the "periphery of the periphery" is obliged – if it wants to survive – to be at least twice as effective and fast as its more central competitors, which benefit much more from their own environment.

As globalization is intimately linked to the process of innovation, and this latter is the result of the expansion of knowledge, it seems clear that the basic condition for an organization —whether it is functional, like an enterprise or a university, or territorial, like a region or country— to be able to link up with the "centre" of globalization, that is to say, its dynamic knowledge-based core, is that it should possess the knowledge which is necessary and pertinent for that purpose. It has been said, for example, that for the Latin American countries the "window" of the manufacture of micro-electronic products has already been closed with a padlock whose key is in the hands of a few Asian and European countries, and that linking up to the dynamic core of globalization now involves opening even more complex "windows" in such areas as bio-genetics, services or new materials. But how can we do this without having the necessary knowledge?

As we already noted, assuming that the generation of this knowledge could still be solely the responsibility

of the universities would be a fatal error at a time when we are talking about distributed knowledge, knowledge communities, knowledge-based networks, inter-organizational synergy, and new types of learning in general.

If we admit, then, that although the universities of the new spaces such as the European Union or MERCOSUR still have an important role this is far from being as important as in the past, it is clear that the universities must be called upon to carry out to the full their central functions of research, teaching and extension, but in a new and extremely demanding context which is at once highly competitive but also cooperative, in which speed is a crucial element. For this purpose, the universities —and above all the subnational universities (regional, departmental, provincial and even community universities, as in the south of Brazil)— must reaffirm their local links and their pertinence (Boisier, 1994). Their local links, understood as their integration in a local community, are of key importance for securing their identity; in an open and competitive world, "trademarks" and "seals of origin" make a crucial contribution to distinguishing the units in question from thousands of competitors[10] and are of key importance for obtaining the support and economic backing of the community, which "feels" that a university is really theirs when it has been able to highlight the fact that it "belongs". "Belonging", understood as the adaptation of a university's activities to the short- and long-term needs of the area where it is located and to which it belongs socially, is related with "excellence", which is another key word in this ambit. The University of Comahue (Argentina) or the Universidad Austral (Chile) or the University of Santa Cruz do Sul (Brazil) can hardly be centres of excellence in all disciplines. They must necessarily specialize in order to reach the status of a national university,[11] which is very important when seeking "clients" and resources.

According to Pérez (2004), the factors which either strengthen or weaken the universities' contribution to the competitiveness of their environment are:

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[10] Nobody knows this better than wine producers.
[11] For example, a student who graduated with top honours from the secondary education cycle in Chile and who wanted to be a veterinarian would certainly choose as his first option the Universidad Austral de Chile in the city of Valdivia, because it is an establishment which occupies top academic status in that discipline in the country and therefore constitutes a "national university" in this field.

— The characteristics of the environment itself: level of economic and technological development; business and organizational environment; endowment and use of human capital; specialization of the economy and its technological intensity.
— The characteristics of the universities: human and financial resources; scientific specialization; organizational culture and prevailing values; efficiency, productivity and quality of teaching and research.
— The functioning of their links: research, development and innovation system; dissemination of results; financing of those activities.

The key question, of course, is what the universities can do to help their local area to attain a better position in globalization on the basis of knowledge. There are a number of answers to this question, as we can see below.

i) *In matters of training*
   — Train more citizens to assimilate more knowledge and take part in a process of ongoing rapid change.
   — Improve human capital by training more scientists and engineers with a strong sense of values.
   — Improve the position of their graduates in the labour market by giving them a form of training which stimulates their business sense and prepares them to make a contribution to the innovation process.

ii) *In research and development (R&D)*
   — Strengthen research: more and better-quality research.
   — Strengthen the connection between innovation and the enterprise.

iii) *With regard to structural change in the economy*
   — Support the creation of technology-based enterprises through "brooders" and other means.
   — Support the technological improvement of existing enterprises and sectors through systematic technology transfer programmes.

iv) *With regard to regional development*
   — Contribute to local and regional development strategies for their area here and now (knowledge plus values).

This latter point calls for more extensive, in-depth analysis. What does "contribute to strategies" mean? What could this contribution be? It seems obvious that it could not be limited to contributions at the microeconomic level, that is to say, at the level of

enterprises or activities; the meso-economic level would appear to be more appropriate for these contributions.

If we admit that both the economic growth and the development of a local area are collective and synergistic processes, it follows that their achievement presupposes some form of coordination of the various agents (decision-makers) involved, so that the resultant decision-making matrix will have a high degree of internal coherence and move in a pre-established direction.

This coordination is, by definition, horizontal and heterarchical, since otherwise it would be an imposition. How can we achieve this result? The answer seems to lie in the field of linguistics, that is to say, in the use of words, discourse and conversation in order to create a future and generate social consensus.

This can only be achieved through a complex process designed to introduce external energy into the collective body: a form of negentropy which we have called "cognitive synergy", defined as scientific knowledge shared by the majority (although not necessarily all) of the social agents on the nature and dynamics of the processes of social change taking place in the local area: growth and development, which are structurally different but not entirely independent (Boisier, 2000). In short, this is equivalent to discovering and adopting two bodies of knowledge which "empower" the community to intervene here and now in the promotion of both growth and development.

Firstly, this involves the adoption on an everyday basis of a local territorial view which makes it possible to understand the local area, whatever its scale, as: i) a system; ii) an open system, and iii) an open complex system. This is not a very simple matter, but in reality there is nothing to invent from the cognitive point of view; it is only necessary to adapt knowledge which has already been created, albeit rejecting any kind of mental rigidity, of course.

Secondly, it is necessary to open a mental space for a second (new) cognitive framework which will make it possible to understand what are the current determinants of both growth and development, and under what kind of relationship between the system and the environment these objectives can be attained.

Very briefly, this leads to the assumption that the growth of a local area now depends on six factors: i) capital accumulation; ii) the accumulation of technical progress; iii) the accumulation of human capital; iv) external demand; v) the territorially differentiated

effects of the macroeconomic policy situation; and vi) the national or country project and the way it operates at the local level. As we noted earlier, as the decision-making agents are mostly from outside the local area, it is reasonable to consider that from this point of view subnational growth is essentially an exogenous process. It may be added, from the systemic point of view, that local growth is a function of the interaction between the system and its environment.

On the other hand, and considering the strictly endogenous characteristics of local development, it can be held that this process depends on the synapsis and synergy operating between six subsystems which belong to the local system in question and define its complexity: i) the accumulation subsystem; ii) the axiological subsystem; iii) the decision-making subsystem; iv) the procedural subsystem; v) the organizational subsystem, and vi) the subliminal subsystem. Development may be seen, then, as a systemic outcome or as a evolutionally emerging property of a complex local system.

Thirdly, as already hinted on various occasions, both of the local processes of change are closely linked with the new local environment, in a complex set of processes which are taking place right now and are associated with the emergence of three new scenarios for local areas: a new contextual scenario (external and internal openness), a new strategic scenario (a new geography and new forms of management), and a new political scenario (modernization of the State and new functions for the subnational levels of government).

It seems obvious, even admitting *a priori* the validity of the foregoing hypotheses, that understanding these matters is indispensable for minimizing errors in interventions or, alternatively, maximizing their probabilities of success.

In practice, all this becomes a veritable *sine qua non* for local universities in their teaching, research and extension activities. They are the main, but not the only, institutions for developing these concepts, making them available in the form of up to date programmes for undergraduate and postgraduate courses —in the latter case, programmes dealing with local development— and spreading them to a broader public. Dror (1994) was quite right when he said that "We need democratic governing elites which are properly qualified for representing the future and the interests of mankind and for perfecting the links between knowledge and power. At the same time, every effort must be made to raise the level of popular understanding of such complex matters".

V

Conclusions

The globalization process produces important changes in the geography of production, not only in manufacturing, but also in its broader sense which includes activities such as agriculture and tourism. The free circulation of capital in the new expanded trading spaces and the conversion processes that local areas are obliged to undertake, together with technological innovations, give rise to new maps of production, with their inevitable outcome of losses and gains.

The new activities in new spaces open up definite possibilities for the generation of growth processes which can serve as the basis and setting for more complex processes of endogenous local development. Whether those growth processes will correspond to the models mentioned earlier —industrial districts, geographical concentration of enterprises, endogenous change— will depend on the nature of the local response, which will be influenced in turn by the catalytic effects that local research and development systems, especially those of the universities, can have in the local environment.

The role of the subnational universities is particularly important, and not only in terms of the transfer of technology to production and organizational processes. The crucial contribution of the universities must be through their role in the creation and dissemination of new, up to date and pertinent cognitive frameworks to provide scientific support to the interventions of society itself in the two processes of social change which are most important for society: growth and local development.

(Original: Spanish)

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The settlement of disputes under the WTO.

The experience of Latin America and the Caribbean

Gonzalo Biggs

This article analyses the implications for the Latin America region of the dispute settlement procedure approved in 1994 by the Marrakesh Agreement Establishing the World Trade Organization (WTO). These implications are important because the region has become involved in a growing number of commercial disputes as its international trade has increased. The procedure applies to disputes between any of the 148 member countries over matters covered by the Agreement and the 29 multilateral agreements annexed to and forming an integral part of this. The present article highlights the ways in which the procedure differs from the old GATT rules and other international dispute settlement procedures. It describes the agreements that have generated the most disputes (anti-dumping, subsidies and countervailing measures, and safeguards), discusses United States policy in this area and details the disputes in which the Latin American countries have participated, with particular reference to Brazil.

Gonzalo Biggs

Lawyer,

Partner of the law firm of Figueroa and

Valenzuela

✎ gbiggs@fivalabogados.cl

I

Introduction

Of all international organizations, the most important for Latin America, in our opinion, is the World Trade Organization (WTO). One author has described it as the most economically influential of all the world's international bodies.[1]

Its importance stems from the macroeconomic reforms and trade liberalization of the 1980s, which turned international trade into the main engine of economic development in the Latin America region, so that volumes all but trebled in a decade.[2] In 1994 the region's exports and imports totalled US$ 323 billion, but by 2004 the figure had risen to US$ 860 billion. As might be expected, the rise in the volume of world trade over that period was accompanied by a corresponding increase in international trade disputes or differences. These developments explain why the procedure operated by the WTO Dispute Settlement Body (DSB) is so crucially important for the region's countries.[3]

This article analyses the implications for the Latin America region of this WTO procedure or Dispute Settlement Understanding (referred to hereafter as the Understanding) and covers the following issues: historical background and institutional characteristics; new features and comparison with other procedures; United States policy; most common disputes; the experience of the Latin American and Caribbean countries; the Brazilian experience, and conclusions.

II

Historical background and institutional characteristics of the WTO

1. Background

The Bretton Woods Conference of 1946 gave birth to the World Bank, the International Monetary Fund (IMF) and the International Trade Organization (ITO). The roles of these three institutions were to promote investment for development and to regulate balances of payments and international trade, respectively. The creation of the ITO was negotiated by the United Nations and culminated in the Havana Charter of 1948. Tariff relief, meanwhile, was regulated by the 1947 General Agreement on Tariffs and Trade, better known as GATT, whose application and supervision were assigned to the ITO. The United States Congress, however, did not adopt the ITO, so that GATT came into force without this institutional backing. Its implementation was only ever provisional, moreover, since it never secured the number of ratifications required by its charter.[4] The gap was filled by a temporary secretariat created by the United Nations, which eventually became permanent, and by article XXV, which established a mechanism enabling the parties (known as the Contracting Parties when acting collectively) to meet and execute the Agreement.

Besides these institutional shortcomings, GATT was born with two major limitations. The first was the

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☐ At the recommendation of the Government of Chile, the author has been included in the WTO indicative list of non-governmental experts. He was a panellist in Canada's case against the United States over the provisional countervailing duties applied to softwood imports and in the case brought by Brazil and other countries against the European Communities over sugar subsidies.

[1] See Jackson (1999, p. 101).
[2] In 2004, external trade represented 44% of the region's GDP (ECLAC, 2004, p. 8, and ECLAC, 1994, p. 39).

[3] The DSB was established by article 2 of the Understanding approved in Marrakesh at the same time as the WTO was established.
[4] Article XXVI of GATT stipulated that it would come into force upon acceptance by governments named in Annex H whose territories accounted for 85% of the total external trade of the territories of those governments. The deadline passed, however, without this target being met. See Petersmann (1997, vol. II, p. 46).

underrepresentation of developing countries, since there were only seven of these among the 23 founder members of GATT. In Latin America, the original signatories of the Agreement were Brazil, Chile and Cuba.[5]

The second limitation was that its work was confined exclusively to regulating customs tariffs on goods trade between industrialized countries, on the basis of the national treatment and most-favoured-nation principles. Despite these limitations, GATT managed to survive and endure for almost 50 years. In its eight negotiating rounds, furthermore, it was able to adopt decisions, resolutions and protocols that allowed it to develop and expand its sphere of action, its representativeness and, very gradually, its responsibilities towards developing countries.

2. Disputes under GATT

Disputes under GATT during the 1948-1994 period of the Agreement were governed by its articles XXII and XXIII which, as will be explained later, remain in force. These articles established the right of Members to bring forward consultations or complaints concerning the application of the Agreement, on the terms set forth therein. They did not establish a procedure for handling disputes, however, but gave the Contracting Parties (and not independent bodies) the authority to resolve them. Nor was there any appeals procedure.

In the initial stages, disputes were submitted directly to the Contracting Parties; subsequently, resolutions were passed on to working groups of up to 20 delegates or representatives of governments (which could include those of the parties in dispute), whose recommendations were submitted to the Contracting Parties for a final decision. In 1952, panels were created to resolve complaints under article XXIII and agreement was reached on the principle that any measure infringing the agreements adopted would be presumed to constitute a case of nullification or impairment of the benefits conferred by GATT rules. Under these new provisions, panel members could no longer be from the parties in dispute, but their recommendations continued to be submitted to the

Contracting Parties for a final ruling. Subsequent resolutions adopted from 1952 onward made good the lack of a set procedure, culminating in 1989 with the approval of a new set of rules that were more elaborate and objective, and that applied until the end of the Uruguay Round.[6]

However, the fact that final rulings required consensus among all Contracting Parties, including the parties in dispute, mean that disputes were ultimately resolved through diplomatic or political channels. During the period from 1948 to 1994, 196 disputes were resolved but in only one case was authorization given to suspend concessions owing to a Member's non-compliance with its obligations under the Agreement.[7]

3. Institutional structure of the WTO

The Uruguay Round was the last GATT negotiating round before the current and still ongoing Doha Round, and it was the first to be held in a developing country. It culminated with the Marrakesh meeting of 15 April 1994 and the approval by the 124 participating countries and the European Communities[8] of the Marrakesh Agreement Establishing the WTO (referred to hereinafter as the WTO Agreement) and of 29 annexed multilateral agreements, 28 declarations and ministerial decisions, four plurilateral agreements[9] and an understanding on financial commitments.

The Uruguay Round negotiations took place at a political and trade ministry level. However, disputes arising from the application of the resulting agreements have been and continue to be settled essentially by legal means, as we explain further on.

Whereas GATT led to a great deal of fragmentation, since the parties did not all ratify the same agreements (for example, two thirds of members did not sign up to the agreements of the 1979 Tokyo Round), the WTO Agreement and annexed agreements approved in Marrakesh constitute an integrated blanket agreement whose texts are equally binding on all Members.[10] WTO

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[5] See the Preamble to GATT 1947 in *The Legal Texts, Results of the Uruguay Round of Multilateral Trade Negotiations* (GATT, 1994). The following citations from the WTO Agreement and its annexed agreements, all approved at Marrakesh, are taken from that publication.

[6] Decision of the Contracting Parties of GATT dated 12 April 1989, approving dispute resolution rules and procedures (WTO, 1995, p. 638).
[7] See Petersmann (1997, vol. II, p. 46).
[8] In WTO usage, the term "European Communities" is used to refer to the European Union, particularly in relation to dispute settlement processes. Accordingly, in this article both terms are used.
[9] The four plurilateral trade agreements are only binding on countries that have ratified them.
[10] Article II (2) and (3) of the WTO Agreement.

rules extend not just to trade in goods and services but also to subsidies, safeguards, anti-dumping measures, rules of origin and other issues covered by the 29 agreements mentioned. The WTO is an organization with an international legal personality (which GATT was not) and is responsible for supervising the application of the main agreement and its annexed agreements, including, of course, the Understanding.[11]

The 148 member countries are always part of the three main WTO bodies —the Ministerial Conference, the General Council and the Dispute Settlement Body (DSB)— and are represented on them. This innovative structure ensures that the decisions taken by these bodies will be multilateral and representative:

i)   the Ministerial Conference is an assembly of the ministerial representatives of the Member States. It meets every two years and has the authority to settle any matter covered by the multilateral agreements adopted in Marrakesh;

ii) the General Council is an assembly of the Geneva representatives accredited by the governments of the Member States. It discharges the functions of the Ministerial Conference when the latter is not meeting. It meets as often as it deems necessary and administers and supervises the different Councils established by the Agreement (trade in services, trade in goods and trade-related aspects of intellectual property rights),[12] and it also acts as the Dispute Settlement Body when required;

iii) The Dispute Settlement Body (DSB) is composed of the same representatives as the General Council. It administers the rules and procedures of the Understanding and settles disagreements arising from the application of the multilateral agreements covered. As mentioned above, its functions are performed by the General Council. It meets monthly, and may have its own chairman and approve such rules as it needs to carry out its functions;[13] and

iv) a Secretariat headed by a Director-General who is appointed by the Ministerial Conference and in turn appoints a staff which he then heads and whose duties and conditions of service he determines. Both the Director-General and the Secretariat staff are international officials and do not accept instructions from any government.[14]

At meetings of the Ministerial Conference and General Council, each member has one vote. The WTO continues the GATT practice of decision-making by consensus, which is deemed to have been reached when no Member present at the meeting where the decision is taken formally opposes it. Thus, an absence or abstention does not block consensus. If consensus is not reached, the decisions of the Ministerial Conference and Council are taken by majority vote, unless otherwise provided.[15] The exception to this are the rulings of the DSB, which can only be adopted by consensus.[16]

III

The WTO dispute settlement procedure

Some novel features of the WTO dispute settlement procedure, which set it apart from any other international procedure of the same kind and account for its efficiency and effectiveness, are the compulsory and exclusive nature of its jurisdiction, its multilateral character, its automaticity, the primacy of law in dispute settlement, the preference for non-contentious solutions, low cost, speed and the procedures for enforcing and implementing resolutions.

1.   Jurisdiction

The jurisdiction of the WTO is compulsory, exclusive and multilateral.

Any Member country which considers that another Member has violated its obligations under the WTO Agreement or an annexed agreement, or that its benefits have been impaired or nullified, is entitled to initiate the dispute settlement procedure by requesting

[11] See articles VIII and III of the WTO Agreement.
[12] See article IV (5) of the WTO Agreement.

[13] See article IV (3) of the WTO Agreement.
[14] See article VI of the WTO Agreement.
[15] See article IX (1) of the WTO Agreement.
[16] See article 2 (4) of the Understanding.

consultations.[17] In certain cases, a Member with a substantial trade interest may (if the consulting Member agrees) be joined in the consultations[18] and subsequent proceedings.

The Member to which the request for consultations is addressed is obliged to respond and cannot challenge this jurisdiction (as may happen with other bodies), since it automatically accepted it by ratifying the WTO Agreement and annexed multilateral agreements. This is in contrast to the proceedings of other international tribunals, where challenges to jurisdiction and the like are common and can delay or hold up any settlement of the substance of a dispute for years.

Jurisdiction is also exclusive in the sense that any infringement of WTO agreements can only be judged or remedied in accordance with WTO rules and procedures.[19] A Member country cannot sue another or seek reparations for such infringements before any jurisdiction or through any proceedings, national or international, other than those established by the WTO system and Understanding.

Furthermore, the procedure is multilateral in a twofold sense. First, because once an agreement has been violated or challenged, the affected party cannot respond with unilateral measures without also committing an infraction. Its only legitimate recourse is to work through the multilateral procedures of the WTO. Second, because each stage in the procedure has to be approved by the DSB, which is composed of representatives from all WTO Members. Thus, for example, the start of consultations, the formation of a panel and its ruling, a ruling by the Standing Appellate Body (hereinafter the Appellate Body) or a resolution approving the suspension of concessions or obligations all have to be approved by the DSB. Furthermore, once the procedure has been initiated, any settlement arrived at by mutual agreement between the parties has to be consistent with the WTO Agreement and its annexed agreements, and be notified to the DSB and the relevant Committees. This allows other Members to raise concerns about the consequences this bilateral solution might have for the multilateral agreements concerned.[20]

2. Dispute settlement: primacy of law. Description of the bodies involved

A radical change from GATT has been the replacement of procedures where political and diplomatic considerations prevailed by one whereby disputes are settled by independent tribunals pursuant to the facts and the relevant law.

The governing law is the set of agreements annexed to the WTO Agreement and forming an integral part of it. GATT 1994 is one of these annexed agreements, and itself includes GATT 1947 and the decisions, procedures and customary practices of its Contracting Parties.[21]

Panels are formed at the request of the complaining country and must be approved by the DSB, unless the latter decides by consensus not to establish a panel.[22] They are composed of three well-qualified independent governmental and/or non-governmental individuals who cannot be citizens of the parties to the dispute or of third countries involved in the dispute and having a substantial interest in it, unless the parties agree otherwise.[23] Nominations are made by the Secretariat and may not be opposed except for compelling reasons.[24] If agreement is not reached, the appointments will be made by the Director-General in consultation with the Chairman of the DSB.[25]

Panels shall have the right to seek information of relevance to the dispute presented from any individual or organization within the jurisdiction of a Member country, on the sole proviso that they first inform the authorities of that country. In turn, Member countries are legally obliged to provide this and a refusal to do so may lead the panel to draw inferences unfavourable to that Member.[26]

The Appellate Body is to be composed of seven persons of recognized authority and demonstrated expertise in law, international trade and the subject matter of the covered agreements generally. They shall be unaffiliated with any government and only three shall serve on any case, in accordance with a predetermined rotation.[27] They are to be appointed by the DSB for a four-year term, renewable once, and shall

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[17] Understanding, article 4 (4).
[18] Understanding, article 4 (11).
[19] Understanding, article 23 (1) and (2).
[20] Understanding, article 3 (6).

[21] Article XVI (1) of the WTO Agreement.
[22] Understanding, article 6.
[23] Understanding, article 8 (1) and (3).
[24] Understanding, article 8 (6).
[25] Understanding, article 8 (7).
[26] Understanding, article 13.
[27] Understanding, article 17 (1) and (3).

be broadly representative of the membership of the WTO.[28] Only the parties may appeal. Third parties which have notified the DSB of a substantial interest may make written submissions and be given a hearing.[29]

The Appellate Body will only consider issues of law or legal interpretations developed by the panel.[30] It is exclusively for the panel to analyse and assess the facts and evidence. However, it has been determined that consideration of evidence by a panel is a matter of law and thus qualifies for Appellate Body review. Furthermore, it has been argued that GATT, the WTO Agreement and the annexed agreements are an integral part of public international law and thus governed by the general principles of international law.[31] Accordingly, the Appellate Body regularly invokes the rules of interpretation of the Vienna Convention on the Law of Treaties, particularly article 31.[32]

The resolutions of panels and the Appellate Body do not apply the *stare decisis* principle of Anglo-Saxon law, whereby courts are obliged to apply the case law established by previous rulings on the same matters. WTO panels and the Appellate Body take their decisions freely on the merit of the facts and the law applicable in each case. In practice, however, even though they are not binding, previous rulings are always analysed and considered thoroughly in every resolution adopted. They are also a principal source of information for countries considering whether to submit a claim to the WTO.

Member countries have to ensure that their laws, regulations and administrative procedures are consistent with the obligations accepted under the WTO Agreement and annexed agreements.[33] Members are entitled to ask that legislation inconsistent with these (e.g., laws that violate national treatment or the countervailing duties application procedure) be amended or repealed. An example of this is the complaint made by a number of countries, including Brazil, Mexico and Chile, against the United States for

the so-called Byrd Amendment of 2000 which altered that country's legislation and authorized the direct payment of countervailing duties to businesses alleging import subsidization or dumping. The ruling, which will be discussed later in this article, accepted the complaint and established that this amendment was contrary to and incompatible with the provisions of the Anti-dumping Agreement (AD Agreement), the Agreement on Subsidies and Countervailing Measures (SCM Agreement) and GATT 1994.[34]

Jurisprudence has distinguished, however, between contrary legislation that is imperative (which can be protested) and legislation that, while contrary, is merely optional or discretionary (which cannot).

3. Automaticity or the "negative" or "reverse" consensus rule

By contrast with the resolutions of GATT bodies, which required for their validity the consensus of the Contracting Parties so that just one Member could prevent a panel from being formed or a ruling from being adopted or enforced, at the WTO the reverse consensus rule applies. This means that DSB resolutions take effect automatically unless there is a consensus among Members that they should not be adopted. As is obvious, a Member consensus against the formation of a panel, the approval of a ruling or the suspension of concessions has never occurred. With GATT, on the other hand, it was enough for such resolutions to be rejected by a single Member for consensus to be blocked, which in the end meant that the parties had to negotiate a political solution. This is one of the innovations accounting for the speed and expeditiousness of WTO procedures. Thus, when a country requests consultations or the formation of an arbitration panel, DSB resolutions for or against take effect immediately, unless there is a consensus against them. The same is true of DSB resolutions on the rulings of arbitration panels[35] and the Appellate Body,[36] or rulings approving the suspension of concessions or other obligations when the respondent party does not comply with the resolutions of the latter.[37] In all these cases, the relevant resolutions can only be revoked if there is a Member consensus against their adoption.

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[28] Understanding, article 17 (2) and (3).
[29] Understanding, article 17 (4).
[30] Understanding, article 17 (6).
[31] Debra Steger cites the opinion of the Appellate Body in the gasoline case (document WT/DS2/AB/R of 20 May 1996, p. 17), which states that the provisions of the WTO Agreement establishing the organization cannot be read in "clinical isolation" from public international law (Steger, 2005).
[32] Article 31 (1) of the Vienna Convention states: "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."
[33] Article XVI (4) of the WTO Agreement.

[34] Documents WT/DS217/AB/R and WT/DS234/AB/R and DSB resolution of 27 January 2003.
[35] Understanding, article 6 (1).
[36] Understanding, article 16 (4).
[37] Understanding, article 22 (6).

4. Preference for non-contentious solutions

The first objective of the procedure is to find a positive solution that is mutually acceptable to the parties to the dispute.[38] Accordingly, contentious proceedings cannot begin right away; instead, the procedure has to start with a request to the DSB for consultations, and the Member complained of is obliged to respond. These consultations are confidential, and only when they fail can the formation of a panel be requested. Without prejudice to this, the procedure allows and encourages the parties, subject to its rules (including notification to the DSB), to settle their bilateral differences at any of the subsequent stages.

5. Costs

In comparison with other mechanisms, WTO proceedings have a low cost. The parties do not pay for administration, secretarial costs or arbitration fees. All these costs are met by the Organization out of its general budget.[39]

In international disputes, however, legal costs are the largest item and here too the WTO differs from other bodies. Since October 2001, the Advisory Centre on WTO Law has been operating. This Centre is an independent public international body, with its own legal personality, which had 37 member countries as of January 2005 (10 industrialized countries and 27 developing countries). It is based in Geneva and its function is to provide developing countries with legal advice on WTO issues, particularly dispute settlement, at a reasonable cost. Its current Executive Director was formerly a WTO legal advisor. As of January 2005, Honduras, Nicaragua, Ecuador, Peru, Colombia and Venezuela had received legal advice from the Centre in some of their disputes before the WTO. In some cases this advice was provided directly by the Centre, in others by an outside legal advisor.[40]

6. Speed

Once consultations have begun there is a very strict pre-established timetable for the procedure, and extensions can only be granted by the DSB. In practice, WTO proceedings are both faster and more flexible than those of any other international body. The flexibility comes, among other factors, from the non-contentious nature of the consultations with which they begin, most of which end with the parties reaching agreement or the deadline simply expiring without either of the parties requesting the formation of a panel.[41] It is the exception, then, for disagreements to persist and be settled by a panel. Indeed, in some cases the parties settle their differences by mutual agreement even after a panel has been constituted.

The timetable is 60 days for the consultations[42] and six months for the panel to issue its ruling (or report when there is no appeal) from the date it is formed. Unless the DSB grants an extension,[43] in no event may the period between the establishment of the panel and the distribution of the report to Members by the DSB exceed nine months, or 12 months when there is an appeal.[44] Should there be an appeal, the ruling must be distributed within 60 days from the time the decision to appeal is formally notified.[45]

Once the ruling has been adopted by the panel or the Appellate Body, the affected Member must notify the DSB of its intention to comply with the decisions adopted. If it does not comply with them immediately, it must do so within a reasonable time, which in most cases may not exceed 15 months from the date of the panel or Appellate Body ruling. If the panel or Appellate Body has extended the deadlines for issuing the respective rulings, however, the additional time will be added to the 15 months with the proviso that the total period may not exceed 18 months from the said date, unless the parties agree that there are exceptional circumstances.[46]

7. Compliance or execution

If the panel or Appellate Body resolves that the measure complained of is inconsistent with a covered agreement, it will recommend that the Member

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[38] Understanding, article 3 (7).
[39] Understanding, article 8 (11).
[40] www.acwl.ch.

[41] Of the 317 consultations begun between 1 January 1996 and 22 October 2004, only 129 led to the formation of a panel (see WTO, 2004a, p. 43, paragraph 93).
[42] Understanding, article 4 (7).
[43] If the complainant so requests, the work of the panel may be suspended for up to 12 months, in which case the deadlines laid down in the procedure will be extended for the period of this suspension; if work is suspended for more than 12 months, however, the functions of the panel will cease. See Understanding, article 12 (12).
[44] Understanding, article 12 (8) and (9) and article 20.
[45] Understanding, article 17 (5).
[46] Understanding, article 21 (3).

concerned bring it into conformity with that agreement, and may suggest how this should be done.[47]

If there is disagreement over the compliance measures or their consistency with a covered agreement, this will be resolved through the same procedure, ideally by the original panel and within 90 days from when the matter is brought before it.[48] If the Member affected or prejudiced by the report does not comply with the agreed measures within a reasonable time period, that Member will be obliged to negotiate mutually acceptable compensation if the other party so requests. Compensation is voluntary, in that the country may refuse to provide it, in which case concessions may be suspended indefinitely until it comes into compliance. Should compensation be granted, it must be compatible with the relevant agreements.[49] If this has not happened within 20 days following expiration of the reasonable time period agreed on, any of the parties that has had recourse to the dispute settlement procedure may apply to the DSB for the concessions or other obligations resulting from the covered agreements to be temporarily suspended in respect of the Member concerned.[50]

Suspensions or reprisals will be authorized by the DSB until such time as the measure declared inconsistent with the covered agreement has been removed, or the Member concerned provides a solution to the nullification or impairment of benefits, or a mutually satisfactory solution is reached.[51] The Member concerned may, however, object to the level of suspension proposed or the procedures followed, in which case the dispute will be submitted for arbitration to the original panel if available or, if not, to an arbitrator appointed by the Director-General.[52] The level of suspension of concessions or other obligations authorized by the DSB must be equivalent to the level of nullification or impairment of the agreement that has been breached.[53]

In the 10 years that the WTO has been operational, there have been only six cases in which compliance with a final Appellate Body ruling has been called into question and the DSB has had to authorize the suspension of concessions or other obligations against the offending member. Three of these six cases involved Latin American countries, something that is discussed below.

8. Some shortcomings

One of the shortcomings of the procedure is that it does not make any provision for precautionary or provisional measures to assure the outcome of the dispute for the complainant. Furthermore, the final rulings of panels or the Appellate Body only apply to the future and not from the date on which the infraction complained of occurred.

As for the compensation or suspension of concessions or other obligations that can be imposed on an offending Member to enforce DSB resolutions, these have to be equivalent to the level of nullification or impairment of the breached agreements.[54] The problem with this requirement of proportionality is that it has only a minimal impact on an industrialized country when the complainant is a developing country. Furthermore, suspending concessions increases the tariffs applicable to the country being penalized, and thus raises import prices for consumers in the importing country. Lastly, perhaps the most serious shortcoming is that the DSB lacks the power to apply coercive measures to enforce its decisions. This limitation contrasts with the regulations governing the International Centre for Settlement of Investment Disputes (ICSID), which give arbitration awards issued in accordance with the ICSID Convention executive force in all Member States of that organization.[55]

9. Comparison with other mechanisms

The WTO has the most efficient dispute settlement procedure of any international body. It is an objective, fast, predictable, low-cost procedure or code of rules which, notwithstanding the limitations referred to, responds effectively to the needs of developing countries. Before it existed, a trade complaint made by a developing country was unlikely to prevail in the courts of an industrialized country or, during the early decades, in GATT bodies. The most fundamental change has been the replacement of a system in which political

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[47] Understanding, article 19 (1).
[48] Understanding, article 21 (5).
[49] Understanding, article 22 (1).
[50] Understanding, article 22 (2).
[51] Understanding, article 22 (8).
[52] Understanding, article 22 (6).
[53] Understanding, article 22 (4).

[54] Understanding, article 22 (4).
[55] See article 54 of the Convention on the Settlement of Investment Disputes between States and Nationals of Other States, which gave rise to ICSID.

considerations predominated by one administered by independent bodies with an obligation to apply a legal statute which recognizes and protects the equality of all Members' rights. What this means, as we shall see, is that any developing country can now bring a successful claim against an industrialized country for non-compliance with its WTO obligations.

Two examples, among many, which would have been impossible under GATT, illustrate the benefits that the WTO has brought the Latin American countries.

The first was the complaint by Costa Rica against the United States for its restrictions and safeguards on textile imports. The Panel accepted the complaint and ruled that the United States had failed to show that the Costa Rican exports were causing serious damage or were a real or present threat to its domestic industry, and that its restrictions consequently violated articles 6.2 and 6.4 of the Agreement on Textiles and Clothing. Furthermore, by failing to give preferential treatment to re-exports from Costa Rica, the United States measures violated article 6.6 d) of that Agreement.[56]

The second was the complaint by Peru against the European Communities for preventing it from using the designation "sardines" for its exports of that fish, on the grounds that it did not match the European description; this complaint was accepted by the Appellate Body. The ruling stated that the European rules contravened article 2.4 of the Agreement on Technical Barriers to Trade and article XVI (4) of the WTO Agreement, which requires countries to ensure that their laws, regulations and administrative procedures

conform to the obligations laid down by annexed agreements like the one mentioned.[57]

The dynamism and broad jurisdiction of the WTO procedure set it apart from the procedures of the International Court of Justice (ICJ) and ICSID, whose Administrative Council is headed by the President of the World Bank, and those operated by GATT until 1995.

The ICJ deals exclusively with disputes between States, and these may formulate reservations or refuse to recognize its jurisdiction as binding. The WTO also administers disputes between States but, unlike the ICJ, does not allow reservations[58] or any challenge to the jurisdiction of its dispute settlement bodies. The situation of the ICJ is different as 58 of its members, including four of the five permanent members of the United Nations Security Council, have refused to recognize its jurisdiction as binding.[59] Nor has its performance been particularly impressive. From 1947 to 2004, i.e., in a period of over 57 years, the ICJ has handed down only 210[60] rulings and 25 advisory opinions.

As for ICSID, its jurisdiction is limited to disputes between any of its 148 Member States and a national or investor from those States. As of the end of the 2004 financial year, 159 cases had been registered with it since its creation in October 1966 and 86 had been concluded or were pending.[61]

As for GATT, in almost 50 years (from 1948 to 1994) it resolved 196 complaints.[62] These figures should be compared with the 317 consultations commenced and the 129 panels formed at the WTO in the eight years from 1996 to 22 October 2004, as detailed further on.[63]

IV

United States policy

The policy of the United States under both GATT and the WTO has been one of consistent support for free

trade and rejection of unfair practices.[64] This policy has been strongly influenced by the dramatic experience of the 1930s crisis and the mistaken policies which triggered it including, among others, the Smoot-

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[56] Document WT/DSB/M/29 and DSB resolution of 25 February 1997.
[57] Document DS/231/AB/R and DSB resolution of 26 November 2002.
[58] Article XVI (5) of the WTO Agreement.
[59] See Petersmann (1997, p. 23).
[60] www.icj-cij.org/icjwww/idecisions.htm
[61] ICSID (2004, p. 4).
[62] WTO (1995, pp. 771-787).
[63] WTO (2004a, p. 43, paragraph 93).

[64] During the Uruguay Round negotiations, the United States agreed to repeal section 301 of its 1974 trade law, which authorized unilateral reprisals against practices by other countries deemed to restrict or discriminate against United States trade. Reprisals were taken against Latin American countries under this law in no fewer than 11 cases. Brazil was one of the countries most affected (see Husted, 1995, p. 261).

Hawley Act, a historic example of trade protectionism of the most primitive kind.[65]

Notwithstanding all this, some powerful pressure groups with great political influence have perpetuated the protection of industries (particularly in agriculture) that could not have survived in a situation of genuinely free trade.[66] Examples of this include the sugar[67] and cotton industries. Meanwhile, political circumstances have led governments to adopt measures of protection for specific industries from time to time. A recent example of this was the increase in tariffs on steel imports; this gave rise to a complaint before WTO which we shall discuss further on.

Although support for free trade is still the rule, rulings against the United States by the WTO bodies have given rise, as we shall see, to strong criticism of the organization's procedures and resolutions by different sectors in the country.

Notwithstanding this, in 1997 a United States government report gave unconditional backing to WTO procedures and, specifically, to the consultation mechanism, stating that "the new dispute settlement rules often make it possible for us to enforce WTO agreements without ever having to reach a panel decision". The report went on to back up its conclusion by citing seven cases that were resolved in this way.[68]

At the same time, until recently, public opinion and political sectors in the United States could not conceive that trade or investment rulings by the country's administrative or legal authorities might be revoked or amended by international tribunals. When this happens, there is a groundswell of indignation against what is perceived as unacceptable intervention in the country's sovereignty. This change has been taking place very gradually, as a result, first, of some resolutions by the arbitration tribunals set up under the bilateral free trade agreement of 1987 with Canada,

then of some of the rulings by the tribunals established under the North American Free Trade Agreement, of ICSID and, lastly, of the WTO. Some of these experiences have given rise to hostility against international jurisdictions that are perceived as inimical to national sovereignty, and the argument is made that United States laws should only be interpreted by the country's own courts, and not by faceless bureaucrats hidden away in Geneva. Curiously enough, these reactions and this defence of sovereignty parallel former experiences that our region used to have (and still does, but to a lesser degree) with the International Monetary Fund, the conditionality of international financial organizations and the unilateral policies of certain countries.

The current criticisms were articulated by Ralph Nader in a discussion of the WTO Agreement when he argued that "decision-making power now in the hands of citizens and their elected representatives…would be seriously constrained by a bureaucracy and a dispute resolution body located in Geneva, Switzerland that would operate in secret and without the guarantees of due process and citizen participation found in domestic legislative bodies and courts".[69]

In response to these reservations, a Senate resolution of March 2003, known as the "Dole proposal", established a five-member Commission which will be responsible for reviewing panel and Appellate Body resolutions that go against the United States and informing the government of its findings. Specifically, the Commission will be required to determine whether these WTO bodies have exceeded their authority or mandate, increased the obligations or diminished the rights of the United States under the Marrakesh Agreement, acted arbitrarily or wilfully or departed from the provisions of article 17.6 of the AD Agreement (which gives the resolutions of national authorities precedence over those of WTO bodies in anti-dumping investigations).[70]

A later resolution of the House of Representatives rejected the Appellate Body ruling that safeguards on steel imports were not compatible with the WTO agreements.[71] Since then, however, the United States Government has complied with that ruling.

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[65] The Smoot-Hawley Act of 1930 raised the trade tariffs of the United States to the highest levels in their history. The result was that foreign trade declined drastically and the depression worsened (see Columbia Electronic Encyclopedia, 2003).

[66] Agricultural support in the countries of the Organisation for Economic Co-operation and Development (OECD) was estimated at US$ 350 billion in 2003, with the United States, the European Union and Japan accounting between them for four fifths of this total (see OECD, 2004).

[67] Protection for the sugar industry would be a stumbling block to approval of a free trade agreement between the United States and the Central American countries (see Barrionuevo and Becker, 2005, p. C1).

[68] Office of the United States Trade Representative, Report on Trade Expansion Priorities, cited by Horlick (1998, p. 685).

[69] Testimony by Ralph Nader before the 104th Congress of the United States in 1994. Cited by Jackson (2003, p. 790).

[70] Senate resolution no. 676 of 20 March 2003.

[71] House of Representatives resolution no. 445 of 18 November 2003.

A more general criticism was voiced by both houses of Congress concerning the interpretation of the Anti-Dumping (AD), Subsidies and Countervailing Measures (SCM) and Safeguards (SG) Agreements. They advised the President to ensure that the different measures specified there were observed or applied in WTO proceedings and argued, among other things, that article 17.6 of the AD Agreement, which establishes that the decisions of national jurisdictions take precedence over those of WTO bodies, applied not only to anti-dumping investigations but to subsidy and safeguard investigations as well.[72] One author argues, and we agree, that there is no legal basis for this interpretation.[73]

These apprehensions are contradicted by the General Accounting Office (GAO) report of 30 July 2003. According to this, most of the experts consulted, in both the public and private sectors, considered that the WTO had not exceeded its authority when applying the AD Agreement, that all Members were treated alike and that no new obligations had been imposed and no rights curtailed. However, the rules on causality and unforeseen developments as they related to safeguards were judged to be confused.[74]

There has also been strong and persistent criticism from academic and professional circles. One view which is very widespread, but which is not borne out by the facts, is that panels have "almost universally been deciding against the United States for several years".[75] The GAO report referred to, however, states that 11 out of 13 complaints by Member countries concerning the compatibility of different United States trade laws with WTO rules were rejected and that out

of 21 findings by national authorities in anti-dumping or subsidy investigations, the number of United States findings rejected was equivalent to the number of other countries' findings rejected.[76]

A frequent criticism concerns "judicial activism", or the adoption by WTO bodies of resolutions on matters that are ambiguous, contradictory or unlegislated, or that were not agreed in Marrakesh. According to the critics, panels and the Appellate Body should refrain from settling matters of this kind and should hand them over for solution to the political bodies of the WTO.[77]

These comments have done nothing, however, to shake the support of successive United States governments for the WTO, something that has been manifested in their compliance (albeit after delays and questionable challenges) with rulings against them, as well as in other ways. In addition, the United States has been the largest user of the system. As of May 2005 it had participated as a complainant, respondent or third party in all but one of the disputes settled by the Appellate Body.[78] This in itself is enough to demonstrate, in our opinion, the support of the United States for the WTO.

A quite balanced United States perspective has been provided by professor John Jackson. He cites two opinions that, in his view, sum up the current debate. The first comes from the Democrat leader Tip O'Neill, who said that "all politics is local". The second is from the economist Peter F. Drucker, for whom "all economics is international". In Jackson's view, reconciling these two perceptions is the great challenge ahead for international trade relations.[79]

V

The most frequent disputes

The most frequent disputes involving the Latin American countries, whether as complainants or respondents, have generally concerned the application of the covered agreements on subsidies and countervailing measures (SCM), anti-dumping (AD) and safeguards (SG), and of certain sections of GATT 1994.

These agreements are an integral part of the WTO Agreement and are binding on all its Members.[80] As it happens, criticism of the resolutions of WTO bodies by certain sectors in the United States has mainly been directed, as we shall see, against the way these three covered agreements have been applied and interpreted.

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[72] Concurrent resolution of the Senate and the House of Representatives no. 243 of 15 July 2003.
[73] Jackson (1999, p. 90).
[74] GAO (2003, p. 30).
[75] Ragosta, Joneja and Zeldovich (2003, p. 750).
[76] GAO (2003, p. 12).

[77] Ragosta, Joneja and Zeldovich (2003, p. 751).
[78] Smith (2004), cited in Shaffer (2005).
[79] Jackson (1999, p. 104).
[80] Article II (2) of the WTO Agreement.

1. Agreement on subsidies and countervailing measures (SCM)

A subsidy exists when there is a financial contribution by a government or any public body within the territory of a Member or there is some form of income or price support conferring a benefit.[81] Prohibited subsidies are those that are contingent, either solely or as one of several other conditions, upon export performance (in law or fact) or upon the use of domestic over imported goods.[82] No Member should cause, through the use of any such subsidy, injury to the domestic industry of another Member, or nullification or impairment of benefits accruing directly to it from GATT 1994 (particularly concessions already bound) or serious prejudice to its interests.[83]

Members may only impose countervailing duties after initiating and concluding an investigation accrediting the existence, amount and effects of the alleged subsidy. Investigations must be initiated upon a written application by a branch of domestic industry or, exceptionally, by the authority, when this has sufficient evidence of the existence of a subsidy, the injury caused and the causal relationship between the imports subsidized and the alleged injury.[84] By countervailing duty is meant "a special duty levied for the purpose of offsetting any subsidy bestowed directly or indirectly upon the manufacture, production or export of any merchandise, as provided for in paragraph 3 of Article VI of GATT 1994".[85]

2. The Anti-dumping Agreement (AD Agreement)

The AD Agreement provides that anti-dumping measures are to be applied under the circumstances laid down in article VI of GATT 1994[86] and pursuant to investigations initiated and conducted in accordance with the provisions of that Agreement.[87] For the purposes of the Agreement, a product is considered to be dumped "i.e. introduced into the commerce of another country at less than its normal value, if the export price of the product exported from one country to another is less than the comparable price, in the ordinary course of trade, for the like product when destined for consumption in the exporting country".[88] Much like the SCM Agreement, the AD Agreement makes the application of countervailing duties conditional on an investigation first being held by a national industry or, exceptionally and when the circumstances justify it, by the authority itself.[89]

Just hours before the conclusion of the Uruguay Round, the United States succeeded in inserting a provision that has been the subject of much controversy.[90] This is article 17.6, which establishes that panels, in assessing the facts of an AD complaint, must determine whether the local authorities' establishment of the facts was proper and whether their evaluation of those facts was unbiased and objective. If the panel determines that this was the case, the evaluation shall not be overturned even though the panel might have reached a different conclusion. In other words, the assessment of the facts carried out by the local authorities prevails over that carried out by the WTO tribunals. This article adds that the panel must also interpret the relevant provisions of the AD Agreement in accordance with customary rules of interpretation of public international law. Nonetheless, if it concludes that the provision concerned admits of more than one permissible interpretation, it is to prefer the interpretation that supports the measure adopted by the local authorities.[91]

3. The Agreement on Safeguards (SG Agreement)

The SG Agreement governs the application of safeguard measures provided for by article XIX of GATT 1994[92] and establishes that a Member may only apply such measures if that Member has determined, pursuant to the conditions of the Agreement, that a product is

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[81] Articles 1.1 and 1.2 of the SCM Agreement.
[82] Article 3.1 a) and b) of the SCM Agreement.
[83] Article 5 of the SCM Agreement.
[84] Articles 10 and 11 of the SCM Agreement.
[85] Note 36 to Article 10 of the SCM Agreement. Article VI of GATT 1994 refers to anti-dumping duties and countervailing duties.
[86] The circumstances described by article VI of GATT are that a product introduced into the commerce of another country at less than its normal value causes or threatens material injury to an established industry in the territory of a contracting party or materially retards the establishment of a domestic industry.
[87] Article 1 of the AD Agreement.

[88] Article 2.1 of the AD Agreement.
[89] Articles 1 and 5 of the AD Agreement.
[90] Petersmann (1997, p. 54, note 98).
[91] Article 17.6 ii) of the AD Agreement.
[92] One of the safeguard measures mentioned in article XIX is as follows: "If, as a result of unforeseen developments and of the effect of the obligations incurred by a contracting party under this Agreement, including tariff concessions, any product is being imported into the territory of that contracting party in such increased quantities and under such conditions as to cause or threaten serious injury to domestic producers in that territory of like or directly competitive products, the contracting party shall be free, in respect of such product, and to the extent and for such time as may be necessary to prevent or remedy such injury, to suspend the obligation in whole or in part or to withdraw or modify the concession."

being imported into its territory in such increased quantities, absolutely or relative to domestic production, and under such conditions as to cause or threaten to cause serious injury to the domestic industry that produces like or directly competitive products. The SG Agreement, however, does not mention the "unforeseen developments" to which article XIX of GATT refers as giving rise to excessive imports, and this has led to controversy as to which provision or agreement prevails.

Measures may be adopted only after an investigation by the competent authorities of that Member following a pre-established public procedure.[93] They shall be applied, moreover, only to the extent necessary to prevent or remedy serious injury and to facilitate adjustment,[94] and they may not last for more than four years, unless the period is extended.[95] The Agreement established a Committee on Safeguards under the authority of the Council for Trade in Goods, which monitors and supervises its application.[96]

VI

The experience of Latin America
and the Caribbean[97]

Between 1 January 1995 and 22 October 2004, 317 consultations were filed with the WTO, leading to the formation of 129 panels for 159 disputes.[98] These panels issued 90 rulings, of which 59 were appealed, so that in 31 cases the parties accepted the panel findings.[99] Of the consultations, 188 ended in mutual agreement between the parties, or else their differences were resolved in one way or another and there was no need to form a panel.

Of these consultations, most involved industrialized countries, 204 as complainants and 191 as respondents. Developing countries, meanwhile, initiated 136 consultations and were the respondents in 122.[100]

Most of the consultations concerned anti-dumping, subsidies and countervailing measures, and safeguards.

Concerning anti-dumping, the countries that have applied the largest number of measures since 1995 have been India (279), the United States (211), the European Union (193) and Argentina (193); the countries against which most measures have been taken are China (272), the European Union and its

member countries (213) and the Republic of Korea (110).[101]

Concerning subsidies and countervailing measures, 168 investigations were notified during the period 1995-2003, the largest numbers being conducted by the United States (69) and the European Union (42).[102] The countries that have applied the largest number of safeguards, meanwhile, are India (8), the United States (6) and Chile, the Czech Republic and the Philippines, with 5 apiece.

As regards compliance with panel or Appellate Body rulings, the great majority have been complied with within the reasonable time period stipulated by article 21.3 of the Understanding.[103] The exceptions have been cases where the parties were in disagreement and the party ruled in favour of had to apply for DSB authorization to suspend concessions or other obligations vis-à-vis the offending party. There have been six such cases since 1995 and the following three have involved Latin American countries:[104]

— Actions by the United States, Ecuador, Guatemala, Honduras, Mexico and other countries against the banana import restrictions of the European Communities.

— Actions by Canada against Brazil for export financing subsidies in its civil aviation sector.

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[93] Article 3 of the SG Agreement.
[94] Article 5 (1) of the SG Agreement.
[95] Article 7 (1) of the SG Agreement.
[96] Article 13 (1) of the SG Agreement.
[97] The figures in this section differ slightly from those given elsewhere in this document, as the sources are from different periods.
[98] WTO (2004a, p. 43, paragraph 93).
[99] WTO (2004a, p. 44, paragraph 96).
[100] WTO (2004a, p. 44, paragraph 95).

[101] WTO (2004a, pp. 34 and 35, paragraph 67).
[102] WTO (2004a, p. 35, paragraph 68).
[103] WTO (2004a, p. 44, paragraph 97) and Understanding, article 21 (3).
[104] See the last paragraph of section III, point 7 above.

— Actions by Brazil against Canada for export credits and loan guarantees in its civil aviation sector.[105]

1. Consultations

One consequence of the gradual format of the procedure and the preference for non-contentious solutions is that a large proportion of consultations between 1995 and March 2005 ended in agreement between the parties, without the need to form a panel. This outcome has been highlighted by the United States and the European Union as one of the great successes of the procedure.

Brazil and Argentina have been the main Latin American users of the consultation procedure. Brazil has been a complainant in 22 consultations and a respondent in 12, while Argentina has been a complainant in 9 and a respondent in 15.[106]

2. Disputes settled by the Appellate Body

Between 20 May 1996 and 19 May 2005, 68 disputes were settled by rulings or final reports from the WTO Appellate Body.[107]

Approximately one third (22) of these 68 rulings were on disputes involving Latin American countries as complainants or respondents,[108] and in three of the 22 the disputes were wholly between Latin American countries. The other 19, therefore, were between Latin American and non-Latin American countries.

Of these 19 disputes, there were eight in which the Latin American countries brought their actions individually and five in which they did so jointly with other countries.

Latin American countries were respondents in six disputes.

The details of the disputes are given below.

a) *Individual actions by Latin American and Caribbean countries*

These were the eight cases that follow, and the rulings went in favour of the complainants in all but two:[109]

i) Costa Rica versus the United States for its restrictions on textile imports; the ruling went in favour of Costa Rica.[110]

ii) Brazil versus the European Communities for restrictions on poultry imports; the ruling went in favour of the European Communities.[111]

iii) Brazil versus Canada for civil aircraft export subsidies; the ruling went in favour of Brazil.[112]

iv) Peru versus the European Communities for the ban on its use of the term "sardines" in its exports to the region; the ruling went in favour of Peru.[113]

v) Brazil versus the European Communities for application of anti-dumping measures to exports of steel tubes; the ruling went in favour of Brazil.[114]

vi) Argentina versus the United States for application of anti-dumping measures to imports of Argentine steel tubes for the oil industry; the ruling went in favour of Argentina.[115]

vii) Brazil versus the United States for subsidies to the cotton industry; the ruling went in favour of Brazil.[116]

viii) Antigua and Barbuda versus the United States for restrictions on the cross-border supply of gambling and betting services; the ruling went in favour of the United States.[117]

b) *Actions by Latin American countries jointly with other countries*

There were five of these actions and all the rulings went in favour of the complainants:

i) Brazil and Venezuela versus the United States for its restrictions on gasoline imports.[118]

ii) Ecuador, Guatemala, Honduras, Mexico and the United States against the European Communities for their restrictions on banana imports.[119]

Antigua and Barbuda against the United States for its cross-border restrictions on gambling and betting services. The rulings went in favour of the European Communities and the United States, respectively.
[110] Document WT/DS24/AB/R of 20 March 1997. This document and others with similar catalogue numbers cited below are Appellate Body reports.
[111] Document WT/DS69/AB/R of 23 July 1998.
[112] Document WT/DS70/AB/R of 20 August 1999.
[113] Document WT/DS231/AB/R of 23 October 2002.
[114] Document WT/DS219/AB/R of 18 August 2003.
[115] Document WT/DS268/AB/R of 17 December 2004.
[116] Document WT/DS267/AB/R of 21 March 2005.
[117] Document WT/DS285/AB/R of 20 April 2005.
[118] Document WT/DS2/AB/R of 20 May 1996.
[119] Document WT/DS27/AB/R of 25 September 1997.

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[105] WTO (2004a, p. 44, paragraph 97).
[106] WTO (2004a, p. 44, paragraph 95).
[107] www.wto.org/english/tratop_e/dispu_e/ab_reports_e.html.
[108] These 22 rulings include that of 20 April 2005 which settled the dispute between Antigua and Barbuda and the United States over the cross-border supply of gambling and betting services (Appellate Body document WT/DS285/AB/R).
[109] The exceptions were the action by Brazil against the European Communities for its restrictions on poultry imports and that of

iii) Brazil, Chile, Mexico, the European Communities and other countries against the United States for the so-called Byrd Amendment.[120]

iv) Brazil, the European Communities and other countries against the United States for safeguards on steel imports.[121]

v) Brazil, Australia and Thailand versus the European Communities for their sugar subsidies.[122]

c) *Disputes in which Latin American countries were the respondents*

There have been six such disputes and all the rulings but one have gone against the respondents:

i) Philippines versus Brazil for application of countervailing measures against imports of desiccated coconut from the Philippines; the ruling went in favour of Brazil.[123]

ii) The United States versus Argentina for application of duties not included in the schedules of concessions to imports of footwear and apparel; the ruling went in favour of the United States.[124]

iii) Canada versus Brazil for export subsidies to its civil aviation industry; the ruling went in favour of Canada.[125]

iv) European Communities versus Chile for taxes levied by Chile on imports of alcoholic beverages; the ruling went in favour of the Communities.[126]

v) European Communities versus Argentina for safeguards on footwear imports; the ruling went in favour of the Communities.[127]

vi) United States versus Mexico for application of anti-dumping duties to United States fructose syrup imports; the ruling went in favour of the United States.[128]

d) *Disputes between Latin American countries*

There were three such disputes:

i) Mexico versus Guatemala for application of provisional measures to Mexican cement imports; the ruling went in favour of Guatemala.[129]

ii) Argentina versus Chile for the price band system applied to imports of agricultural products; the ruling went in favour of Argentina.[130]

iii) Honduras versus the Dominican Republic for the latter's application of a stamp tax to the importation and sale of cigarettes; the ruling went in favour of Honduras.[131]

e) *The action by Antigua and Barbuda against the United States*[132]

This dispute is highlighted here because its subject matter is quite new (application of the General Agreement on Trade in Services) and it is among the latest to have been settled by the Appellate Body. Furthermore, the action was taken by a very small country against the most powerful country on the planet.

Antigua and Barbuda complained about restrictions applied by the United States to the supply of betting services and games of chance over the Internet in general, with particular reference to horse racing. According to the complainant, the schedule of market access concessions approved by the United States[133] mentioned "other recreational services", and this reference should be understood as including betting services and games of chance. The United States rejected this interpretation and stated that this had never been its intention, since there were three federal laws in force that prohibited games of chance between states and even within certain states. The Panel accepted the complaint, however, because it considered that the schedule had not explicitly forbidden these services, and that the United States had not been able to show that the federal laws invoked fell within the exception of article XIV a) of the General Agreement on Trade in Services, i.e., that they were "necessary to protect public morals or to maintain public order". It also accepted the complainant's objection to the Interstate Horseracing Act, concluding that this discriminated against providers of remote electronic betting services.

The Appellate Body partially overturned the Panel resolution. On the one hand, it accepted the defence of the United States and the legitimacy of the restrictions laid down by the three federal laws and resolved that

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[120] Document WT/DS217/AB/R of 27 January 2003.
[121] Document WT/DS248/AB/R of 10 December 2003.
[122] Document WT/DS265/AB/R of 19 May 2005.
[123] Document WT/DS22/AB/R of 20 March 1997.
[124] Document WT/DS56/AB/R of 22 April 1998.
[125] Document WT/DS46/AB/R of 20 August 1999.
[126] Document WT/DS110/AB/R of 12 January 2000.
[127] Document WT/DS121/AB/R of 12 January 2000.
[128] Document WT/DS132/AB/RW of 21 November 2001.
[129] Document WT/DS60/AB/R of 25 November 1998.

[130] Document WT/DS207/AB/R of 23 October 2002.
[131] Document WT/DS302/AB/R of 19 May 2005.
[132] Document WT/DS285/AB/R of 20 April 2005.
[133] The schedule of market access concessions was approved by the United States in accordance with article II of GATT, which is one of the agreements annexed to the WTO Agreement.

these were justified as "necessary to protect public morals or to maintain public order". On the other hand, it upheld the Panel resolution and the complaint of Antigua and Barbuda that the Interstate Horseracing Act discriminated against cross-border services supplied over the Internet. Its conclusion was that the United States had not succeeded in demonstrating that the restrictions placed by the Act on foreign providers of these betting services applied alike to domestic providers, and it therefore found that the national treatment rule had been violated, as had article XIV of the General Agreement on Trade in Services itself.

f)   *Overall outcome*
   As the information presented shows, during the period from May 1996 to May 2005 the overall outcome (excluding the three disputes between Latin American countries) is as follows:
—   of a total of 19 disputes, the Latin American countries were the complainants (individually or jointly with other countries) in 13 cases, and respondents in 6;
—   of their 13 complaints, the Latin American countries prevailed in 11 and lost 2;
—   of the 6 complaints against them, the Latin American countries lost all but one;
—   of the 19 disputes involving Latin American countries as complainants or respondents, these countries were successful in 12, i.e., two thirds of the total, and unsuccessful in 7;
—   of the 12 Latin American successes, 8 were rulings in favour of Brazil. Excluding Brazil, therefore, the other countries had 4 successes;
—   of the 7 Latin American defeats, 2 were rulings against Brazil. Excluding Brazil, then, the other countries suffered 5 defeats.
   The above figures include the claim by Antigua and Barbuda against the United States as one of the defeats, although in some respects the complainant was successful, as explained above.

VII

The experience of Brazil

1.   Summary

Since 1996, Brazil has used the WTO consistently, and with remarkable success, to resolve its trade disputes. It was the complainant, jointly with Venezuela, in the first case to be brought before the WTO (the gasoline case) and, together with other countries, was also the complainant in one of the latest cases (the proceedings against the European Communities for sugar subsidies).
   Brazil has participated in 10 disputes before the WTO. It has been the complainant in 8 cases and lost only one, while of the 2 in which it has been the respondent, it lost one. In total, 8 successes and 2 defeats.
   Brazil's two defeats were: in its action against the European Communities for the latter's restrictions on poultry imports, and in the action against it by Canada for subsidies to its civil aviation industry, which are mentioned below.
   The 10 disputes involving Brazil are shown in table 1.

2.   Description of the disputes involving Brazil

There follows a brief description of the main actions involving Brazil, as we believe that they are instructive and important.

a)   *Brazil and Venezuela versus the United States for its restrictions on gasoline imports*
   On 12 April 1995, Brazil complained, jointly with Venezuela, against the regulations on foreign gasoline imports approved by the United States. Amendments to the latter's Clean Air Act of 1990 established that only clean or "reformulated" gasoline could be sold in the most polluted metropolitan areas. The complainants argued that the methodology used by this law was discriminatory and subjected imported gasoline to less favourable treatment than domestic gasoline. The Appellate Body upheld the complaint and resolved that these regulations represented "unjustifiable discrimination" and "a disguised restriction on international trade" prohibited by article XX of GATT 1994, and it ordered the United States to modify them and bring them into line with the relevant rules of GATT 1994.[134]

b)   *Philippines versus Brazil for countervailing measures applied to imports of desiccated coconut*
   Brazil applied provisional and permanent countervailing measures to imports of desiccated

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[134] Document WT/DS2/R and DSB resolution of 20 May 1996.

TABLE 1

Appellate Body resolutions involving Brazil as a party

Complainant	Issue	Respondent	Outcome
Brazil and Venezuela	Restrictions on gasoline imports	United States	Favourable to Brazil and Venezuela
Philippines	Countervailing measures on desiccated coconut imports	Brazil	Favourable to Brazil
Brazil	Restrictions on poultry imports	European Communities	Favourable to the Communities
Brazil	Subsidies for aircraft exports	Canada	Favourable to Brazil
Canada	Subsidies for aircraft exports	Brazil	Favourable to Canada
Brazil, Chile, Mexico and other countries	Byrd amendment (anti-dumping and subsidies and countervailing measures agreements)	United States	Favourable to Brazil and others
Brazil	Anti-dumping duties on imports of steel tubes	European Communities	Favourable to Brazil
Brazil, European Communities and others	Subsidies for steel imports	United States	Favourable to Brazil and others
Brazil	Subsidies for the cotton industry	United States	Favourable to Brazil
Brazil and others	Subsidies for the sugar industry	United States	Favourable to Brazil

Fuente: Prepared by the author.

coconut from the Philippines. However, the Appellate Body declined to consider the Philippines complaint for formal reasons, as it considered that the country's legal justification was erroneous and was not specified in the relevant mandate.[135]

c) *Brazil versus the European Communities for restrictions on Brazilian poultry imports*

The final resolution of this Brazilian action before the WTO went against Brazil.

Brazil argued that the European Communities had not complied fully with their obligation to apply the tariff rate quota for poultry products established in a bilateral agreement between the two countries, and had therefore violated article XXVIII of GATT, which regulates amendments to schedules of concessions. Brazil also argued that there had been infringements of article XIII of GATT, concerning non-discriminatory application of quantitative restrictions, article X of GATT on transparency, various provisions of the Agreement on Import Licensing Procedures between the two parties, the national treatment rules of GATT and the

special safeguard provisions of article 5 of the Agreement on Agriculture.

The Panel, among other considerations, found that Brazil had not demonstrated that the European Communities had failed to properly administer the tariff rate quota for poultry imports. The Panel findings were appealed but the Appellate Body upheld its conclusions with some alterations. The two resolutions were adopted by the DSB on 23 July 1998.[136]

d) *Brazil versus Canada for civil aircraft export subsidies*[137]

Brazil and Canada had a long-running dispute over the two countries' subsidies for their respective civil aviation industries, since resolved by mutual agreement between the parties.

There were two main disputes and two subsidiary ones, the latter arising from the failure to reach agreement on compliance with the respective rulings of the Appellate Body.

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[135] Document WT/DS22/AB/R and DSB resolution of 20 march 1997.

[136] Document WT/DS69/AB/R of 23 July 1998.
[137] Document WT/DS70/AB/R of 20 August 1999.

The complaint brought by Brazil, which was settled in the country's favour, will now be described.

Brazil complained against the subsidies provided by Canada and some of its provinces to the country's aircraft industry, arguing that they were prohibited by articles 3.1 a) and 3.2 of the SCM Agreement. On 14 April 1999, the Panel found that two of the measures complained of were "contingent *in fact* upon export performance" and thus prohibited by these articles.

The Appellate Body accepted the Brazilian complaint and ordered the removal of the measures complained of. Agreement was not reached on compliance with the ruling, however, so that Brazil asked for authorization to suspend concessions and other obligations by means of countermeasures under articles 22.2 of the Understanding, 4.10 of the SCM Agreement and VI (6)(a) of GATT for the equivalent of US$ 3.36 billion. This request was rejected by Canada and the matter was referred to arbitration under article 22.6 of the Understanding. The arbitration finding approved the suspension of concessions and the adoption of "appropriate countermeasures" but found that, under article 4.10 of the SCM Agreement, the appropriate sum was US$ 247,797,000, and Brazil was authorized to implement suspensions for this amount. Notwithstanding this, the arbitrator ruled that, in accordance with article 22.8 of the Understanding, the suspension of concessions and other obligations was to be temporary and apply only until the prohibited measure had been removed. The arbitrator also added that he knew the parties were holding consultations to arrive at a mutually satisfactory solution and that, given the circumstances of the case and the wider context, this seemed to be the most appropriate solution.[138]

e)   *Canada versus Brazil for civil aircraft export subsidies*[139]

This complaint by Canada was against Brazil's subsidized financing of the Export Financing Programme (Programa de Financiamento às Exportações-PROEX), which promoted civil aircraft exports, and the panel for this was established on 23 July 1998.

The Appellate Body accepted the complaint that interest paid under PROEX constituted a subsidy within the meaning of article 1 of the SCM Agreement. It found that Brazil had not complied with its obligation under

article 27.4 of that Agreement to "not increase the level of its export subsidies". Furthermore, being subsidies "contingent upon export performance", they were subject to the prohibitions of article 3.1 a) of the same Agreement. It went on to uphold the panel conclusion that Brazil had not demonstrated that subsidies to PROEX had not been used to "secure a material advantage in the field of export credit terms".[140] In the light of these considerations it was ruled that Brazil should withdraw aircraft export subsidies under PROEX, and this was upheld by the DSB on 20 August 1999.

Since no agreement was reached on compliance by Brazil with the ruling, Canada requested the formation of a panel under article 21.5 of the Understanding, and this was established on 9 December 1999. In its report, the Panel concluded that Brazil had not brought PROEX into conformity with the SCM Agreement. Brazil appealed and also requested arbitration[141] to determine the justification for the countermeasures requested by Canada. The Appellate Body confirmed the Panel finding that Brazil had not brought PROEX into conformity with the SCM Agreement, and this was upheld by the DSB on 4 August 2000.

The arbitrators ruled that Canada would be justified in applying countermeasures of up to 344 million Canadian dollars a year for six years and suspending concessions for that amount. This was upheld by the DSB on 12 December 2000. On that same date, Brazil notified the DSB of the changes made to PROEX and argued that it was now in conformity with the SCM Agreement. Canada disagreed, however, and made a second application for a panel under article 21.5 of the Understanding. This time the Panel concluded that the revisions made by Brazil to PROEX III were not inconsistent with the SCM Agreement, and this finding was upheld by the DSB on 23 August 2001.

f)   *Brazil, Chile, Mexico, the European Communities and other countries versus the United States over the Byrd Amendment*[142]

The United States legislation of 2000 known as the Byrd Amendment amended a 1930 Tariff Act and allowed import duties collected by the Treasury under anti-dumping and countervailing duties legislation to be transferred to the businesses that had reported breaches of this legislation.

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[138] See articles VIII and III of the WTO Agreement.
[139] Document WT/DS46/AB/R of 20 August 1999.

[140] See Annex I of the SCM Agreement.
[141] For the concept of arbitration, see section III, point 7 above.
[142] Brazil was one of a number of complainants. This reference is to the Brazilian claim only.

The Appellate Body found that this Amendment was a specific anti-dumping or anti-subsidy measure that was not permitted by and was contrary to the AD and SCM Agreements. It found that the United States had violated those Agreements and article XVI (4) of the WTO Agreement which obliges Member countries to ensure that their laws, regulations and administrative procedures are consistent with their obligations under multilateral covered agreements. By committing these infractions, it found, the United States had nullified or impaired the benefits conferred upon the complainants by those agreements.

The parties were unable to agree on the measures to be adopted by the United States to comply with the ruling, and Brazil requested authorization to suspend tariff concessions and obligations under GATT 1994; this was submitted to arbitration. The resolution adopted established that Brazil could suspend concessions by levying additional import duties on a definitive schedule of products originating in the United States. This schedule would cover, each year, a total trade value no greater than the amount yielded by a particular equation. This would take into account the amount of reimbursements under the Byrd Amendment during the last year for which data were available on the anti-dumping or countervailing duties paid by Brazil that year, multiplied by a coefficient calculated to ensure that the level of suspension would be equivalent to that of the nullification or impairment of the benefits conferred upon Brazil by the breached agreements.[143] The United States reported that on 3 March 2005 a bill repealing the Byrd Amendment had been submitted to the House of Representatives.[144]

g) *Brazil versus the European Communities over anti-dumping duties on malleable cast iron tube or pipe fittings from Brazil*

Brazil made a complaint against the European Communities for infringing the AD Agreement by applying anti-dumping duties to these imports. Chile reserved its third-party rights and formulated observations on the ruling.

The Appellate Body ruled that the Communities had violated articles 6.2 and 6.4 of the AD Agreement by not providing Brazilian exporters, during the investigation of the anti-dumping claims, with the information they had available on the factors listed in

article 3.4 of that Agreement affecting the domestic industry concerned. Since these economic factors and indicators influenced the state of the domestic industry affected by the dumping, Brazilian exporters were unable to mount a proper defence during that investigation. The Appellate Body ruled in favour of Brazil because it considered that the timely provision of this information by the European Communities was an essential part of the process and that the failure to provide it could not be remedied after the event.

h) *Brazil, the European Communities and other countries versus the United States over safeguards on steel imports*

The European Communities, Brazil and other countries made a complaint against the safeguards applied to steel imports by the United States on the grounds that they had violated articles XIX (1) (a) of GATT 1994 and 3.1 of the SG Agreement. The claim was based on the alleged failure by the United States to provide an adequate and detailed explanation of the "unforeseen developments" leading to such increased quantities of imports in such amounts as to cause serious injury to the relevant domestic producers.

The Appellate Body accepted the complaints and added that the application of safeguards to certain steel products was inconsistent with the requirements of articles 2.1 and 3.1 of the SG Agreement, since the United States did not explain the grounds for its determination concerning the rise in imports. The Body also judged it to be inconsistent with articles 2.1 and 4.2 of the SG Agreement, in that the United States did not comply with the requirement of "parallelism" between the products for which the safeguards were established and the products to which the measures were applied.[145] The Appellate Body recommended, and the DSB agreed, that the measures objected to should be brought into conformity with the provisions of the SG Agreement, and on 4 December 2003 the White House announced that these measures were to be lifted[146]

i) *Brazil versus the United States over cotton industry subsidies*

The complaint by Brazil against the United States over subsidies to the latter's cotton industry was

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[143] Document WT/DS217/AB/R of 31 August 2004.
[144] Information on the DSB of 21 March 2005, in WTO (2005).

[145] Document WT/DS251/AB/R and DSB resolution of 10 December 2003.
[146] www.whitehouse.gov.newsrelease.

accepted by the Appellate Body and approved by the DSB on 21 March 2005. The finding was that the payments and support provided by the United States to that industry, put at over US$ 3 billion a year, violated the Agreement on Agriculture, the SCM Agreement and GATT 1994. They constituted a form of "support to a specific commodity" prohibited by the Agreement on Agriculture, and those provided during 1999, 2000, 2001 and 2002 exceeded the amounts provided in 1992 and were subject to the actions of articles 5 and 6 of the SCM Agreement and XVI (1) of GATT 1994. Furthermore, they undervalued domestic prices and were thus harmful to imported products, infringing article 6 (2) (ii), and were prohibited subsidies under the terms of articles 3.1 (b) and 3.2 of the SCM Agreement, respectively. The credits and guarantees provided were judged to be subsidies contingent upon export performance, and thus also illegal under the SCM Agreement. The conclusion was that the measures referred to were not compatible with the Agreement on Agriculture and the SCM Agreement and that they should be brought into conformity with the provisions of these agreements.

j) *Brazil, Australia and Thailand versus the European Communities over their subsidies to the sugar industry (2005)*

One peculiarity of this dispute was that besides the parties directly involved, a total of 22 countries reserved third-party rights, including China, Canada, the United States, India and sugar-producing countries in Africa, the Caribbean and the Pacific. These latter groups of countries, known as "ACP countries", receive financial support from the European Communities.

The complainants argued that the subsidies granted to the sugar industry by the European Communities were above the limits specified in the respective schedules of concessions, and that this violated the Agreement on Agriculture and the SCM Agreement. In particular, the complainants argued that the European Communities guaranteed a high price for sugar included in the respective production quotas, but that sugar in excess of these quotas, known as "C sugar", could not be sold internally but had to be exported. The high prices paid to producers and processors enabled these to finance the production and export of C sugar at prices lower than the cost of production. Furthermore, it was argued that the Communities provided export subsidies to approximately 1.6 million tons, with a value equivalent to that of the imports received from the ACP countries. Because the values and volumes of these exports exceeded the limits committed to and agreed, the subsidies of the European Communities breached the relevant provisions of the Agreement on Agriculture and the SCM Agreement.[147]

The Panel resolution accepted the complainants' arguments, and it was upheld by the Appellate Body. The infractions by the European Communities were ruled to have nullified or impaired the benefits that the Agreement on Agriculture conferred upon the complainants and it was recommended that the Communities amend their rules on sugar and bring them into compliance with the provisions of that Agreement.

VIII

Conclusions

While governments should always give priority to diplomacy for resolving their trade conflicts with other countries,[148] the virtue of the WTO procedure is that its

consultations often yield quite similar solutions. The information analysed shows that when consultations fail and disputes are referred for a panel ruling, the results have usually gone in favour of the Latin American countries. This must be put down to the predictability of the procedure and the fact that it is administered by independent tribunals that objectively apply and interpret rules agreed at a multilateral level.

Given that the disputes concerned are exclusively between States, but concern and affect private-sector interests, it is vital for governments to coordinate closely with domestic exporters and importers. This

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[147] Article 3.3, article 8 and article 9.1 a) and c) or, alternatively, article 10.1 of the Agreement on Agriculture and article I, part 1.1, points a) 1) i) and a) 1) iv) and points a) 2) and b) of the SCM Agreement.

[148] A good example of the successful use of diplomacy to settle or prevent disputes were the negotiations undertaken by Chile to prevent the European Communities from applying safeguards to salmon imports.

coordination should be ongoing rather than arising as an ad hoc response to a particular dispute. Its aim should be preventive, so that problems can be anticipated and the necessary measures or courses of action taken. It is usually foreign affairs or trade ministries, or both, that represent the interests of States before the WTO in these matters. Nonetheless, the complex technical nature of these issues means that governments need specialist professional back-up, particularly in the legal area, if they are to deal with them properly. One option that many countries, particularly weaker ones, should consider before initiating or responding to a complaint is to seek advice from the Advisory Centre on WTO Law in Geneva, referred to earlier, as its charges are far lower than any international law firm's.

The pattern of jurisprudence over the last 10 years means that the results of disputes can be predicted, at least in some matters, and countries need to study it carefully before presenting a complaint. Sometimes, however, domestic political factors trigger hasty reactions whose sole object is to placate local public opinion or respond to pressure, some of it ill-advised, from the private-sector industry affected. Not only do these reactions generally prove unfruitful, but their ultimate effect is invariably to undermine the credibility of governments, and they should always be resisted.

There are two options that Latin American governments ought to consider.

One is to participate fairly frequently as interested third parties in disputes that affect their interests, even if only indirectly. This kind of participation does not involve large costs and it enables governments to familiarize themselves with the procedures and workings of the system, and thereby acquire the experience they need to cope successfully with future disputes before the WTO.

The other option is for governments to consider joining forces with other countries, particularly OECD ones, in large-scale disputes. When they have done so, the results have usually been favourable. Examples of this include the following complaints: Ecuador, the United States and other countries versus the European Communities over restrictions on banana imports; Brazil, the European Communities and other countries versus the United States over tariffs levied on steel imports; and Brazil, Chile, Mexico and the European Communities over the Byrd Amendment. The results of all these cases went in favour of the complainants, and it is possible that this would not have happened had the Latin American countries acted alone.

(Original: Spanish)

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Conditional cash transfer programmes: experiences from Latin America

Pablo Villatoro

This article analyses the experience of five conditional cash transfer programmes established in Latin America to reduce poverty and increase human capital in the form of education, health and nutrition. These innovative programmes should help towards the Millennium Development Goals, and some have become pillars of their countries' anti-poverty efforts. The article begins by presenting some of the concepts that underlie conditional transfer programmes. It then goes on to examine the following experiences: the Bolsa Escola programme and the Programme for the Eradication of Child Labour (Brazil), Families in Action (Colombia), the Social Protection Network (Nicaragua) and the Oportunidades programme (Mexico), analysing their goals, components, targeting mechanisms, impact and efficiency. The article concludes by offering some policy recommendations and identifying design components that might serve as good practice when programmes of this kind are implemented.

Pablo Villatoro

Consultant with the Social

Development Division of ECLAC

✎ pablo.villatoro@cepal.org

I

Introduction

The development targets set for 2015 at the Millennium Summit included a halving of poverty and hunger, universal primary education, equitable access to all levels of education and a reduction in maternal and child mortality. For these targets to be met, the public sector needs to commit itself to the implementation of multisectoral strategies that can contribute simultaneously to the attainment of these aims (United Nations, 2001).

This article analyses the experience of five conditional cash transfer programmes established in Latin America to reduce poverty and increase human capital in the form of education, health and nutrition, with the potential to make a major contribution to the attainment of the United Nations development targets. These programmes were chosen because they were

well documented and not necessarily because they represented best practice for programmes of this type.

Following this introductory section, section II presents the concepts underlying the implementation of conditional transfer programmes. Section III analyses the experience of the Bolsa Escola programme (which provides school grants) and the Programme for the Eradication of Child Labour, both in Brazil; the Families in Action programme in Colombia; the Social Protection Network in Nicaragua, and the Oportunidades programme in Mexico, with reference to their goals, components, targeting mechanisms, impacts and cost-effectiveness. Lastly, section IV offers some policy recommendations and identifies design components that could be helpful when programmes of this type come to be implemented.

II

Preliminary concepts

Programmes that make cash transfers conditional on investment in human capital need to be judged in the context of a new approach to social protection. The social consequences of economic crises and structural adjustment programmes led to a debate about the rationality of existing safety nets (Ravallion, 2003). The result of this debate is that instead of concentrating so much on short-term poverty reduction, social protection systems have shifted towards a risk management approach aimed at enhancing human capital and defeating poverty in the longer term.

According to the social risk management approach (Holzmann and Jorgensen, 2000), individuals, households and communities are exposed to multiple risks. Poverty means greater vulnerability, since the poor have little access to suitable risk management instruments and are ill placed to cope with crises. The mechanisms most used by poor families to deal with economic shocks are informal strategies (e.g., taking their children out of school) whose inefficiency may result in an irreversible loss of human capital and perpetuation of the intergenerational cycle of poverty.

The risk management model assigns three functions to public policy: prevention, mitigation and coping. The social protection system uses mitigation strategies to reduce the impact of future risk, and coping strategies to cushion the impact of risk once it has arisen (World Bank, 2001c; Hicks and Wodon, 2001). Looked at this way, social protection measures are human capital investments that enhance access to basic services and prevent the use of strategies with adverse long-term consequences, benefiting: i) people living in structural poverty, ii) those just above the poverty line, and iii) groups with special needs.

Conditional transfer programmes stem from the concept of social protection as human capital investment. Their premise is that the reproduction of poverty across generations is due to a lack of investment in human capital, and they seek to incentivize this investment by attaching conditions to transfers (ECLAC, 2000). Conditional transfers might be more effective than traditional methods because the conditionality should reduce the opportunity cost of education, thereby reinforcing the income effect of the

transfer, given that school attendance and child labour are substitutes (Skoufias and Parker, 2001).

Skoufias and Parker (2001) offer an economic model to explain how conditional transfers interact with families' preferences and income constraints. This model shows that the conditions imposed by the programme will affect time allocation within the family in different ways, depending on the preferences of the household and its budgetary situation prior to programme implementation. In households where the programme conditions are compulsory (children must go to school), the programme should have income substitution and aggregation effects that will enhance its impact. In households where this is not so, the programme will only affect cash incomes.

If a child spends more time working and less at school, the family will be able to consume additional goods of a monetary value equal to the market wage paid for the child labour. Conversely, if a child ceases to give time over to work and instead goes to school, the family will not be able to consume so many additional goods. If these budgetary allocations are tied in with the assumption that utility is maximized, it can be concluded that there will be a minimum transfer amount needed to produce incentives >0 to send children to school. Skoufias and Parker (2001) argue that conditional transfers in excess of this amount would be very likely to have a positive effect on children's schooling.

As regards the main limitations of conditional transfers, it has been argued that they ignore the employment link in the chain of intergenerational poverty reproduction. ECLAC (2002) and Britto (2005) have warned that there is no guarantee that greater educational attainments will be converted into higher monetary incomes in the long term, since this relationship is influenced by variables such as the quality of the education supply, the returns on education, and unemployment.

It has also been argued that these models do not incorporate the cultural and psychosocial factors which could affect the choices and preferences of individuals, and that they fail to take market imperfections into account. As ECLAC (2000) points out, demand subsidy measures may not always work well because: i) parents do not always act as rational consumers, ii) supply in the education market is not transparent, and iii) education cannot be regarded exclusively as a consumer good.

From a more empirical perspective, increased school attendance by children may not always imply a reduction in the incidence and intensity of all forms of child labour. When an impact assessment was carried out on the conditional transfer programme of Bangladesh, for example, it was found that school attendance had increased at the expense of the children's free time (Ravallion and Wodon, 1999). It is also important to know whether programmes are causing families to change their attitudes towards education and child labour, since if they are not then the effects of the measures may not be sustainable in the long term.

Again, higher demand for education may generate negative externalities if supply remains constant, suggesting a need for supply subsidies to compensate. Some authors have also stressed the importance of analysing how institutional actors in the school system are coping with the new demand created by the transfers, and of establishing whether demand subsidies are improving the education of the poorest children. There is also the question of whether an expanded supply of education might not be more cost-effective than conditional transfers as a way of improving education access and increasing human capital in poor families (Coady and Parker, 2002; Skoufias and Parker, 2001).

As for cash incomes, it has been argued that the effects of conditional transfers could be limited, owing to the extreme vulnerability of the families receiving the benefits (for example, measures might be effective in narrowing the poverty gap, but not in closing it entirely), and that cash transfers will not always result in a better diet for the poorest. The literature shows calorie-income elasticities ranging between quite high values (0.54) and very low ones (0.01) (Hoddinot and Skoufias, 2003); this suggests a need to analyse the variance that could be produced, over and above the effect of transfers, by psychosocial and cultural measures to encourage attitudes conducive to a higher-quality food intake.

It would also be helpful to analyse the data on the efficiency and effectiveness of the different approaches to implementing conditional transfer programmes, i.e., the different components incorporated (one-dimensional or multidimensional measures), the type of management (centralized or decentralized) and the targeting mechanisms used. It is also important to understand how civil society participates in decision-making and service provision and to examine how hard-to-reach populations, such as child street workers, are catered for.

The analysis of the five conditional cash transfer programmes in the following section brings to bear the conceptual elements discussed in the preceding

paragraphs, draws together and systematizes the available evidence and seeks to provide discussion

tools that can contribute to the practical implementation of programmes of this type.

III

Conditional cash transfer programmes in Latin America

1. The national Bolsa Escola programme (Brazil)

This programme of school grants was first implemented by the state government of Campinhas in 1995. That same year, a new version began to be applied in the Federal District of Brasilia. The programme expanded rapidly over the following years, so that by 2001 there were seven states and over 200 municipalities conducting Bolsa Escola type programmes (Godoy, 2004). These programmes were subsequently brought under the Ministry of Education and in 2003, as part of the new Fome Zero ("Zero Hunger") national anti-poverty strategy, they were included in the federal Bolsa Familia programme, which centralized the administration of all conditional transfer mechanisms.

The Bolsa Escola programme was created to encourage 6- to 15-year-olds who were enrolled in some primary or secondary establishment and who came from families with per capita incomes of no more than 90 reais a month to stay in primary and secondary education for longer than they otherwise would have done. The programme uses transfers to encourage school attendance and reduce child working (Secretaria do Programa Nacional de Bolsa Escola, 2002). By increasing the educational human capital of children, it is hoped to reduce poverty in the long term (World Bank, 2001a).

This programme has an educational component whereby cash transfers are made to poor families with school-age children. These transfers are conditional on children attending school for at least 85% of the time each month (Secretaria do Programa Nacional de Bolsa Escola, 2002). The amounts transferred do not depend on the number, age or sex of the children in the beneficiary families, and vary greatly from one municipality to another (World Bank, 2001a).

It has been suggested that the programme could be more efficient and effective if transfer amounts were

tailored to family characteristics (World Bank, 2001a). For example, the opportunity cost of school attendance could be higher for adolescents than for younger children, which would reduce the incentive to send adolescents to school (Skoufias and Parker, 2001). In the view of the World Bank (2001a), the transfer amount should be determined by programme priorities (mitigation or elimination of poverty).

Selection of Bolsa Escola beneficiaries was originally carried out by the municipalities. In a given municipality, the programme would first identify the poorest areas and then pick out the neediest families in them, using a scoring system that included different indicators of family living standards. The programme did not originally have a national targeting system to optimize the choice of the poorest geographical areas and remove administrative inefficiencies (World Bank, 2001a).

To improve targeting, the Brazilian Government subsequently created a national register of families that were beneficiaries of federal programmes. By 2002, the beneficiary selection process included a number of stages, with eligible families being identified by a federal government body on the basis of data collected by municipalities, after which the final choice of beneficiaries would be made locally with the involvement of Social Oversight Councils (Conselhos de Controle Social), which include representatives of civil society organizations (Secretaria do Programa Nacional de Bolsa Escola, 2002).

The evidence suggests that the programme has been targeted successfully, since leakage rates have been quite low. Indicators of under-coverage (the target population not reached by the programme) have been high, however, and this is put down to the weak financial capacity of the poorest municipalities (World Bank, 2001a). It also appears that families with preschool and adolescent children are being left out. Two options have been suggested for including these

groups: the implementation of parallel programmes for them, or their incorporation into the Bolsa Escola programme, which would entail an additional nutrition and health component (World Bank, 2001a).

One of the main obstacles to bringing in hitherto uncovered populations is financing: since programmes are financed mainly from local resources, the poorest municipalities cannot introduce them. Specifically, it has been suggested that extra resources be provided to the worst-off municipalities, since reducing transfer amounts could compromise the effectiveness of the Bolsa Escola programme (World Bank, 2001a). In recent years, though, there has been a tendency to increase coverage by cutting back on transfer amounts (Godoy, 2004).

Objections have also been raised to the school stay-on limits specified by the programme (between 1 and 2 years), as these mean there is no guarantee that the benefit will continue. These stay-on thresholds are set, it is argued, because most legislation for school grant programmes is not designed "to get children through basic education, but to get them off the streets, and this reinforces the welfarist character of the programme to the detriment of its redistributive impact" (Godoy, 2004, p. 22).

Concerning the impact of the Bolsa Escola programme on human capital accumulation, the evidence is that the results in terms of school attendance and narrowing of the grade-for-age gap have been positive. Some studies have shown that school attendance is higher and dropout rates lower among programme beneficiaries than among non-beneficiaries, and that beneficiary children are more likely to enter school at the right age than children in control groups (World Bank, 2001a). It has been argued that the Bolsa Escola programme has helped dismantle the mechanisms used by schools to keep out the poorest students, since in normal circumstances they tend to exclude the most vulnerable on academic pretexts (World Bank, 2001a).

One question that has been somewhat neglected is whether programmes of transfers that are conditional on investment in educational human capital have any incidence on learning outcomes. It is also important to know how schools are responding to the extra demand created by the programme. To answer these questions, a quasi-experimental study was carried out, using two measurements (before entry into the programme and a year afterwards), on a sample of children from Bolsa Escola beneficiary families and a control group of children from families outside the programme (World Bank, 2001a).

The research showed that teachers and school heads had a favourable perception of the programme, which they saw as reinforcing their educational efforts and providing an opportunity to improve their work with the poorest children and raise their learning levels. However, the study did not find any difference in learning outcomes between programme participants and children in the control group (World Bank, 2001a). These data suggest that further efforts are needed to improve the quality of supply.

Meanwhile, there is no conclusive evidence that the Bolsa Escola programme reduces child labour (World Bank, 2001a). Still, if the programme is assumed to have increased school attendance, it can be argued that it must have reduced the number of hours available for children to work. There is a twofold challenge here: to prevent child labour in out-of-school hours, and to analyse the potential of different levels of conditional transfer payments to incentivize the reduction of child labour.

Meanwhile, cross-sectional studies have shown that the programme narrows the poverty gap affecting beneficiary families (World Bank, 2001a), but the evidence on poverty reduction is not consistent. For example, according to the World Bank (2001a), the Bolsa Escola programme is reducing the prevalence of poverty. Godoy (2004), however, considers that the school grants have had only a slight poverty reduction impact, owing to the small amounts transferred and the vulnerability of beneficiary families.

Godoy (2004) also argues that the Bolsa Escola programme has not improved families' own income generation capabilities. In a survey of beneficiary families in Campinhas, it was found that barely 1% of those who left the programme did so because they had achieved financial independence, and that none of the families leaving the programme solved their financial problems. Godoy puts this down to a failure to coordinate Bolsa Escola interventions with occupational training and employment initiatives.

2. The Programme for the Eradication of Child Labour (Brazil)

The Programme for the Eradication of Child Labour (Programa de Erradicação do Trabalho Infantil-PETI) was created by the Government of Brazil to eradicate the worst forms of child labour in rural areas. In early 1999, PETI began to expand into urban areas to deal with the problem of working street children, with a target population of 266,000 children aged 10 to 14

working in activities like prostitution, drug dealing, refuse collection and street selling. A few years ago the Brazilian Government merged PETI with the Minimum Income Guarantee Programme (Programa de Garantia de Renda Minima) to create the Alborada programme, with a view to improving complementarity, efficiency and effectiveness.

PETI has similar objectives to the Bolsa Escola programme, as it aims to increase educational attainment and reduce poverty, but its main purpose is to eradicate child labour. To achieve this goal, it makes transfers to families with school-age children (7 to 14) in rural and urban areas, on condition of their guaranteeing that their children will attend school at least 80% of the time and will participate in the Jornada Ampliada ("Extended Day") subprogramme of after-school activities. Transfer amounts are higher in urban areas than in the countryside, vary from one state to another and sometimes depend on the number of children per family. Transfers usually go to the mother.

The programme also has a psychosocial component whose aim is to alter the beliefs and attitudes that prevail in many poor families, whose difficulties lead them to underrate the benefits of education and set a high value on child labour. PETI also provides municipalities with funding for the Jornada Ampliada subprogramme, so that children who attend school will not find themselves working anyway. The idea of this supply subsidy is to limit the time available for children to work.

The targeting process used by PETI involves first selecting the geographical areas with the highest incidence of child labour and then collecting information about households within these. These data are passed on to a federal agency which carries out preselection of eligible families. Lastly, the beneficiary population is selected at the local level, with the participation of civil society representatives. This procedure has two advantages: i) it minimizes exclusion of eligible families and ii) it enables the programme to be implemented in areas that do not themselves have sufficient funds for it.

There is some evidence that the programme is properly targeted in rural areas. For example, it has been found that beneficiary families tend to be quite large (up to seven members) and that a third of mothers never went to school. In a qualitative study carried out in Pernambuco, most beneficiaries said that they spent the transfers on essentials like food and clothing (World Bank, 2001b).

In 1999, PETI began to work towards the eradication of the worst forms of child labour in urban

areas. This threw up difficulties with programme design, targeting mechanisms, the setting of transfer amounts and the selection of transfer components. Firstly, data on working street children in urban areas are unreliable or non-existent, which complicates targeting. Secondly, the heterogeneity of child labour in cities makes it harder to specify transfer amounts there than in the countryside. Thirdly, the problems of street working by children are linked to family neglect, violence, drugs and health vulnerabilities, so that it is indispensable for the programme to include psychosocial and health components.

Hitherto, the psychosocial measures taken by PETI to deal with child prostitution have been aimed at prevention and assistance, and have been targeted at children aged between 7 and 14 from families with per capita incomes of less than half the minimum wage. Preventive measures have included mounting a national campaign to create social awareness of the problem and holding seminars and workshops. Action to improve school attendance has included initiatives to give children better access to institutional support networks and to promote the relationship between families, schools and the community. PETI has not taken any steps to reduce domestic working by children in urban areas.

It has been proposed that PETI should take advantage of the experience of non-governmental organizations (NGOs), as the PETI model is consistent with the methodologies used by these (World Bank, 2001b). In particular, it has been suggested that the programme should act to enhance children's self-esteem and social skills and should implement educational measures in the fields of health and human rights. One alternative to including new components in PETI could be to make transfers conditional on children participating in NGO-run prevention and assistance programmes. PETI would thus avoid the costs of adding a new component and would benefit from the experience of these organizations.

Concerning the effects of PETI, data are only available on the rural programme. Impact assessment was carried out by means of a survey taking in three municipalities that were participating in the programme and three that were not (World Bank, 2001b). This survey gathered information about the effects of the programme on the number of school hours, years of education completed, grade-for-age, child labour and children's involvement in high-risk work.

The assessment showed that PETI had doubled the number of hours spent in school and cut child working significantly. According to Sedlacek, Yap and Orazem (2002), it was the Jornada Ampliada programme that

accounted for the reduction in child labour force participation. These authors argue, however, that PETI was less successful in cutting the hours worked by children. In the states of Bahia and Sergipe there was a "spillover effect", so that children not included in the programme became more likely to work.

Studies have also been carried out to gauge the effects of the psychosocial component of PETI on adults' attitudes towards children's education and child labour. Broadly, only a minority of adult beneficiaries believe that children need to go to school (18% in Bahia and 11% in Pernambuco), and more than half do not think that child labour is bad for children's development. These figures are borne out by events in some municipalities that have fallen behind with transfer payments: when this has happened, some beneficiaries have threatened to take their children out of school, revealing how hard it is to change beliefs about education and child labour (World Bank, 2001b).

As for the effects on the status of women, some studies have shown that the programme policy of paying transfers to the mother has given women greater responsibility and independence and a greater say in the family. Most of the women surveyed said that their lives had changed once they started to receive the transfers, as they were able to spend more time working while their children were at school (World Bank, 2001b).

3. The Families in Action programme (Colombia)

The Families in Action (Familias en Acción) programme was implemented as part of the Social Support Network (Red de Apoyo Social-RAS), a temporary social safety net created in 1999 by the Colombian Government to cushion the effects of economic recession and fiscal policy adjustments on the welfare of the most vulnerable populations. Two other social programmes, Youth in Action (Jóvenes en Acción) and Jobs in Action (Empleo en Acción), were implemented along with Families in Action.

Families in Action is a conditional cash transfer mechanism whose original purpose was to reduce the impact of recession on poor households. The specific goal of the programme is to safeguard and promote human capital formation in children aged 0 to 17 from poor households by supporting and encouraging investment by poor families in health, nutrition and education.

Like the Bolsa Escola programme and PETI, Families in Action provides assistance through an education component, but combines this with health and nutrition services. The education component provides a transfer equivalent to the direct cost to the poorest families of keeping their 7- to 18-year-old children at school. This amount was US$ 6 a month per capita in primary schools and US$ 12 in secondary schools (Rawlings, 2002). The amount of the transfer is not determined by the opportunity cost of child labour, either because the programme does not have explicit goals of this type or because it was set up to help families cope with the crisis.

The second component, health and nutrition, transfers resources to poor families with children aged 0 to 6. The cash assistance is given to the mother to ensure it will be invested in the child, and to give women more independence.

As for the conditions laid down by the programme, with the health and nutrition component families retain the benefits for as long as they keep taking their children to primary health services for the appropriate check-ups and immunizations. With the education component, transfers are suspended if children miss school without good reason more than 20% of the time and/or repeat more than one school year.

Where targeting mechanisms are concerned, Families in Action operates in rural and urban areas not covered by the Jobs in Action (Empleo en Acción) programme. These areas have to meet basic eligibility criteria, such as the presence of a bank and an adequate supply of education and health services. Within the geographical areas that meet the eligibility conditions, the programme selects families classified as SISBEN 1 (the most vulnerable). No health or nutritional support is given to SISBEN 1 families that have children aged 0 to 6 in Community Welfare Homes (Hogares Comunitarios de Bienestar).

Families in Action has performed well in terms of keeping inclusion errors to a minimum, as 71% of families entering the programme were indigent at the time (Attanasio, Meghir and others, 2004). However, it has had difficulty covering isolated rural areas that lack social and financial services, and this means a high probability of exclusion error.

The programme has an impact assessment system that began to be applied in 2002. In that year information began to be collected on three population groups: i) families that had been in the programme for three months; ii) families that were going to start in the programme and iii) families for which no action was planned. The assessment design provides for repeated

follow-up measurements in the three groups selected (Departamento Nacional de Planeación, 2003).

The first assessment reports show the programme having favourable effects in the areas of education, health and nutrition. It has been positive for school attendance among rural and urban children aged 12 to 17, but not among those aged 8 to 11. According to Attanasio, Battistin and others (2005), this is because the younger children had very high school attendance rates before entering the programme.

As for health, Families in Action significantly increased the percentage of children aged under 48 months whose check-ups were up to date and reduced the proportion of rural children with diarrhoea. In its nutrition component, the programme increased food consumption considerably, mainly in rural areas. Most of the increase was due to a more varied diet, especially where protein-rich foods were concerned (Attanasio, Battistin and others, 2005).

4. The Social Protection Network (Nicaragua)

The Social Protection Network (Red de Protección Social-RPS) promotes the development of human capital in the form of education, nutrition and health in extremely poor rural families. The design of the RPS provides for a two-stage pilot phase. In the first stage, the programme has benefited 6,000 families in 21 census areas, selected by means of geographical and household targeting criteria. In the second stage, the RPS will benefit 4,000 families.

The programme has two components: i) health/ food security and ii) education. It operates through cash transfers and other measures designed to stimulate demand for and improve the supply of education and health services. Transfers in the health/food security component are intended to ensure that poor families with children under 5 can buy food; this benefit is conditional upon mothers attending health workshops and children being taken in for medical check-ups.

The workshops for mothers teach basic nutrition and reproductive health skills. The medical check-ups are to monitor children's growth, carry out vaccination and provide them with vitamins and antiparasitic drugs. Monthly check-ups in the home are also carried out for children under 2. In addition, training is given to health-care providers in non-governmental organizations to ensure that the beneficiary communities receive high-quality medical services.

In its education component, the programme makes cash payments to poor families with children aged from 7 to 13 on condition that the children enrol in school and have an 85% attendance rate. This benefit consists of a fixed sum per household that does not vary by the number of children in the family. Cash is also provided for the purchase of items needed for school (clothes, equipment), and here the amount is determined by the number of children in the family.

The education component also includes a supply subsidy, in the form of a small payment to teachers. Parents' organizations sometimes request financial assistance to support the work of teachers. This financial assistance is often provided to the families, which then pass on the appropriate amounts to the teachers. The latter may use this money to buy school items and keep back some of it for later use.

Food payments amount to 13% of beneficiary families' total yearly spending before they entered the programme, and cash support for education represents 8% of annual family spending. Total payments are equivalent to a nominal increase of 21% in families' consumption, a figure comparable to the assistance provided by the Oportunidades programme in Mexico and the Family Allowance Programme (Programa de Asignación Familiar-PRAF) in Honduras. By contrast with these two programmes, however, RPS transfers are not index-linked, so that the real value of payments has declined by about 7% (IFPRI, 2002).

Implementation of the RPS entailed coordination efforts at the national, regional and local levels. Locally, planning was carried out by committees involving ministry officials, civil society representatives and RPS staff. This collaboration was important in equipping the supply side to deal with rising demand for health and education services.

In the pilot phase, RPS payments have usually gone to mothers, since family food security and children's quality of life are better when resources are managed by women (IFPRI, 2002). Extra payments have sometimes been made to families meeting all the education and health targets and requirements.

An impact assessment with a quasi-experimental design, involving intervention and control groups, baseline measurements and follow-up, was carried out during the pilot phase of the RPS. The study was used to estimate the main effects of the programme on incomes, diet, nutrition and education (IFPRI, 2002).

The RPS had a 20% impact on per capita spending in beneficiary households, mainly because incomes in the control group shrank. In fact, the data do not show any increase in incomes in the beneficiary group, but do show a significant drop in the incomes of families

outside the programme, something that can be attributed to the economic crisis affecting the areas where the RPS was implemented. This indicates that the programme has had the effect of cushioning the adverse consequences of a recession. Again, the percentage of income spent on food by families in the intervention group remained high (70% of total spending), which means that transfers have not had substantial effects on the poverty indicators.

It was also found that programme participation encouraged consumption of a more varied diet, in terms of both quantity and quality. For example, families in the intervention group buy four food types more than the control group and tend to spend more money on more nutritional foods. At the same time, there is no evidence that the programme has led to investment in home improvements or durable goods, or that payments have given adults a disincentive to work.

In the area of health, the programme can be seen to have had positive effects on access to primary care services. The number of children undergoing check-ups increased, as did the number being given ferrous sulphate. Both the RPS group and the control group saw major increases in vaccination levels, suggesting there was a spillover effect in the distribution of vaccines to the areas where the control group lived and the clinics used by it.

Lastly, the RPS had a significant impact on school enrolment. These effects were most substantial in the 7- to 9-year-old group and least so among 12- to 13-year-olds. Overall, the effects were three times as great for extremely poor families, and twice as great for poor families, as for non-poor families. The difference in school stay-on rates was smaller, although it was still favourable to the RPS (8%). Distance to school (school attendance cost) was found to be a major factor in stay-on rates, which highlights the need to improve access to supply.

5. The Oportunidades programme (formerly PROGRESA) (Mexico)

PROGRESA was created by the Mexican Federal Government in 1997 as a strategy to support rural families in extreme poverty. In 2001, during the administration of President Fox, its name was changed to the Oportunidades ("Opportunities") programme and its services were extended to urban populations. The Oportunidades programme is one of the most thoroughly analysed and assessed conditional cash transfer programmes in Latin America, and its design

marks a significant shift in social services provision in Mexico. This shift is expressed in the following principles guiding the work of the programme: i) targeting, ii) intersectorality, iii) the empowerment of women and iv) shared responsibility (Skoufias and Parker, 2001).

The purpose of the Oportunidades programme is to increase the capabilities of families that live in extreme poverty by investing in human capital. The programme has three components: education, health and nutrition. With the education component, payments are made to families with children under 18 enrolled in a school between the first year of primary education and the third year of secondary education. To create incentives for families to invest in human capital, the payments are conditional on the children attending school. If a child has a non-attendance rate of over 15% in a month without good reason, the family does not receive the assistance. The programme provides additional resources to schools in communities where it operates, to compensate for the negative externalities that could be generated by the increase in demand.

Transfer amounts are set on the basis of the additional income the children would have brought in for their families had they been working. The cash payments rise with a child's age, and at the secondary level they are higher for girls. They are adjusted for inflation every six months, which prevents their real value from falling.

The health component of the Oportunidades programme involves the provision of primary care to all members of the family. These medical services are provided at clinics operated by the Secretariat of Health and the Mexican Social Security Institute (Instituto Mexicano del Seguro Social). The nutrition component provides for a set cash payment to improve food consumption, and the provision of food supplements for children aged from 4 months to 2 years, unweaned babies and breastfeeding mothers. These supplements are also given to children aged 2 to 5 who are at risk of malnutrition or are poorly nourished. To continue qualifying for the benefits, families have to visit health clinics regularly.

Cash benefits are paid to the mother. It has been calculated that cash transfers represent an average of 22% of participating families' monthly income. After three years in the programme, families can apply for their entitlement to be renewed.

The targeting procedure used by the Oportunidades programme involves geographical selection using an index of deprivation constructed

from census data. A census is conducted in the communities selected, covering all households, to identify eligible families. For the final selection of beneficiary families, assemblies are held to involve the community.

It has been claimed that the beneficiary selection approach of the Oportunidades programme is efficient when it comes to identifying extremely poor localities and households, but less effective at distinguishing between "localities or households in the middle of the scale". For this reason, programmes of this type "may be quite successful at reducing the poverty gap or the severity of poverty, but may have a negligible impact on the headcount ratio" (Skoufias, Davis and De la Vega, 1999, p. 18).

It has also been argued that "the non economic costs associated with targeting deserve serious consideration in the overall decision to pursue a household level targeting strategy… Preliminary qualitative surveys from PROGRESA's evaluation show that these costs of targeting in rural, often indigenous, communities may not be negligible" (Skoufias, Davis and De la Vega, 1999, pp. 18-19). González de la Rocha (2003) has emphasized the importance of considering the effects of the targeting mechanisms used on the social capital of beneficiary communities and families.

González de la Rocha (2003) argues that mistakes in selecting families are one of the main difficulties faced by the Oportunidades programme, because of the discontent they cause among poor families that have not been chosen. This could give rise to "social divisions within communities when people's perception of their own and other families' circumstances do not match the technical programme identifiers" (González de la Rocha, 2003, p. 12). Nonetheless, there are also "relationships of mutual aid and support, despite the breach between beneficiary and non-beneficiary households" (González de la Rocha, 2003, p. 18).

Difficulties have also been detected in the use of community assemblies to select families. In many communities these assemblies have not worked as they should, because participants do not dare express their views openly (González de la Rocha, 2003).

One of the distinctive aspects of the Oportunidades programme has been its impact assessment system. This has allowed for comparative testing of basic hypotheses for the design of conditional transfer programmes, e.g., their cost-effectiveness as compared to other methods of enhancing educational human capital (such as supply subsidies), their incidence on the way children's time is shared out between school, work and leisure, and their effects on the nutritional situation of minors. The quantitative and qualitative methods included in this assessment system have enabled researchers to ascertain the effects of the programme and identify problems and unforeseen situations.

The design of the Oportunidades programme assessment included the random allocation of 506 eligible communities in seven states to intervention and control groups. A census of the 24,077 households in the control and intervention localities was conducted before the programme began, and the data gathered was used as the baseline. Follow-up surveys then began to be conducted every six months.

Skoufias and Parker (2001) found that the programme had had positive effects in increasing school enrolment and reducing child working, and this was particularly true among adolescents. They also noted, however, that the reduction in children's participation in working activities did not match the educational benefits obtained. In the case of girls, most of the success of the Oportunidades programme was with adolescents who combined school with domestic work, which could indicate a loss of leisure time.

The qualitative study carried out by González de la Rocha and Escobar (2002) observed that some families were unwilling for their children to stay on at school —an attitude that differed sharply by gender. The authors state that "there were numerous cases in which parents seemed to be trying to use their daughters' labour to reduce their own domestic burden" (González de la Rocha and Escobar, 2002, p. 27). Poor families' perceptions of child labour were also found to be a major obstacle. Some beneficiaries of the Oportunidades programme tended to think that child labour: i) helps children to make the transition to adult life; ii) prevents drug addiction, gang involvement and alcohol abuse, and iii) represents a saving for the family.

At the same time, participation in the programme has given rise to some conflicts within families. There have been separations and desertions by men, some of whom have also curtailed their contribution to the household economy. In many cases, however, women have presented a united front to counteract the effects of male reactions to their loss of power (González de la Rocha and Escobar, 2002).

Another issue is the cost-effectiveness of subsidies that are conditional on demand, as compared to an

increase in supply (improvement in the quality of education services and/or the building of more schools). After analysing the Oportunidades programme data, Coady and Parker (2002) concluded that demand-oriented measures had a cost-effectiveness of 9,730 Mexican pesos for each extra year of education generated, whereas expanding supply had a cost-effectiveness of 113,500 Mexican pesos for each extra year of school.

Lastly, Hoddinot and Skoufias (2003) analysed the effects on calorie intake of participation in a subcomponent of the Oportunidades programme: educational talks on nutrition. The authors stated that, while programme beneficiaries increased their intake of high-calorie foods, this change was attributable to the higher incomes resulting from the transfers. However, the talks were effective in encouraging participants to diversify their diets and consume calories from animal, fruit and vegetable products. These data illustrate how important psychosocial and educational measures can be for food consumption patterns.

IV

Conclusions

Conditional transfer programmes aim to build up the human capital of children and young people in order to break the intergenerational cycle of poverty, and they do so by creating incentives for families to invest in human capital from education, nutrition and health. These programmes stem from an approach that prioritizes action to deal with the causes of poverty and thus defeat it in the long term, unlike traditional welfare programmes that centre on redistribution and short-term poverty reduction.

These transfer programmes cater primarily to populations in a situation of structural poverty, by delivering assistance and promoting human capital with a view to reducing future risks. For the most part, they were not designed to provide safety nets when economic shocks occurred (Hicks and Wodon, 2001). Nonetheless, some initiatives do explicitly set out to mitigate the consequences of economic crises for the poorest (Families in Action) and others have cushioned the effects of a recession (the RPS in Nicaragua), which indicates that conditional transfers can play this role (Sedlacek, Hahi and Gustafsson-Wright, 2000; Rawlings, 2004). Still, other instruments, such as temporary employment programmes, seem more appropriate for dealing with the worst effects of crises (Morley and Coady, 2003).

The evidence shows that conditional transfer programmes are effective at increasing school enrolment and attendance in the short term. Their effectiveness in reducing child working is not so clear, however. The Oportunidades programme and PETI have succeeded in reducing children's participation in working activities, but in the case of the Bolsa Escola programme the evidence is inconclusive. The difference could be due to the Extended Day component specific to PETI and to the method used by the Oportunidades programme to set the transfer amount.

According to Skoufias and Parker (2001), the data on the Oportunidades programme reveal an inverse relationship between child labour and school attendance, indicating that these two activities are substitutes for each other. The information on Bolsa Escola and the Oportunidades programme, however, indicates that there is a need to follow up the distribution of time between school, paid and unpaid work and leisure time, so that educational goals are not attained at the expense of children's free time, or do not have to compete with domestic work.

One aspect that is crucial to the design of conditional transfer programmes for education is the cash payment amount decided upon. As we have seen, methods differ considerably from one programme to another. Perhaps the best way of settling on a sum that will encourage school attendance and discourage child working is to calculate it from the opportunity cost of sending children to school. If the view is taken that this cost might rise with the child's age and that it might be higher for girls, the reasonable course would be to set higher payment amounts for adolescents and girls, as the Opportunities programme does.

In setting payment amounts, consideration should also be given to education costs, i.e., all the expenses involved in sending a child to school. This is the method used by Families in Action. Education

payments should be calculated from the number of children in the family, to avoid the possible loss of incentives in larger households, and should be index-linked so that their real value does not erode.

Another aspect to consider are beneficiaries' perceptions of child labour and education. Studies carried out by PETI and the Oportunidades programme found that families set a limited value on education and did not believe child work to be detrimental to their children's future. This reveals the importance of psychosocial measures to change these perceptions. Otherwise, children may be very likely to leave school and resume work once programmes have ended, which would jeopardize the sustainability of the changes.

Making women the preferential recipients of payments seems to be a good approach: the evidence shows that women administer financial assistance more efficiently than men (IFPRI, 2002). This also nurtures feelings of autonomy and independence, which are indicators of empowerment (Zimmerman, 1990 and 1995). Nonetheless, steps must be taken to avoid both the adverse consequences that might be caused by male reactions to women's new autonomy and the conflicts that may arise as girls participate less in domestic work.

A good practice is to implement a supply component to compensate for the greater pressure that increased demand places on the school system. The information available indicates that demand subsidies are well received by schools, but that learning outcomes are not improved by children's participation in programmes. This suggests a need for education quality improvement measures that do more than just compensate for higher demand.

There is evidence that conditional transfers to support demand raise the educational standards of children from poor families more effectively and efficiently than the expansion of supply. While these data provide decision-making input, though, the results of other research will have to be awaited. The information yielded by the assessment system of the Family Allowance Programme in Honduras will help to clarify the matter (Alvarez, 2001).

Some conditional transfer programmes have narrowed the poverty gap affecting poor households, and others have cushioned the consequences of an economic crisis. Their potential for raising beneficiaries above the poverty line is unclear, however, although it may transpire that the likelihood of this happening depends on transfer amounts, programme targeting and an absence of economic contractions.

In the long term, poverty will only be defeated if households' income generating capacity is increased. Although simulations indicate that the extra years of schooling will yield earnings gains of 8% for children in the Oportunidades programme and 9% for children in the RPS in Nicaragua (Morley and Coady, 2003; Skoufias and McClafferty, 2001), this cannot be automatic, given the incidence of other factors such as the quality of learning and unemployment rates. This being so, there is a vital need to improve both education quality and links with employment programmes.

Where health and nutrition are concerned, Families in Action has had positive effects on access to and use of services in the primary health-care network. The evidence for the Oportunidades programme indicates that this has had positive effects on diet and that the inclusion of psychoeducational components has led to families diversifying and improving the quality of what they eat.

The programmes differ in their components, administration methods and targeting mechanisms, although less so now than when they started. In recent years there has been a tendency to consolidate programmes involving multiple components (education, health and diet) with centralized national administration and targeting mechanisms at different stages, in line with the Oportunidades programme model.

The literature on the subject presents programmes of this type as more comprehensive (since they deal simultaneously with the different dimensions of human capital), more efficient in their planning and management and more effective in their targeting. Also, their measures embrace the whole family, creating the potential for synergies and a greater impact.

The inclusion/exclusion of poor families within communities is an issue that will have to be examined in the light of the social and community costs that it could give rise to. It is important to consider the lessons from the Oportunidades programme regarding the dissatisfaction felt by families that were not selected for it, a situation that could create conflicts within the community and erode its social capital (González de la Rocha, 2003). To lessen the non-economic costs of targeting, it will be necessary to improve community participation arrangements, such as the community assemblies of the Oportunidades programme or the Social Oversight Councils (Conselhos de Controle Social) of the Bolsa Escola programme.

Civil society organizations have involved themselves to some extent with service provision, planning and the selection of beneficiaries, as the

experience of the Bolsa Escola Social Oversight Councils illustrates. One option is to subcontract the services of non-governmental organizations that have a track record in working with difficult groups, such as street children. One of the conditions attached to transfers could be that beneficiaries attend programmes offered by these NGOs, something that could maximize the efficiency of programme measures by making it cheaper to expand supply and capitalizing on the experience of these institutions.

Lastly, what really sets these conditional transfer programmes apart from other measures implemented in Latin America is the use of impact assessment systems as part of the programme design. Some assessments have included the random allocation of communities to experimental and control groups, together with repeated measurements. Assessment systems have been used to ascertain the effects of programme measures and have made it easier to compare the hypotheses on which programmes of this kind are based. Particularly applicable are the experiences of the Oportunidades programme (Mexico), the Social Protection Network (Nicaragua) and the Families in Action programme (Colombia). The design of the Family Allowance Programme (Honduras) assessment system also repays study.

(Original: Spanish)

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The human capital endowment of Latin
America and the Caribbean

Gregorio Giménez

Although there are a great many theoretical and empirical studies which use the concept of human capital, there is no generally accepted definition of this term, and in many cases it is simply equated with formal education. This article will try to clarify the concept of human capital more precisely, with special reference to the ways in which it can be acquired. It will also provide an international indicator that takes account of all the shades of meaning of the definition proposed here, which are usually left out of the traditional indicators. Thus, the proposed indicator will take into account health, formal and informal education, and experience. Analysis of the human capital endowments of the Latin American and Caribbean countries reveals a certain backwardness with respect to other regions. It should be noted, however, that there are big differences between countries, although these have been reduced in the last few decades through a process of regional convergence.

Gregorio Giménez

Professor of Economics

Faculty of Economic Sciences

University of Zaragoza, Spain

✎ gregim@unizar.es

I

Introduction

The most diverse disciplines —such as political science, philosophy or sociology— have always attached great importance to the education of individuals, emphasizing the way in which this conditions the general functioning of societies. The impact of education has also been stressed by economic science from its inception. Nevertheless, the interest in studying human capital was shared by very few economists until the 1960s, when some crucial studies began to be published on the concept of human capital, such as those by Becker (1962 and 1964), Schultz (1960, 1961 and 1962) or Denison (1962 and 1964).

It was not until the appearance of the new endogenous growth models, however, that the economic literature began to show growing interest in human capital, which it saw as one of the factors responsible for growth. Some of the most important models may be found in Lucas (1988), Romer (1990), King and Rebelo (1990), Rebelo (1991), Stokey (1991), Young (1991), Lucas (1993) and Acemoglu (1997). In these, human capital is shown to make possible an increase in labour productivity or acts through the stimulation of technological change. As regards the empiric evidence, among the many recent studies which have shown the connection between human capital and economic growth are those by Azariadis and Drazen (1990), Barro (1991), Levine and Renelt (1992), Mankiw, Romer and Weil (1992), Kyriacou (1992), Barro and Lee (1994), Benhabib and Spiegel (1994 and 1997), de la Fuente and da Rocha (1996), Mingat and Tan (1996), Krueger and Lindahl (1999), or de la Fuente and Doménech (2001).

As well as being an outstanding growth factor, human capital is also extraordinarily important in many other areas. Thus, as the Organisation for Economic Cooperation and Development (OECD, 1999) notes, it

helps cultural and institutional development, increases social cohesion, makes it possible to reduce crime, enhances citizens' interest in protecting the environment, permits the improvement of health conditions, and strengthens participation in political life, among many other important contributions.

In view of the importance of human capital, it is easy to understand why it is necessary that both the definition of the concept and the indicators constructed in order to quantify it should reflect its underlying elements as accurately as possible. One of the objectives of this article is precisely to offer a more complete definition of human capital than that usually given by most of the studies to be found in the economic literature. In addition, on the basis of the proposed definition various indicators will be constructed which will bring us closer to accurate measurement of all the nuances that it contains, in order to subsequently combine this information into a single indicator. On this basis, an analysis will then be made of the human capital endowment of Latin America and the Caribbean, which highlights the differences within and between regions but also shows a process of convergence.

This study is therefore organized as follows: after the present introduction, section II goes more deeply into the concept of human capital and offers a broad proposed definition; section III constructs various indicators based on the different elements forming part of the proposed definition; in section IV, a global human capital indicator is constructed and its properties as compared with the traditional indicator based on average years of schooling are evaluated; section V makes a diagnosis of the situation in Latin America and the Caribbean on the basis of the human capital indicator thus developed, and finally section VI presents the conclusions of the study.

II

The concept of human capital

This section analyses the concept of human capital as reflected in the economic literature and proposes a broad definition on the basis of a synthesis of those findings, taking account of various aspects which are usually left out of the reckoning.

1. Regarding the concept of human capital

The differences separating some individuals from others can be observed in many fields, including the economic sphere. Consequently, the labour force is not homogeneous: people carry out different types of activities with different degrees of efficiency, so that workers display different levels of productivity when carrying out similar tasks. Each worker's capacity to adapt to the needs of the labour market will depend on his skills. The human capital he possesses will thus determine an individual's capacity to do a given job. It should be noted that we are taking a markedly economic attitude, distinguishing the concept of human capital from the traditional concept of education, which has a more social connotation.

The underlying idea of the concept of human capital is not new. Over 200 years ago, in 1776, Adam Smith recognized the importance of personal skills in determining the wealth of individuals and nations (Smith, 1904). The formal concept of human capital was not developed until the 1960s, however. Special mention may be made in this respect of the studies by Schultz (1961) and Becker (1964). In these studies, human capital is related to productivity and is defined as the sum of the investments in education, labour training, emigration or health, which result in an increase in the productivity of workers. Those studies conceive the training of individuals as an investment process in which more training will result in higher productivity and, hence, higher wages. Thus, the term "human capital" is explained by the fact that it is seen as a form of capital incorporated into persons. The association of the concept of capital with human beings caused much controversy among the economists of the time, but in spite of the initial criticisms, human capital soon became one of the most important economic concepts of the second half of the twentieth century.

More recently, the original concept has been expanded to include not only paid work but also that carried out outside the market, such as voluntary, community and domestic work: it thus covers all activities that directly or indirectly create income or wealth. Even so, economists have begun to recognize that these definitions of human capital are still too simple and leave out crucial aspects, so that they do little to help in the design of a proper training policy. Laroche, Merette and Ruggeri (1999, p.89) suggest that the traditional definition of human capital should be broadened to include the potential for obtaining human capital and the amount of such capital already possessed. In the work in question, they define human capital as the sum total of inborn capabilities, knowledge and skills that individuals acquire and develop in the course of their lives.

Along the same line of thinking, Ruggeri and Yu (2000) argue that human capital is a dynamic and many-sided concept. They consider that it should be analysed from a dynamic perspective covering a wide variety of purposes. Thus, they suggest that the concept of human capital should be expanded to include four dimensions: i) potential human capital; ii) the acquisition of human capital; iii) the availability of human capital, and iv) the effective use made of it. The concept would thus incorporate the use made and yields obtained, reflecting to some extent the demand side for human capital.

In short, as noted by Yu (2001), there are different definitions of human capital in the literature, but there is no generally accepted definition, even though human capital is considered to be one of the key production factors. The term "human capital" has traditionally been applied to academic education, and only recently has it been expanded to include a number of other aspects. The new definitions proposed reflect the present needs of the economy, while at the same time they present new challenges for quantifying human capital.

2. The definition of human capital

In the light of the foregoing, a definition of human capital is developed in this study which includes

various elements —some of them already covered in the existing literature— and is based on the ways in which human capital is acquired and accumulated. The proposed definition will be developed in line with the scheme shown in figure 1.

Thus, it is considered that human capital can be inborn or acquired. **Inborn human capital** comprises capabilities of a physical and intellectual nature, which may be modified by the individual's health and nutritional conditions. **Acquired human capital** will be built up in the course of life through formal education, informal education and accumulated experience. These three types of acquired training will condition the labour training and system of values of the individuals concerned, and these, together with their inborn aptitudes, will determine their performance at work.

Labour training will be determined by the skills obtained for carrying out a given task. In many cases, one single kind of training can be used for various jobs. For example, learning how to use a computer is a type of knowledge, obtained in school, at home or at work, which can be used in very different jobs. In other cases,

however, a given type of labour training will only be useful for a particular function, as in the case of learning to pilot an aircraft. In this latter case, it is difficult to replace employees with a specific type of training with others, and it is often necessary to make big investments in order to provide new employees with such knowledge.

The system of values of an individual is also something which is acquired. These values will be a key element in the labour capabilities of employees. Employers attach great importance to these values, since they will condition the motivation, loyalty, integrity, diligence or reliability of a worker.

Now that we have made a first approximation to the elements that go to make up human capital, we will study them in greater detail in the following pages.

a)   *Inborn human capital*

Human beings are distinguished from birth by genetic conditioning factors which will cause them to have different physical and intellectual aptitudes and will determine their efficiency in carrying out the jobs they do. Physical aptitudes include, among others,

FIGURE 1

The concept of human capital
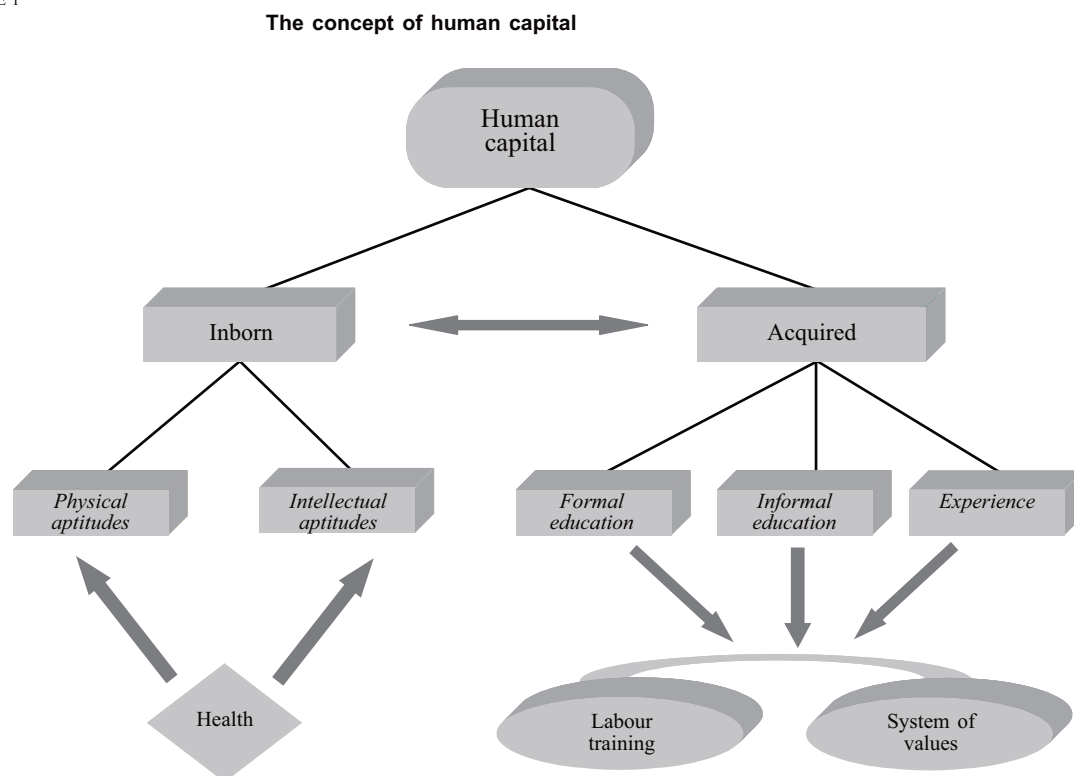
Source: Prepared by the author.

strength, sense of balance, or manual dexterity, while intellectual aptitudes include intelligence and capacity of attention or concentration. These qualities can be cultivated throughout a worker's life through his acquired human capital.

Although each individual has different characteristics, it is reasonable to suppose that the initial average characteristics of the individuals of one country will be similar to those of the individuals of any other country. In other words, it is considered that geographical or racial differences do not exist. But although those qualities are initially similar, however, the use made of them will be subject to circumstances connected with the level of health of the environment in which the individuals live. Thus, if an individual suffers from malnutrition or unsuitable health conditions, this can reduce the possibility of making good use of his inborn aptitudes. It should be noted that this way of approaching the influence of health on the acquisition of human capital differs from the approaches traditionally adopted. [1] Thus, in most of the studies it is argued that an improvement in health conditions, measured through an increase in life expectancy, will affect human capital because of the longer active life of individuals, which will bring an increase in the return on human capital, and this will be reflected in greater economic growth. This argument is followed by Meltzer (1995), Kalemli-Ozcan, Ryder and Weil (2000) —who also offer an empirical study on the United Kingdom— and Rodríguez and Sachs (1999), who offer empirical results for Venezuela.

This reasoning must be viewed with caution, however, because —as argued by Echevarría (2004)— the proposed models assume an infinite time horizon, without taking account of the period of retirement. This latter factor must be taken into account, however, in order to achieve a correct explanation of the process of investment in human capital. Increases in life expectancy will not necessarily be accompanied by changes in decisions to invest in human capital unless there are changes in the period of retirement. Thus, in the great majority of countries life expectancy now exceeds the retirement age. Echevarría's study gives empirical results for the case of the United States which

confirm this proposal. It must also be added that, in the poorest countries with lower life expectancy, investment in human capital is conditioned by other factors which are much more important than the proposed time horizon of that investment. Examples of this are the need to start work at a very early age, or distance from training centres. These motives would support a change in the proposed approach.

b) *Acquired human capital*

Acquired human capital includes the formal and informal education received and the experience gained.

i) Formal education. Formal education includes pre-school, primary, secondary and higher education, and these academic levels form the conceptual basis traditionally used to quantify human capital, either through average years of schooling, the percentage of persons who have completed a given level of studies, or the indices of enrolment in each level of education.[2] Part of these levels of education will be compulsory and part voluntary.

In addition to the academic education regulated by law, formal education will also include the training given to unemployed persons by public bodies and the training courses for workers given by business firms and public bodies.

ii) Informal education. The concept of informal education began to be used in education sciences in the late 1960s and early 1970s, and covers all types of training received outside the institutionalized educational area. Thus, informal education consists of the instruction that individuals receive in their family and their closest social environment and all types of knowledge gained through self-teaching.[3]

On the one hand, the family and the circle of relations have always been of fundamental importance

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[1] Even when the concept of human capital first appeared, Schultz (1961) and Mushkin (1962) already considered that improvements in health conditions could increase the endowment of human capital. Nevertheless, health has been left out of the reckoning in the great majority of theoretical and empirical studies dealing with the use of human capital. For an interesting analysis of health and human capital, see Bandrés and García Delgado (2000).

[2] For an analysis of indicators of formal academic education and quality of education, see Barro and Lee (1993, 1996 and 2001).

[3] Coombs, Prosser and Ahmed (1973, p. 23) define informal education as the process carried out throughout a person's life whereby he acquires aptitudes, values and knowledge from everyday experience and the resources and influences of his closest surroundings, namely, the family and neighbours, work and play, the market, the local library, and the mass media. Tight (1996, p.68) assigns great importance to the education received through learning and training that takes place outside the formal institutions, distinguishing it explicitly from other types of education. The importance of this type of education in the training of individuals has been emphasized in many studies on education: for example, Torres (1990) analyses its importance in the educational policies implemented in Latin American countries, Foley (1999) focuses on the experiences of Australia, Brazil, Zimbabwe and the United States in this respect, while Youngman (2000) highlights its importance in the training of adults.

in the education of human beings. On the other hand, more and more importance is being assumed by the training which people receive from the various information media and which they all assimilate in their own way. Among these vehicles for informal education, books have long played a fundamental role. Other important means of informal education which have come on the scene more recently are the press, television, radio and the internet.[4]

iii) Experience. Experience consists of all the situations experienced by an individual, which enable him to react to circumstances on the basis of previously acquired knowledge. Within this category, special mention may be made of work experience, which consists of all the knowledge gained in carrying out a particular task. Work experience is the most important type of experience from an economic point of view, since it is a decisive factor in a worker's productivity.[5]

III

The measurement of human capital:
a new proposal

In this section, we will construct various indicators in order to come closer to the different aspects of the definition given above which are not usually taken into account in other indicators. The section will end with the formulation of a single indicator which will cover the different nuances of that definition.

Based on the concept of human capital formulated in section II above, various indicators will be proposed here which take account of all the nuances of that definition, i.e., **inborn human capital, formal education, informal education, and accumulated experience.** Using these indicators, a broad human capital index which corresponds to the concept in question has been prepared. The various indicators cover a period extending from 1960 to the present day and include the broadest sample of countries permitted by the available statistical information. The indicators taking account of each aspect of the definition are presented below.[6]

1. Inborn human capital

As already noted, it would be logical to assume that the average individuals of one country would have the same inborn qualities as the average individuals of any other country. However, the use of those qualities is conditioned by the health situation prevailing in the environment where those individuals live. Thus, while starting from the assumption that the endowments of inborn human capital are the same for all countries, we will try to measure the consequences of disparities in health conditions for that human capital. This is done through the life expectancy indicator, which takes information on the health of the entire population spectrum and reflects the consequences of the general health conditions of individuals. This indicator also includes a considerable number of observations over time for a broad group of countries.

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[4] Leadbeater (2000) puts forward a number of arguments about the importance of the new technologies in the acquisition of knowledge.

[5] For an analysis of learning by doing and its implications for productivity, see Arrow (1962). That study introduces this notion, which implies that the experience obtained from the use of new technologies in the production process will be accompanied by an increase in efficiency. Thus, there would be an increase in workers' productivity due to experience, at least until decreasing returns come into play. Various models based on human capital have stressed the importance that the process of learning by doing has in growth, due, among other factors, to the increasing use of new technologies. Some of these models are those by Romer (1986), Stokey (1991), Young (1991), Parente (1994) and Greenwood and Yorukoglu (1997).

[6] The data on formal education are taken from Barro and Lee (2001), while the figures on paper consumption for cultural uses are from the Statistical Institute of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The rest of the data used in the preparation of the indicators come from *World Development Indicators* (World Bank, various years). The statistics on the use of newspapers, the radio, television and books were completed with data from the *Cross-National Time-Series Data Archive* of Arthur S. Banks, taken from the Social Indicators and Fixed Factors data base of the World Bank. All the sources used provide annual data from 1960 to the present for a broad sample of countries. The data taken from Barro and Lee refer to five-yearly figures. More exhaustive information on the definitions of the variables used and the availability of data can be obtained from the data bases mentioned.

2. Acquired human capital

Acquired human capital is the result of the formal and informal education received and the experience accumulated.

a) *Formal education*

The main effort made in the measurement of human capital has been in the collection of information on formal education. Out of all the indicators prepared in this respect, we will use the information on average years of schooling assembled by Barro and Lee (2001), since their indicator was constructed using the most rigorous procedures of any of the international studies made so far and provides information on the stock of human capital, in contrast with other indicators which only measure flows of education. This source provides five-yearly data from 1960 to 2000.

It must unfortunately be noted that the international information available on other areas of formal education, such as training provided for the unemployed and training provided by enterprises themselves, is so scanty that it is not worth including in an international human capital indicator.

b) *Informal education*

The **family** plays a fundamental role in the education of individuals,[7] although not all families will be capable of giving their children the same attention, nor will they possess the same resources for educating them. This circumstance will condition the training that children receive within the family unit. It will therefore be necessary to find an indicator to quantify the attention and resources devoted to the education of children, on average, in each country. In this study, we have chosen to use the fertility rate as an approximation to the education that children can receive from their parents. Thus, this rate will constitute a first indicator of the attention that parents give to each of their children. That attention will be less as the size of the family increases. Moreover, the number of children will limit the resources that can be devoted to each child, since it will be necessary to share the available resources among all of them. Furthermore, there is a strong negative correlation between fertility and per capita income, which is a further reason why the fertility rate can serve as an approximation to the resources that each family can devote to the upbringing of its children.[8]

Another important element in the acquisition of informal education is **self-training through various information transmission media.**[9] In order to capture this decisive factor in acquired human capital, an indicator of the media that make possible the acquisition of informal education has been prepared for the present study. Through this indicator, we will have an approximation to various possibilities of self-training that are available to the citizens of each country. We will then go on to explain how this media index was prepared.

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[7] Coombs and Ahmed (1974) argue that the examples and attitudes observed within the family circle will naturally form an essential part of the educational process.

[8] The trade-off between the number of children and the quality of their education has been observed by Rosenzweig and Wolpin (1980), Behrman and Taubman (1986), and Hanushek (1992). These studies find that the size of the family unit will condition the investment in the education of their children, since each child will only be able to receive fewer resources. This idea has been accepted in various models and empirical studies. Thus, Becker, Murphy and Tamura (1990) develop a model which generates different stationary states according to the relations between fertility, education and growth, concluding that individuals must choose between the quantity and quality of the children they want to have. Lam and Duryea (1999) find a strong negative effect of female schooling on fertility and a strong positive effect of the schooling of the parents on the schooling of their children, arguing that the effects of education on fertility are reflected above all in greater investment in the education of children and an improvement in the quality of that education. Moav (2005) develops a model based on fertility and quality of education which offers an explanation of the persistence of poverty in some countries: that article finds that the quality of the education received by children is conditioned by the number of children, assuming that the productivity of the parents in educational matters increases with their own degree of training; as a consequence, poor countries have high levels of fertility and low investments in education, so that their future generations will also be poor. Similarly, Tamura and Sadler (2001) construct an overlapping generations model in which fertility appears as an endogenous variable which conditions the education received by the children. It should be noted, however, that the relation between fertility and human capital does not only show itself in the direction mentioned. Thus, human capital can also be one of the determinants of fertility rates, as shown by Becker, Murphy and Tamura (1990) or Lam and Duryea (1999), although there are also other factors that affect the reduction of that rate, such as lower mortality, the expansion of contraceptive use, the opportunity cost in wage terms of looking after children, or the lower degree of dependence of the aged.

[9] The studies by Coombs, Prosser and Ahmed (1973) and Leadbeater (2000) already referred to earlier mention the importance of this means for acquiring informal education. The importance of these means of learning is shown by the fact that the Centre for Educational Research and Innovation of the Organisation for Economic Cooperation and Development (OECD) is developing a broad programme to study the impact of information and communication technologies on the quality of education. Various studies have already been published on learning through the internet, the consequences of the technology gap between countries, and the dramatic impact that the new opportunities have on learning.

Two periods were examined: one covering the period from 1960 to 1989, and the other covering the 1990s. The methodology used for each period is slightly different, the reason for this being the availability of data in each case and the appearance of new media.

The **media index for 1960-1989** was prepared in the light of the access of the population of each country to books, newspapers, radio and television. It is as follows:

$$IM_{it} = \frac{\dfrac{books_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} books_{it}} + \dfrac{newspapers_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} newspapers_{it}} + \dfrac{radio_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} radio_{it}} + \dfrac{television_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} television_{it}}}{Me_{it}} \quad (1)$$

where:
IM_{it} = media index of country i in year t.
i = 1, 2, … , N_t where t is the number of countries in the sample in year t.
t = 1960, 1961, … , 1989.
$books_{it}$ = number of book titles per capita published in country i in year t. This includes all editions, children's books and textbooks. The figure refers to book titles, not the number of copies printed.

$newspapers_{it}$ = number of newspapers per capita circulating in country i in year t. Only includes daily newspapers.
$radio_{it}$ = number of radio sets per capita in country i in year t.
$television_{it}$ = number of television sets per capita in country i in year t.
Me_{it} = media analysed in country i in year t.

In the **media index for 1990-2000**, the number of book titles published is replaced with the consumption of paper for cultural purposes, which provides more valuable information. The index also includes the use made of personal computers, which have revolutionized access to information in the last decade through various programmes and internet. The index will thus be as follows:

$$IM_{it} = \frac{\dfrac{paper_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} paper_{it}} + \dfrac{newspapers_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} newspapers_{it}} + \dfrac{radio_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} radio_{it}} + \dfrac{television_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} television_{it}} + \dfrac{computers_{it} \cdot N_t}{\sum\limits_{i=1}^{N_t} computers_{it}}}{Me_{it}} \quad (2)$$

where:
IM_{it} = media index of country i in year t.
i = 1, 2, … , N_t where t is the number of countries in the sample in year t.
t = 1990, 1991, … , 2000.
$paper_{it}$ = kilogrammes of paper consumed for cultural purposes per thousand inhabitants in country i in year t.
$newspapers_{it}$ = number of newspapers per thousand inhabitants circulating in country i in

year t. Only includes daily newspapers.
$radio_{it}$ = number of radio sets per thousand inhabitants in country i in year t.
$television_{it}$ = number of television sets per thousand inhabitants in country i in year t.
$computers_{it}$ = number of personal computers per thousand inhabitants in country i in year t.
Me_{it} = media analysed in country i in year t.

Of course, not all individuals will be able to make use of the media available in the same way. In order to make an approximation to the actual use made of these instruments, it will be assumed that only the literate inhabitants will be able to make full use of them, while the illiterates will not be able to make any use of them whatever. Although this assumption may seem arbitrary, the literacy index of each country does represent a good indicator of the advantage taken of the available educational media, so that by introducing this correction we will be coming closer to the real situation. Thus, the index of utilization of the available media will finally be as follows:

$$IUM_{it} = IM_{it} \cdot ALF_{it} \qquad (3)$$

where:

IUM_{it} = index of utilization of available media in country i in year t.

IM_{it} = index of media in country i in year t.

ALF_{it} = literacy rate of country i in year t.

c) *Experience*

Few attempts have been made to try to measure experience, because of the difficulties involved in representing in the form of an indicator the knowledge accumulated through personal experiences or work. For the present study, we have opted to calculate the number of years that the average citizen of each country has been present in the labour market. The results obtained should be interpreted with caution, however. The problem is that the labour functions carried out by an individual usually change over the course of his working life. Furthermore, work is not homogeneous: there are jobs for which experience is more important than for others and takes longer to acquire.

The average number of years of work experience, that is to say, the number of years for which an individual has been in the labour market, has been calculated from the average age of the country's population, less the age at which the average citizen began to work.[10] It has been assumed that the minimum age of entry into the labour market is 16, in line with the international conventions on this subject, although

unfortunately in some cases this age may be considerably lower. In order to take account of this circumstance, data have also been used on the work done by children between 10 and 14 years of age. Finally, the opposite situation should also be taken into account. Thus, in some countries the age of entry into the labour market is higher than 16, since the average individual has continued his education after the minimum age for starting work. A suitable correction was therefore made for the countries which were in this situation at some time in the period between 1960 and 2000, namely, Australia, Canada, the United States, Norway, New Zealand, South Korea, Sweden and Switzerland.

We thus have:

$$EXP_{it} = EMP_{it} - EIMT_{it} + AMTI_{it} \qquad (4)$$

where:

EXP_{it} = the indicator of the work experience of country i in year t.

i = $1, 2, ... N_t$, where N_t is the number of countries in the sample in year t.

t = 1960, 1961, … 2000.

EMP_{it} = the average age of the population of country i in year t.

$EIMT_{it}$ = the average age of entry into the labour market in country i in year t.

$AMTI_{it}$ = the average number of years during which an inhabitant of country i in year t has been carrying out child labour.

Although the indicator thus prepared refers to the labour market, it should not be considered as relating solely to work experience, as it will also include the experience of life accumulated by individuals, which is one of the most important bases of knowledge. This is because life experience will grow in line with the average age of individuals, which is the key element in the preparation of the indicator.

To sum up, in line with the concept originally developed, inborn human capital —which is assumed to be equal, on average, for all individuals— can be affected by health conditions, as measured by life expectancy; formal education is reflected through an indicator of average years of schooling; informal education is taken into account through the fertility rate, which acts as a proxy for the possibilities of devoting resources and attention to the children's education, and through the preparation of an indicator of the use made of information transmission media; and

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[10] It would also be desirable to take account of the average period for which an average worker was unemployed, but this information has not been included because not enough data were available at the international level.

finally, an attempt is made to arrive at an approximation of accumulated experience through the preparation of another indicator, based on average number of years of presence in the labour market. The tables with the values of the indices prepared are available from the author on request.

IV

Preparation of a global human capital indicator

Once we have indicators of the different elements that make up human capital, we can construct a global indicator encompassing all the aspects in question. This indicator will be constructed on a five-yearly basis for the period from 1960 to 2000. The reason why an annual basis was not used is that the data used in its preparation were taken from the study on formal education by Barro and Lee (2001), which cover five-year periods and thus condition the time periods used here.

In order to avoid scale effects due to the different definitions and units used in the variables, the latter were typified by subtracting the sample average from each item of data and dividing it by its standard deviation. The statistical procedure used to construct the indicator is factor analysis. Specifically, the method used is that of the main components. An important point is that in all cases a single main component can explain over 80% of the variation of the variables. Thus, a joint human capital indicator can be constructed which takes in the effect of each of the factors contemplated, condensed into a single figure for each country and year.[11] This makes it much easier and more intuitive to work with the results obtained. The

human capital indicators for each of the years in question may be found in the appendix at the end of this study. The total sample covers 106 countries, for the great majority of which information is available on a very high number of periods.

The indicator thus presented has the advantage of taking account of the effect of the multiple factors included in the definition of human capital, i.e., health, formal and informal education, and experience. Other indicators traditionally used were based on only one of these aspects. Consequently, from a theoretical point of view, it will make more sense to use it when considering a broader concept of human capital rather than the more restrictive concept of formal education. Furthermore, the time-span covered is considerable and the index has been constructed for a wide variety of countries, thus facilitating its use in empirical studies.

Although its theoretical justification is obvious, however (because it corresponds more closely to the concept), it must be noted that the measure of human capital made through the new indicator differs from that obtained with other, more traditional, indicators. For this reason, a comparison has been made between the indicator constructed here and the indicator traditionally used in empirical studies, i.e., average years of schooling of the population.[12] This comparison reveals appreciable differences in the periods analysed. Thus, although both indicators give homogeneous results, if we order the countries according to the values of the respective indicators, we observe appreciable changes of position depending on the index used. These changes are due to the inclusion of means of acquiring human capital other than the habitual means of academic education, which thus become just one more

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[11] The equations obtained for each period by the main components method are:

$H_{60} = 0,92*ESV_{60} + 0,93*AME_{60} - 0,93*FEC_{60} + 0,85*IUM_{60} + 0,92*EXP_{60}$
$H_{65} = 0,90*ESV_{65} + 0,94*AME_{65} - 0,94*FEC_{65} + 0,90*IUM_{65} + 0,91*EXP_{65}$
$H_{70} = 0,90*ESV_{70} + 0,94*AME_{70} - 0,95*FEC_{70} + 0,91*IUM_{70} + 0,91*EXP_{70}$
$H_{75} = 0,90*ESV_{75} + 0,95*AME_{75} - 0,96*FEC_{75} + 0,91*IUM_{75} + 0,92*EXP_{75}$
$H_{80} = 0,88*ESV_{80} + 0,94*AME_{80} - 0,94*FEC_{80} + 0,91*IUM_{80} + 0,94*EXP_{80}$
$H_{85} = 0,91*ESV_{85} + 0,95*AME_{85} - 0,95*FEC_{85} + 0,92*IUM_{85} + 0,94*EXP_{85}$
$H_{90} = 0,91*ESV_{90} + 0,94*AME_{90} - 0,94*FEC_{90} + 0,87*IUM_{90} + 0,94*EXP_{90}$
$H_{95} = 0,91*ESV_{95} + 0,92*AME_{95} - 0,93*FEC_{95} + 0,86*IUM_{95} + 0,93*EXP_{95}$
$H_{00} = 0,89*ESV_{00} + 0,91*AME_{00} - 0,93*FEC_{00} + 0,85*IUM_{00} + 0,92*EXP_{00}$

where *H* is the human capital indicator constructed, *ESV* is life expectancy, *AME* is the average years of schooling, *FEC* is the fertility index, *IUM* is the indicator of use made of media, and *EXP* is the indicator of experience.

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[12] Figures taken from the series prepared by Barro and Lee (2001).

way of obtaining training. Table 1 shows the absolute values of the differences between the place occupied by a country in terms of human capital according to the indicator constructed here, and the place it occupies according to the indicator based solely on average number of years of formal schooling.

Thus, use of the broader human capital index results in an average shift of seven places —a variation of 8% in the list— in absolute terms, compared with the place occupied by the same country when the average years of schooling are used. If we divide the countries into two groups —those with a high endowment of human capital and those with a low endowment— these variations do not imply

movements of countries from one group to the other, but they do show a change in the relative position among countries of the same group.

In addition to noting the differences in the amount of human capital according to each indicator, it is also important to take into account the differences in their statistical performance. To this end, we will analyse the statistical relation between the indices and a number of variables indicative of levels of economic and social development which can be correlated *a priori* with human capital. In order to determine the differences which exist between the two indicators in this respect, table 2 shows the correlation coefficients between those indicators and the variables in question.

TABLE 1

Total set of countries in the sample: Mean variations of places occupied by the countries according to their human capital indicatorsno

Mean variation in place occupied (a)	5	6	7	7	8	7	8	9	8	7
Number of countries in sample (b)	71	84	92	101	100	101	102	100	93	94
Quotient between (a) and (b)	8%	8%	8%	7%	8%	7%	8%	9%	9%	8%

Source: Prepared by the author.

TABLE 2

Total set of countries in the sample: Correlation coefficients between human capital indicators and various variables, 2000[a]

Variable	Average years of schooling	Human capital indicator	Number of observations
Per capita GDP, in purchasing power parity dollars	0.43	0.48	81
Population living on less than one dollar a day	−0.51	−0.61	43
Probability of living for more than 65 years (men)	0.57	0.54	82
Probability of living for more than 65 years (women)	0.59	0.76	82
Years lived with bad health (men)	−0.29	−0.31	82
Years lived with bad health (women)	−0.48	−0.63	82
Infant mortality rate (per thousand live births)	−0.35	−0.85	84
Infant mortality rate of children under 5 (per thousand live births)	−0.40	−0.91	84
Death rate in childbirth	−0.33	−0.47	82
Fertility rate between 15 and 19 years of age	−0.61	−0.42	82
Contraceptive use	0.59	0.93	49
Scientists and engineers engaged in R&D, per million inhabitants	0.99	0.65	55
Technicians engaged in R&D, per million inhabitants	0.65	0.98	51
Spending on R&D, as % of GDP	0.31	0.80	52
Articles in scientific and technical journals, per 100,000 inhabitants	0.77	0.98	84
Patent applications per 100,000 inhabitants	0.89	0.82	66
Women in ministerial-level decision-making posts (%)	0.29	0.31	78
Country risk: *Institutional Investor Credit Rating* (Institutional Investor, Inc.)	0.34	0.57	80
Country risk: *Euromoney Country Credit-worthiness Rating* (Euromoney Publications)	0.26	0.50	82

Source: Prepared by the author on the basis of data from *World Development Indicators* (World Bank, various years). See that source for a detailed definition of the variables. In the cases where no data were available for 2000, the nearest year was taken. In the country risk indicators, the higher the figure, the lower the risk.

[a] Samples of homogeneous countries.
[b] R&D = research and development.

Although the direction of the relation with the variables is the same in each case, there are considerable contrasts in the size of the correlation coefficient, depending on the indicator involved. The average difference between the coefficients obtained for each of the indicators in each case is 22 percentage points. This represents the differences in statistical performance between the two human capital measures. It may be noted that in 15 out of the 19 cases the new indicator displays greater correlation with the variables analysed.

Consequently, the indicator prepared here uses a broader concept of human capital and differs from the traditional indicator based on average years of schooling in its statistical performance. In the following section, these properties will be used to analyse from a new perspective the human capital endowments of the Latin American and Caribbean countries.

V

Spatial and temporal analysis of human capital endowments in Latin America and the Caribbean

The following two subsections seek to go more deeply into the spatial and dynamic analysis of human capital endowments on the basis of the indicator prepared here.

1. Spatial analysis of human capital endowments

Table 3 was prepared in order to give a comparative analysis of the different human capital endowments of Latin America and the Caribbean compared with other world regions.

This comparison reveals that the differences between geographic areas are significant and, overall, are due to disparities in the five basic indicators used, although the contrasts are particularly marked in the case of formal and informal education but are less notable in the case of differences in health and experience.

Overall, Latin America and the Caribbean have a better endowment of human capital than Africa South of the Sahara, Southeast Asia, the Middle East and North Africa. Their situation in this respect is actually quite similar to that of the latter region, with indices of media utilization and health which are slightly lower (52% and 106% of the world average) but better endowments in terms of formal education received (99% of that average) and above all, greater experience (94% of the average) and better possibilities of acquiring informal education from the family (once again, 94% of the world average). East Asia and the Pacific, Eastern Europe and Central Asia, Western Europe and North America, however, have endowments superior to those of Latin America and the Caribbean in all the aspects covered.

In spite of the overall relative lag of Latin America and the Caribbean, a detailed analysis of the countries making up the region shows that there are big differences between them. Thus, it may be seen from table 4 that the countries with the best endowments of human capital are, in order, Barbados, Uruguay, Chile, Trinidad and Tobago, and Argentina. These countries have values of the global human capital indicator which are considerably above the world average and close to those of the countries with a medium-high endowment of human capital.

We also found countries in the region, however, which have a very low endowment of human capital, with values well below the world average and close to the levels of other areas of the world with a lower degree of development. The most serious situation within the sample of 21 countries is that of Guatemala, followed by Honduras, Bolivia and Nicaragua. The countries with low endowments of human capital display shortcomings in all the indicators covered, but these deficiencies are most serious in the case of informal education, as measured through the fertility indicator and the media utilization index. The countries in the worst situation as regards the first indicator are Guatemala, Honduras and Bolivia, which also have serious shortcomings in terms of media utilization, while the cases of Colombia, Nicaragua and Ecuador are also noteworthy on account of their low levels in that index.

In general, the countries already mentioned above also display shortcomings in the indicators of experience, health and formal education. Special mention should be made of the deficit in formal

TABLE 3

Selected regions: Spatial analysis of human capital endowments, 2000

	Average years of schooling	Average years of schooling/ world average	Media utilization index	Media utilization index/ world average	Health	Health/ world average	Expe- rience	Experience/ world average	Ferti- lity	Fertility/ world average	Human capital indicator
Africa South of the Sahara	3.29	0.53	0.16	0.15	47.91	0.72	10.97	0.71	4.92	1.60	–4.57
Southeast Asia	3.38	0.54	0.08	0.08	61.21	0.92	12.99	0.85	3.99	1.29	–2.65
Middle East and North Africa	6.01	0.97	0.56	0.56	72.21	1.08	13.42	0.87	3.09	1.00	–0.04
Latin America and the Caribbean	6.13	0.99	0.52	0.52	70.81	1.06	14.52	0.94	2.89	0.94	0.19
East Asia and the Pacific	7.25	1.17	1.34	1.33	71.59	1.07	16.43	1.07	2.35	0.76	1.89
Eastern Europe and Central Asia	7.84	1.26	0.93	0.93	71.09	1.06	19.61	1.28	1.71	0.56	2.74
Western Europe	9.02	1.45	2.53	2.52	77.74	1.16	21.95	1.43	1.59	0.52	5.33
North America	11.84	1.91	3.71	3.70	77.97	1.17	18.57	1.21	1.80	0.58	6.30
Average, all countries	*6.21*	*1.00*	*1.00*	*1.00*	*66.77*	*1.00*	*15.37*	*1.00*	*3.08*	*1.00*	*0.33*

Source: Prepared by the author.

TABLE 4

Latin America and the Caribbean: Spatial analysis of human capital endowments, 2000

	Average years of schooling	Average years of schooling/ world average	Media utilization index	Media utilization index/ world average	Health	Health/ world average	Expe- rience	Experience/ world average	Ferti- lity	Fertility/ world average	Human capital indicator
Argentina	8.49	1.38	0.76	1.47	73.57	1.04	17.31	1.19	2.55	0.88	2.07
Barbados	9.11	1.49	0.82	1.58	75.66	1.07	20.72	1.43	1.75	0.61	3.61
Bolivia	5.54	0.90	0.20	0.39	62.06	0.88	11.79	0.81	4.02	1.39	–2.08
Brazil	4.56	0.74	0.66	1.28	67.15	0.95	15.62	1.08	2.24	0.78	0.12
Colombia	5.01	0.82	0.01	0.02	70.35	0.99	14.07	0.97	2.67	0.92	–0.53
Costa Rica	6.01	0.98	0.48	0.93	76.84	1.09	14.59	1.01	2.53	0.87	0.81
Chile	7.89	1.29	1.68	3.24	75.51	1.07	16.35	1.13	2.19	0.76	2.72
Ecuador	6.52	1.06	0.18	0.35	69.23	0.98	13.60	0.94	3.14	1.09	–0.38
El Salvador	4.50	0.73	0.42	0.81	69.53	0.98	13.66	0.94	3.20	1.11	–0.84
Guatemala	3.12	0.51	0.07	0.13	64.89	0.92	10.72	0.74	4.72	1.63	–3.34
Guyana	6.05	0.99	0.25	0.49	63.70	0.90	14.95	1.03	2.30	0.79	–0.14
Honduras	4.08	0.67	0.18	0.35	69.82	0.99	10.88	0.75	4.04	1.40	–2.16
Jamaica	5.22	0.85	0.45	0.87	75.16	1.06	15.29	1.05	2.54	0.88	0.54
Mexico	6.73	1.10	0.65	1.25	72.14	1.02	14.23	0.98	2.78	0.96	0.58
Nicaragua	4.42	0.72	0.12	0.23	68.63	0.97	10.94	0.75	3.61	1.25	–1.93
Panama	7.90	1.29	0.47	0.91	73.88	1.04	14.77	1.02	2.47	0.86	1.23
Paraguay	5.74	0.94	0.40	0.77	69.95	0.99	11.50	0.79	4.03	1.39	–1.33
Peru	7.33	1.20	0.40	0.78	68.74	0.97	13.71	0.94	3.05	1.06	0.08
Trinidad and Tobago	7.62	1.24	0.85	1.64	72.63	1.03	17.48	1.20	1.75	0.61	2.28
Uruguay	7.25	1.18	1.41	2.73	74.30	1.05	19.16	1.32	2.26	0.78	2.75
Venezuela	5.61	0.92	0.41	0.79	73.16	1.03	13.53	0.93	2.88	0.99	–0.06
Average, all countries	*6.13*	*1.00*	*0.52*	*1.00*	*70.81*	*1.00*	*14.52*	*1.00*	*2.89*	*1.00*	*0.19*

Source: Prepared by the author.

education displayed by the most backward Central American countries, while this deficit in education is also noteworthy in the case of Brazil, which, although it has made a big effort in this field in recent years, still registers figures well below the average for the countries of the region.

To sum up, Latin America and the Caribbean are lagging behind the world average in relative terms and also register considerable disparities between countries within the region. Some of the countries show serious overall deficits in the indicators analysed, which reduce their possibilities of converging with other more developed countries of the region and adversely affect the possibilities of the global economic and social success of the region as a whole.

2. Evolution of the endowments of human capital

Table 5 has been prepared in order to show the evolution of the human capital endowments of the countries of Latin America and the Caribbean. It covers the 17 countries for which human capital indicators are available for all the five-year periods between 1960 and 2000. The overall picture given by the data is positive, because a total of 12 countries —Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Peru and Venezuela— have appreciably improved their relative situations. In the cases of Chile, Costa Rica, El Salvador, Mexico and Peru, the effort made has been reflected in notable advances. In the case of Venezuela, however, although it registers a considerable improvement, which was especially noticeable up to the second half of the 1980s, since then there has been a decline.

Two countries which have stagnated as regards their relative position in terms of human capital with respect to the other countries of the region are Bolivia and Guatemala. This has helped to widen the gap in terms of development separating these nations from the rest of the countries of the region.

Finally, there are three countries —Argentina, Paraguay and Uruguay— which have suffered a gradual deterioration in their relative position, leading to a loss of competitiveness by the Southern Cone. This negatively affects the whole region, although some other countries in the area —especially the neighbouring countries of Brazil and Chile— have been able to derive advantages from it.

At all events, in spite of the relative lag of Argentina, Paraguay and Uruguay the region as a whole has registered a relative improvement in its world position, as may be seen from the evolution of the mean indicator for all the countries taken together. This is because there has been an upward trend in the human capital endowments shown by each indicator. But has this process of convergence with the situation at the world level been accompanied by real convergence at the regional level? In order to answer this question, Kernel density functions have been prepared for 1960 and 2000 and are shown in figure 2. This procedure reveals that there has indeed been convergence among the different nations, as reflected in the human capital index.

TABLE 5

Latin America: Evolution of human capital indicator, 1960-2000

	1960	1965	1970	1975	1980	1885	1990	1995	2000
Argentina	3.77	3.92	4.07	3.16	2.78	2.71	2.42	2.29	2.07
Bolivia	−2.02	−2.25	−2.64	−2.61	−2.49	−2.31	−2.02	−2.07	−2.08
Brazil	−1.31	−1.17	−0.84	−0.70	−0.61	−0.28	−0.18	−0.05	0.12
Colombia	−1.71	−1.68	−1.27	−0.46	−0.33	0.17	−0.30	−0.38	−0.53
Costa Rica	−1.35	−0.95	−0.09	0.77	0.83	1.16	0.80	0.91	0.81
Chile	0.67	0.79	1.40	1.69	2.15	2.33	2.24	2.32	2.72
Ecuador	−1.73	−1.77	−1.74	−1.36	−0.79	−0.36	−0.26	−0.30	−0.38
El Salvador	−2.78	−2.70	−2.30	−2.33	−2.10	−1.64	−1.32	−1.04	−0.84
Guatemala	−3.35	−3.26	−3.18	−3.27	−3.34	−3.60	−3.45	−3.46	−3.34
Honduras	−3.56	−3.60	−3.58	−3.31	−3.25	−2.34	−2.26	−2.24	−2.16
Mexico	−1.76	−1.65	−1.34	−1.06	−0.66	−0.31	0.37	0.55	0.58
Nicaragua	−3.38	−3.27	−2.97	−2.94	−3.12	−2.99	−2.52	−2.05	−1.93
Panama	0.06	0.35	0.28	0.55	0.97	1.35	1.47	1.31	1.23
Paraguay	−0.47	−0.77	−0.59	−0.60	−0.79	−1.10	−1.02	−1.28	−1.33
Peru	−2.34	−2.18	−1.71	−1.39	−0.80	−0.53	−0.47	−0.18	0.08
Uruguay	4.79	4.73	4.69	3.86	3.46	3.54	3.25	2.77	2.75
Venezuela	−1.40	−1.13	−0.73	−0.22	0.60	0.70	0.11	0.27	−0.06
Average, all countries	*−1.05*	*−0.98*	*−0.74*	*−0.60*	*−0.44*	*−0.21*	*−0.18*	*−0.15*	*−0.13*

Source: Prepared by the author.

FIGURE 2

**Latin America and the Caribbean: Kernel[a] density function of
the human capital indicator, 1960 and 2000**

Source: Prepared by the author.

[a] The Kernel density function makes it possible to smooth out the statistical distribution histogram and turn it into a continuous graph, by giving less weight to the observations furthest from the point being evaluated. The Kernel density of a series X at a given point x is estimated through the function:

$$f(x) = \frac{1}{N \cdot h} \sum_{i=1}^{N} K\left(\frac{x - X_i}{h}\right)$$

where N is the number of observations, h is the smoothing parameter selected, and $K(x)$ is the gaussian-type Kernel function used:

$$\frac{1}{\sqrt{2\pi}} exp\left(-\frac{1}{2} u^2\right)$$

where u is the argument of that Kernel function.
The smoothing parameter h used will have a value of 0.65. This parameter was obtained by applying the method proposed by Silverman (1986, equation 3.31) to the series of periods analysed.

In 1960 there was more marked polarization between the countries with higher and lower human capital endowments, as may be seen from figure 2, where two peaks in the distribution may be observed. Thus, in 1960 the countries fell into two groups: one (the most numerous) consisted of the countries with lower human capital endowments, while the other contained those with more human capital. This polarization was gradually reduced over the years, however, until a more uniform and concentrated distribution was attained by the year 2000. It may therefore be concluded that the region has been undergoing a process of convergence as regards the endowments of human capital.

VI

Conclusions

Human capital has far-reaching effects on the economy and life in society, as shown by many empirical studies. The definition of human capital and the indicators constructed to quantify it must therefore take account of all the elements included in the concept as accurately as possible.

A broad definition which distinguishes between inborn and acquired human capital has therefore been proposed in the present study. Inborn human capital includes both physical and intellectual aptitudes, which may be modified by nutrition and health conditions. Within acquired human capital, a distinction is made between formal education, informal education and experience. Formal education comprises legally regulated academic education, training within enterprises, and courses for the unemployed. Informal education is imparted fundamentally within the family circle, but it can also be acquired through self-education by way of different means of transmission of information, such as books, the mass media or computers. Experience, for its part, consists of all the situations lived by an individual, which enable him to react to circumstances on the basis of the knowledge thus acquired. All these elements condition the labour training and system of values of the individual, thus determining his productivity.

After formulating this definition, we proceeded to propose different indicators which take account of each element contained in it.

— Inborn human capital, which is considered to the same for all individuals in principle, can be altered by health conditions, as measured by life expectancy.

— Formal education is assumed to be represented by an indicator of average years of schooling. No consistent international information is available on other types of formal education.

— Informal education is measured indirectly by the fertility rate, which summarizes the possibility of devoting resources and attention to children's education, and by an indicator of the use made of means of transmission of information such as books, newspapers, radio, television and personal computers.

— Lastly, accumulated experience is taken into account through the preparation of another indicator: average number of years of presence in the labour market.

On the basis of the above indicators, and using the main components method of analysis, which makes possible the reduction of the data concerned, a global human capital indicator was prepared for the period from 1960 to 2000, presenting the data for five-year periods. The sample of countries used for each period numbered around one hundred. This indicator takes account of more nuances than the international human capital indicators habitually used, which are based only on academic education received.

Analysis of the countries making up the Latin American and Caribbean region, using the indicator developed here, shows that the region is lagging behind in relative terms compared with East Asia and the Pacific, Eastern Europe and Central Asia, Western Europe and North America, although there are big differences in human capital endowment within the Latin American and Caribbean region as a whole.

At the same time, in spite of the declines suffered by Argentina, Paraguay and Uruguay in the last four decades, it has been observed that the region has registered a relative improvement in terms of human capital endowment, as well as a process of internal convergence in this respect. This is undoubtedly a *sine qua non* for there to be effective convergence in real terms at the intra-regional and inter-regional levels.

(Original: Spanish)

APPENDIX

Values of human capital indicator

	1960	1965	1970	1975	1980	1985	1990	1995	2000
Afghanistan	−4.2	−4.3	−4.8	−5.2	−5.5	−6.0	−6.4	−6.4	−6.5
Algeria	...	−3.9	−4.1	−3.9	−3.7	−3.0	−2.1	−1.5	−1.0
Argentina	3.8	3.9	4.1	3.2	2.8	2.7	2.4	2.3	2.1
Australia	7.1	7.4	7.3	7.1	7.1	6.9	6.7	6.3	6.2
Austria	6.8	6.8	6.6	6.5	6.8	6.9	6.6	5.5	5.7
Bahrein	...	...	...	−1.6	−0.5	0.6	0.5	0.3	0.5
Bangladesh	...	...	...	−4.3	−4.2	−4.1	−3.4	−3.0	−2.7
Barbados	...	...	4.3	5.2	0.8	5.1	4.3	3.9	3.6
Belgium	7.4	7.4	7.2	6.8	6.3	6.4	6.5	5.8	5.4
Benin	...	...	...	−4.6	−4.9	−5.4	−5.5	−5.4	−5.3
Bolivia	−2.0	−2.2	−2.6	−2.6	−2.5	−2.3	−2.0	−2.1	−2.1
Botswana	...	...	−3.7	−3.6	−3.4	−3.3	−3.2	−3.7	−4.3
Brazil	−1.3	−1.2	−0.8	−0.7	−0.6	−0.3	−0.2	−0.1	0.1
Burundi	...	...	...	...	...	...	−6.2	...	...
Cameroon	−2.6	−3.0	−3.4	−3.7	−4.0	−4.4	−4.4	−4.3	−4.6
Canada	7.0	6.5	7.0	7.5	8.1	8.1	6.9	6.7	6.3
Colombia	−1.7	−1.7	−1.3	−0.5	−0.3	0.2	−0.3	−0.4	−0.5
Congo, Dem. Rep.	−3.3	−3.4	−3.7	−4.0	−4.5	−5.0	−4.9	−5.3	−5.6
Congo, Rep.	...	...	...	...	...	...	−4.4	−4.8	−4.9
Costa Rica	−1.4	−1.0	−0.1	0.8	0.8	1.2	0.8	0.9	0.8
Cyprus	2.8	3.3	3.8	4.8	5.0	4.4	3.7	3.2	3.4
Chile	0.7	0.8	1.4	1.7	2.2	2.3	2.2	2.3	2.7
China	...	...	...	0.3	0.6	0.9	2.9	2.0	1.6
Denmark	8.6	8.8	8.3	8.0	7.8	7.8	7.2	6.4	5.8
Dominican Republic	−2.7	−2.5	−1.9	−1.4	−1.0	−0.6	−0.4	−0.4	...
Ecuador	−1.7	−1.8	−1.7	−1.4	−0.8	−0.4	−0.3	−0.3	−0.4
Egypt	...	...	...	−2.5	−2.5	−2.2	−1.7	−1.4	−1.1
El Salvador	−2.8	−2.7	−2.3	−2.3	−2.1	−1.6	−1.3	−1.0	−0.8
Fiji	...	...	0.5	1.1	1.3	1.4	0.9	0.8	1.4
Finland	5.2	6.6	7.1	7.1	7.3	7.5	7.6	7.7	5.9
France	6.1	6.2	6.1	6.0	5.8	6.0	5.8	5.6	5.0
Gambia	...	...	...	−4.7	−5.1	−5.4	−5.0	−5.0	−5.0
Germany	8.2	8.2	7.7	7.2	7.2	7.1	7.0	6.5	5.9
Ghana	−3.7	−3.7	−3.4	−3.5	−3.7	−4.0	−3.7	−3.3	−3.2
Greece	4.7	4.7	4.5	4.7	4.7	5.0	4.8	4.8	4.7
Guatemala	−3.3	−3.3	−3.2	−3.3	−3.3	−3.6	−3.4	−3.5	−3.3
Guyana	...	...	−1.2	−0.2	−0.1	0.0	0.1	0.0	−0.1
Haiti	−2.8	−2.8	−3.0	−3.2	−3.6	−3.9	−4.0	−4.0	...
Honduras	−3.6	−3.6	−3.6	−3.3	−3.2	−2.3	−2.3	−2.2	−2.2
Hong Kong	...	...	...	...	...	...	6.0	6.3	5.5
Hungary	6.2	6.7	6.8	6.3	5.8	5.6	4.4	4.0	3.9
Iceland	6.2	7.3	7.6	7.7	7.7	5.6	4.7	4.8	4.7
India	−2.7	−2.6	−2.4	−2.3	−2.3	−2.2	−1.8	−1.5	−1.4
Indonesia	−2.5	−2.7	−2.5	−2.4	−2.1	−1.5	−1.3	−0.9	−0.6
Iran	−3.4	−3.4	−3.2	−3.1	−3.3	−3.2	−2.3	−1.3	−0.5
Iraq	−3.8	−3.8	−3.6	−3.3	−3.2	−3.3	−3.5	−3.5	...
Ireland	4.8	4.7	4.3	4.1	3.9	4.3	4.4	4.5	4.7
Israel	4.1	4.1	4.3	4.0	4.0	3.8	3.7	3.4	3.1
Italy	5.3	5.2	5.1	4.6	4.4	4.5	5.3	5.0	4.8
Jamaica	...	−0.3	−0.1	0.2	0.5	0.8	0.8	0.6	0.5
Japan	6.0	7.0	6.9	6.6	6.8	6.7	7.4	7.2	6.4
Jordan	...	...	...	...	...	−2.5	−1.9	−1.1	−0.8
Kenya	...	−4.1	−4.2	−4.4	−4.4	−4.4	−4.0	−4.0	−4.2
Korea. Rep. of	−1.0	−0.2	0.3	1.7	2.6	3.7	...	...	...

(Continued)

Appendix (concluded)

	1960	1965	1970	1975	1980	1985	1990	1995	2000
Kuwait	…	−1.0	−1.4	−1.1	−0.2	0.6	0.9	0.8	0.9
Lesotho	…	…	−2.1	−2.3	−2.5	−2.8	−2.8	−3.5	−4.2
Liberia	−3.3	−3.5	−3.8	−4.0	−4.3	−4.8	−6.0	−6.1	…
Malawi	…	−3.9	−4.5	−4.7	−5.1	−5.5	−5.8	−6.1	−6.6
Malaysia	−2.2	−1.8	−1.2	−0.4	0.0	0.4	0.2	0.8	0.6
Mali	−4.2	−4.6	−4.9	−5.2	−5.5	−6.0	…	−6.7	−6.8
Malta	…	4.7	5.0	4.9	4.7	5.0	…	…	…
Mauritania	…	…	…	…	…	…	−4.9	…	…
Mauritius	…	…	0.0	0.4	0.9	1.2	1.2	1.1	1.2
Mexico	−1.8	−1.7	−1.3	−1.1	−0.7	−0.3	0.4	0.5	0.6
Mozambique	…	…	…	−4.5	−4.9	−5.7	−6.1	−6.1	−6.0
Myanmar	−2.7	−2.8	−2.9	−3.0	−3.0	−2.9	−2.4	−2.1	−2.0
Nepal	−2.9	−3.2	−3.7	−4.1	−4.2	−4.6	−4.3	−3.9	−3.8
Netherlands	5.9	6.2	6.7	7.0	6.7	6.7	6.5	5.9	5.6
New Zealand	5.9	6.9	6.8	7.4	7.2	7.2	5.8	5.3	5.0
Nicaragua	−3.4	−3.3	−3.0	−2.9	−3.1	−3.0	−2.5	−2.0	−1.9
Niger	−4.5	−4.8	−5.0	−5.3	−5.8	−6.5	−6.7	−7.1	−7.3
Norway	6.7	7.1	7.5	7.4	7.0	7.2	6.9	6.8	6.5
Pakistan	−3.6	−3.8	−3.7	−3.8	−4.0	−4.1	−3.8	−3.8	−3.7
Panama	0.1	0.3	0.3	0.5	1.0	1.3	1.5	1.3	1.2
Papua New Guinea	…	…	…	−3.4	−3.9	−4.2	−4.1	−3.7	−3.5
Paraguay	−0.5	−0.8	−0.6	−0.6	−0.8	−1.1	−1.0	−1.3	−1.3
Peru	−2.3	−2.2	−1.7	−1.4	−0.8	−0.5	−0.5	−0.2	0.1
Philippines	−1.7	−1.4	−1.2	−0.8	−0.8	−0.7	−0.3	−0.2	−0.2
Poland	4.3	5.0	5.5	5.4	4.9	4.2	3.8	3.9	4.0
Portugal	2.7	2.7	2.6	2.5	2.6	3.4	3.2	3.3	3.2
Rwanda	…	…	−5.0	−5.5	−5.8	−5.9	−6.5	−6.8	…
Senegal	−3.5	−3.9	−4.2	−4.3	−4.6	−5.1	−5.1	−5.1	−5.1
Sierra Leone	…	−4.3	−4.7	−5.2	−5.6	−6.3	−6.8	−7.1	…
Singapore	…	−0.4	0.9	1.9	2.2	2.3	2.7	2.8	3.0
South Africa	−1.5	−1.5	−1.3	−1.3	−1.1	−0.7	−0.8	−0.3	−1.3
Spain	3.9	4.2	4.4	3.9	4.0	4.5	4.6	4.6	4.7
Sri Lanka	0.0	0.2	0.3	0.2	0.7	0.9	0.8	0.9	1.0
Sudan	−4.0	−4.1	−4.3	−4.5	−4.6	−4.6	−4.5	−4.2	−4.0
Swaziland	…	…	−3.6	−3.4	−3.5	−3.4	−3.2	−2.8	…
Sweden	9.4	9.3	8.8	8.7	8.2	8.2	7.2	7.1	7.8
Switzerland	7.5	7.4	7.7	8.0	8.1	8.0	7.4	6.9	6.5
Syria	…	−3.6	−3.5	−3.4	−3.5	−3.3	−2.6	−1.8	−1.5
Thailand	−1.5	−1.6	−1.3	−1.0	−0.3	0.5	1.0	1.2	1.2
Togo	−3.7	−3.8	−4.0	−4.2	−4.3	−4.8	−5.1	−5.0	−5.0
Trinidad and Tabago	…	1.1	1.5	1.5	2.5	2.5	2.1	2.0	2.3
Tunisia	−3.4	−3.6	−3.3	−2.7	−2.2	−1.8	−1.1	−0.4	0.0
Turkey	−1.8	−1.6	−1.4	−1.2	−1.1	−0.8	−0.3	0.1	0.4
Uganda	…	−3.6	−3.8	−4.2	−4.8	−5.5	−5.7	−6.2	−6.4
United Arab Emirates	…	…	…	−0.5	…	…	…	…	…
United Kingdom	8.9	7.8	7.5	7.6	7.1	7.2	6.6	6.2	5.5
United States	8.9	8.8	8.7	9.2	9.4	9.5	8.0	7.0	6.3
Uruguay	4.8	4.7	4.7	3.9	3.5	3.5	3.2	2.8	2.8
Venezuela	−1.4	−1.1	−0.7	−0.2	0.6	0.7	0.1	0.3	−0.1
Yugoslavia, Fed. Rep. (Serbia/Montenegro)	3.7	4.0	4.2	4.1	3.7	3.4	3.0	…	…
Zambia	…	−3.5	−3.7	−4.1	−4.3	−4.6	−4.9	−4.8	−5.2
Zimbabwe	…	−3.7	−3.7	−3.6	−3.5	−3.5	−3.0	−3.5	−3.7

Source: Prepared by the author.

(Original: Spanish)

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Adolescent reproduction: the case of Chile and its

policy implications

Jorge Rodríguez V.

Adolescent fertility and maternity are a source of concern in the Latin American and Caribbean region, because they imply situations of adversity, have not gone down as in other age groups, and are more frequent among poor teenagers. Analysis of the micro-data from the last three censuses in Chile also shows: i) a generalized tendency for adolescent maternity to be out of wedlock; ii) the protective effect of staying in school, which comes into play after passing an educational threshold which is rising with time; iii) the leading role played by the parents of the households where most adolescent mothers live, and iv) the need for specific programmes and integral actions to reduce adolescent maternity, since although access to information and sexual health and reproduction services avoids pregnancies, it is not enough when there is a lack of alternatives to maternity or there are cultural and psychological obstacles to the proper use of contraceptive methods.

Jorge Rodríguez V.

Research Assistant,

CELADE, ECLAC Population Division

✎ jorge.rodriguez@cepal.org

I

Introduction

Recent studies (Rodríguez, 2004; Flórez and Nuñez, 2003; ECLAC/CELADE, 2002) and data from specialized surveys —such as demographic and health surveys (www.measuredhs.com)— suggest that in a number of countries of Latin America and the Caribbean adolescent fertility, that is to say, fertility before 20 years of age, has risen over the last two decades, thus contrasting with the fertility of other age groups and total fertility, which have been going down steadily and markedly (table 1). When in addition it is considered that adolescent fertility generates situations of adversity, at least for the parents and their offspring (ECLAC/OIJ, 2004 and 2003; ECLAC/CELADE, 2002 and 2004; Flórez and Núñez, 2003; Menkes and Suárez, 2003; Molina, Sandoval and González, 2003; Silber and Castells, 2003; IPAS, 2001; Lete, de Pablo and others, 2001; Gage, 1995), it may be concluded that this is a matter that calls for specific, systematic and urgent analysis and action.

In order to take action with regard to this fertility, a detailed and up-to-date knowledge is required of its nature, its determinants, and above all, those who are affected by it. It is urgently necessary to obtain this knowledge, because recent studies on this subject have shown that part of present-day adolescent reproduction no longer conforms to the model which prevailed up to a few decades ago (ECLAC/OIJ, 2004). Up to the 1970s, the countries with high rates of adolescent fertility also tended to have high levels of total fertility. Likewise, women who started their reproductive period early —i.e., who began as adolescent mothers— tended to have a large number of children by the end of that period. This forms part of a syndrome which we could call "traditional reproductive behaviour", which still persists in poor countries and among indigenous populations. It usually involves early initiation of nuptiality and low levels of contraceptive use.

The pattern which has emerged since the mid-1980s in addition to this traditional pattern could be called a pattern of truncated reproductive (or sexual) modernity,[1] because a moderate final parity (two to three children, thanks to deliberate birth control) begins with early maternity. These persons are girls who have their first child during adolescence but are subsequently more motivated to control their fertility or, by the fact of being mothers, have easier access to family planning programmes, thus enabling them to fulfil their desire to have only a small number of children.

Table 2 shows this growing process of delinking between the initiation and intensity of fertility at the aggregate level, using for this purpose simple correlation between the age-specific fertility rates and the total fertility rate of the countries concerned. Since the latter rate is the sum of the former, a high degree of correlation might be expected. At the world level, this correlation is observed for all ages except the 15-19 age group, which is "delinked", and this delinking is most noticeable in the case of Latin America and the Caribbean. This is because countries with low total fertility register moderate (Brazil, Colombia) or high (Dominican Republic) levels of adolescent fertility, while countries with high total fertility (Haiti and Bolivia) register relatively low or moderate levels of adolescent fertility. Even so, countries with high adolescent fertility tend to have higher levels of total fertility (Guatemala, Nicaragua, Honduras).

It has also been noted that the current pattern of adolescent reproduction differs from the earlier pattern because it is more likely to take place outside a stable union; for this reason, it usually has intergenerational implications too, because the family of an adolescent mother is seen as the obvious source of support when an ongoing relationship between the mother and her partner is weak or non-existent (ECLAC/OIJ, 2004).

In view of the regional details, the conceptual discussions and the practical necessities described above, this study seeks to contribute updated knowledge and information in order to permit a better understanding of adolescent reproduction, its tendencies, and some of its connotations for girls and

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[1] The use of the word "modernity" does not have any ethical connotations, nor does it imply a positive appraisal. It is simply used because in modern (industrialized, developed) societies,

recognition of the capacity of persons and couples to control their fertility is widely established and methods are available for exercising that control, so that sexuality can be effectively separated from reproduction. In those societies (especially in Western Europe and Japan), it is also systematically observed that the decline in fertility is accompanied by later initiation of reproduction.

TABLE 1

**Latin America (eight countries): Evolution of age-specific
fertility rates (per thousand), by five-year age groups, and
total fertility rates in the years indicated**

Country and year	Age groups							Total fertility rate
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Bolivia, 1989	98.5	234.5	245.1	198.7	141.5	67.4	21.6	5.0
Bolivia. 2003	84.0	183.0	179.0	145.0	114.0	51.0	12.0	3.8
Brazil. 1986	74.2	186.1	169.4	128.0	80.2	36.8	–	3.4
Brazil 1996	86.3	152.3	122.7	80.9	46.5	15.6	2.9	2.5
Colombia. 1986	73.4	176.8	159.9	118.0	77.1	28.0	7.5	3.2
Colombia. 2000	84.8	142.0	129.3	98.9	48.9	15.4	2.2	2.6
Guatemala. 1995	133.8	267.6	262.7	206.3	148.0	81.8	–	5.5
Guatemala. 2002	114.0	233.0	218.0	150.0	119.0	38.0	4.0	4.4
Haiti. 1994/95	75.7	178.7	233.0	205.7	165.6	78.0	19.1	4.8
Haiti. 2000	86.3	182.8	198.1	219.0	161.2	74.1	17.2	4.7
Peru 1986	78.9	183.9	198.7	161.3	122.2	63.7	14.4	4.1
Peru 2000	66.2	139.7	134.4	112.2	79.0	32.0	6.1	2.8
Nicaragua. 1997/98	130.1	192.3	161.8	122.2	78.4	32.2	9.5	3.6
Nicaragua 2001	119.0	178.0	145.0	108.0	64.0	26.0	6.0	3.2
Dominican Republic. 1986	99.7	202.4	195.3	127.0	70.9	32.4	8.4	3.7
Dominican Republic. 2002	116.0	190.0	145.0	97.0	41.0	8.0	1.0	3.0

Source: www.measuredhs.com (on-line processing with STAT compiler and on-line country reports in the cases of Bolivia, 2003; Guatemala, 2002; Nicaragua, 2001, and Dominican Republic, 2002).

TABLE 2

**World total and Latin America and the Caribbean: Simple correlations between
specific fertility rates and total fertility rates, by countries, 1995-2000**
(World total and two samples of Latin America and the Caribbean)

Specific rate for age group	World total[a]	Latin America and the Caribbean[b]	Latin America and the Caribbean[c]
15-19	0.700	0.330	0.480
20-24	0.837	0.837	0.960
25-29	0.959	0.980	0.992
30-34	0.953	0.928	0.952
15-19	0.700	0.330	0.480
35-39	0.934	0.900	0.892
40-44	0.907	0.889	0.863
45-49	0.863	0.688	0.571

Source: Calculations based on data obtained from www.measuredhs.com.

[a] 51 countries, including 8 from Latin America and the Caribbean, with data from surveys carried out after 1995.
[b] Bolivia, 1998; Brazil, 1996; Colombia, 2000; Guatemala, 1998/99; Haiti, 2000; Nicaragua, 1997/98; Peru, 2000; Dominican Republic, 2002.
[c] Excluding Haiti.

their families in Chile. That country was chosen because there are few recent socio-demographic studies on this matter, this issue is one of the items on the public agenda, and the availability of micro-data from three censuses carried out over a period of 20 years provides an exceptional opportunity in terms of the availability of information. A first objective, then, is to determine if Chile is one of the countries of the region in which adolescent reproduction is increasing, in contrast with what is happening in the other age groups. In addition, this study will seek to appraise the hypotheses on emerging forms of adolescent reproduction, since because of Chile's advanced position in the demographic transition and the fact that

its socio-economic indices are well above the regional average, it is extremely unlikely that this reproduction is due to traditional patterns. Although this study deals with specific fertility rates, the novelty of its contribution lies in its analysis of adolescent maternity,[2] for the identification of mothers under 20 years of age makes it possible to calculate indicators of adolescent reproductive patterns and to gain a clear picture of those mothers and their households, thus providing inputs for policy design and shedding light on the nature and determinants of this type of behaviour.

II

Adolescent fertility and maternity in Chile: their evolution over the last 40 years

There are no recent fertility surveys for Chile. There are three surveys on adolescents and young people (www. inj.cl), but their modules on sexual, nuptial and reproductive behaviour are insufficient and have been very little used; there is also a survey on sexual behaviour carried out by the National Commission on AIDS (CONASIDA, 2000) and a couple of health surveys carried out recently by the National Statistical Institute (INE) and the Ministry of Health, but their circulation has been limited and they have been little used so far. Chile does have good-quality vital statistics and census micro-data bases in REDATAM[3] format (for 1982, 1992 and 2002), however, and using these latter two sources provides irrefutable evidence on the reluctance of adolescent fertility to go down (figures 1 and 2), since the only specific fertility rate which did not go down sharply between 1960 and 2001 was the rate for the 15-19 age group, which has tended to remain constant, with some fluctuations; thus, its level in 2001 was 90% of that registered in 1960, whereas over the same period total fertility and the fertility of all the other age groups went down by at least 50%.

Census data have traditionally been used for indirect estimates of fertility, using procedures developed by demographers (United Nations, 1983) which make use of the questions on the total number of children born alive and the number of children born in the last year (captured in some censuses through the question on the date of birth of the youngest child). In the past, those estimates have been made on the basis of the published data, and experience suggests that they tend to underestimate adolescent fertility because of the very frequent failure of girls under 20 to give an answer to those questions. Nevertheless, the development of procedures to correct this problem using aggregate data has made it possible to arrive at relatively reliable estimates. Calculations made using the P/F method[4] proposed by Brass (United Nations, 1983) —applied by using a special REDATAM module which includes some data treatment and screening criteria— suggest that the specific adolescent fertility rate (15-19 age

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[2] In demography, the concept of fertility refers to the number of children women have during their reproductive period and can be calculated as the average number of children of a real cohort (mean parity, or final parity if the cohort has finished its reproductive life) or the sum of the age-specific fertility rates (total fertility rate, whose interpretation requires some assumptions). Maternity, in contrast, places women in one of two mutually exclusive categories: mothers and childless (nulliparous females). Although demographers usually concentrate on fertility, for operational and policy reasons adolescent maternity has been taking on growing importance and visibility. On the operational level, since this takes place at the beginning of the reproductive period, the percentage of mothers among females under 20 years of age is closely linked with the fertility at that age; obviously, this association tends to weaken with age, since relatively universal maternity may be registered in countries of high or low total fertility (in the latter case, if all women have a single child in their life). At the policy level, at that age the important thing is not so much the average number of children as the distinction between whether or not girls have had children or not. In the present study, the expression "adolescent fertility" will be used both to refer generically to biological reproduction before the age of 20 and to refer specifically to the intensity of reproduction during that period, whether in terms of specific rates or the average number of children. The term "adolescent maternity", for its part, will be used to refer generically to the fact of becoming a mother before the age of 20 and specifically, to the proportion of mothers among adolescents.

[3] REDATAM: The software developed by CELADE for data recovery for small areas by micro-computer.

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[4] The P/F procedure developed by Brass is so named because its estimates are based on the quotient between the cumulative parity (P), obtained from the question on the number of children born alive, and the spot or current fertility (F), calculated on the basis of the question on the children born alive in the last year. The procedure thus provides adjusted specific and total fertility rates.

FIGURE 1
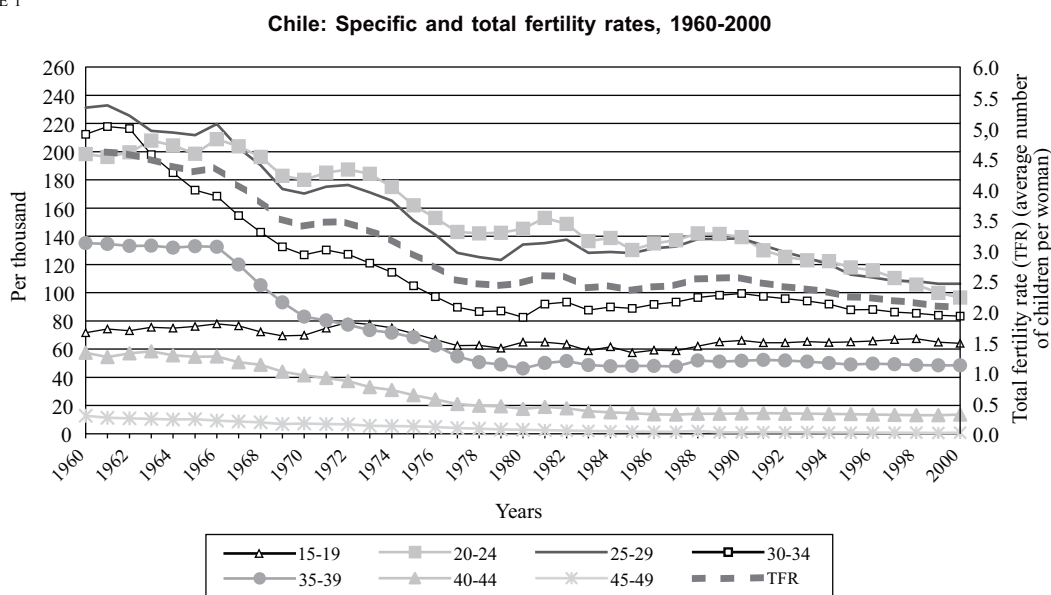
Chile: Specific and total fertility rates, 1960-2000

Source: Calculated on the basis of vital statistics taken from the *Anuario de Demografía* of the National Statistical Institute (INE, various years). In order to correct problems of timeliness, the data from the most up-to-date edition were used.

FIGURE 2
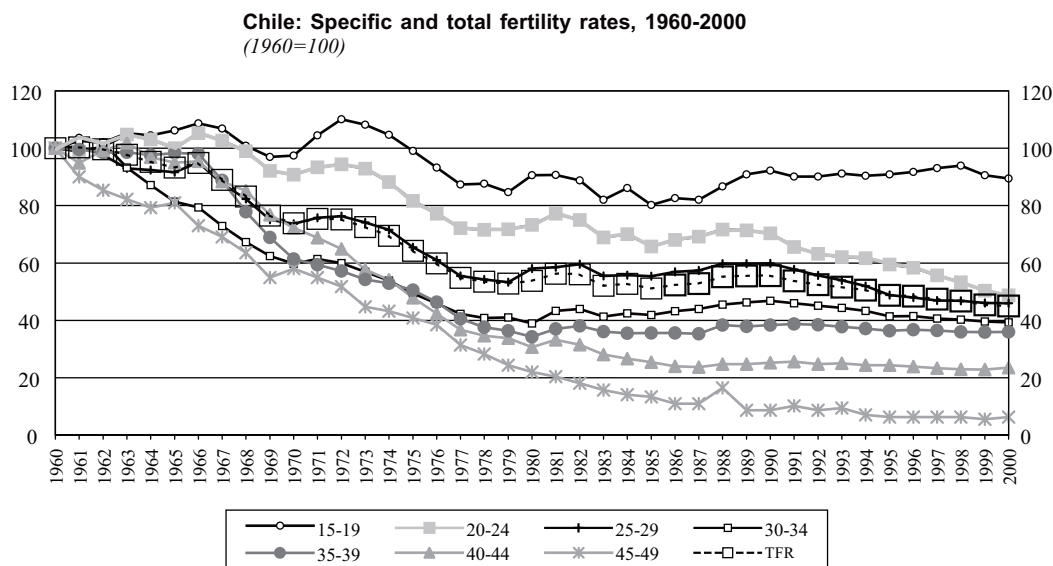
Chile: Specific and total fertility rates, 1960-2000
(1960=100)

Source: Calculated on the basis of vital statistics taken from the *Anuario de Demografía* of the National Statistical Institute (INE, various years). In order to correct problems of timeliness, the data from the most up-to-date edition were used.

group) has remained almost unchanged, at between 65 and 70 per thousand, over the 1982-2002 period (results available from the author on request).

The published census data have also been used to estimate the absolute and relative numbers of adolescent mothers. Thus, it may be seen from table 3, using the published data from the question about the number of children born alive contained in the Chilean censuses of 1982, 1992 and 2002, that adolescent maternity has increased slightly in the last two decades.

TABLE 3

Chile, women between 15 and 19 years of age: Absolute and relative figures on their distribution according to maternity status, 1982, 1992 and 2002
(Numbers and percentages)

No children	Children	Don't know/ don't answer	Total
1982			
429 402	71 541	151 609	652 552
65.80	10.96	23.23	100.00
1992			
414 158	69 890	116 515	600 563
68.96	11.64	19.40	100.00
2002			
426 580	77 291	124 505	628 376
67.89	12.30	19.81	100.00

Source: Official publications of national population censuses.

This table also shows the high frequency of failure to answer the question on children born alive. The experience acquired in investigating this topic suggests, however, that the great majority of girls who do not answer are in fact childless (Rodríguez, 2004), and that in the absence of additional information or reliable adjustment procedures they can safely be considered as such: the error in measurement that might be committed in this way would be much smaller than if the proportion of adolescent mothers were calculated solely on the basis of the women who answered this question, for if we proceeded in the latter manner, the level of adolescent maternity in Chile would rise to 15.34% in 2002.[5]

Table 3 shows how adolescent maternity was investigated before there was easy access to census micro-data bases. This access is now possible, and allows us to begin to find answers to many questions on adolescent fertility. Likewise, some of the problems of measuring this phenomenon can now be tackled using new procedures. Tables 4 and 5 are the result of special processing of census micro-data bases, using REDATAM, which has enabled us to progress on two matters of crucial importance: i) empirically testing the hypothesis on the increasingly early initiation of adolescent maternity (INE, 2000), and ii) evaluating the tendency according to the simple age of adolescent

maternity, imputing the status of mothers to girls who do not provide information in this respect, and correcting "unacceptable" answers.[6] Table 4 —which, as it estimates the percentage of mothers for the total number of women, would be correct if those for whom there was no information were nulliparous (a hypothesis which would appear to be correct for the great majority of girls, but not all)— confirms the aggregate data showing that there has been an increase in adolescent maternity for the entire 15-19 age group and that this increase was most marked in the case of the youngest girls, especially in the 1992-2002 period, a particularly striking feature being the significant increase in the number of girls who were mothers at the age of 15.[7] An even more striking feature is that table 4 makes it possible to conclude that there was an increase in the probability of being a mother for all ages except the oldest (19), which undoubtedly supports the disturbing hypotheses that adolescent maternity is taking place at an increasingly early age. These results coincide with those presented by the INE (2000), although the indicator used in the latter publication was the specific fertility rate by simple age and the data came from vital statistics for the 1980-1998 period (INE, 2000, p. 3).

Table 5 shows calculations using the imputation procedure referred to above. The results slightly modify the picture given in table 4, since although they confirm an increase in adolescent maternity between 1982 and 2002, especially at the younger ages, in the period from 1992 to 2002 they show a situation of stability in which only the substantial rise in the level of maternity of girls aged 15 stands out (although the information on that age group suffers from problems in 2002, as already noted). These results must naturally be viewed in the light of the criteria used to obtain them, but they do

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[5] Table 3: $\left(\dfrac{77\ 291}{628\ 376 - 124\ 505}\right)*100.$

[6] A value of 1 or 0 was imputed to adolescents who did not answer this question when enumerated, using a simple algorithm whereby: i) if a girl was single, she was classified as having 0 children; ii) if she was married, cohabiting, separated or annulled she was classified as having 1 child. In addition, because of the errors displayed by the census, maximum values were fixed for the number of children that an adolescent could biologically have. The results were thus re-coded as follows: i) adolescents between 15 and 17 can declare a maximum of three children; ii) adolescents between 18 and 19 can declare a maximum of four children.

[7] This proportion was 6.3% in 2002, that is to say, three times the percentage registered in 1992. These figures will be reviewed later in the light of additional information, because they would appear to be affected by systematic errors in measurement which could possibly explain the large size of the increase (but not the upward tendency itself).

TABLE 4

**Chile, women between 15 and 19 years of age: Absolute and relative
figures (without correction or imputation) on maternity status,
by simple age, 1982, 1992 and 2002[a]**

Age	1982				1992				2002			
	Total	Mothers	Don't know/ don't answer	% of mothers	Total	Mothers	Don't know/ don't answer	% of mothers	Total	Mothers	Don't know/ don't answer	% of mothers
15	132 898	2 077	40 744	1.56	112 098	2 317	25 553	2.07	140 646	8 902	34 764	6.33
16	128 085	5 315	30 866	4.15	116 439	5 609	24 499	4.82	123 619	6 327	26 870	5.12
17	131 254	11 686	27 952	8.90	122 678	12 078	23 828	9.85	120 195	12 204	23 946	10.15
18	131 725	20 555	24 308	15.60	127 211	20 443	23 356	16.07	120 763	20 198	20 368	16.73
19	128 590	31 908	20 303	24.81	122 137	30 288	18 434	24.80	123 153	29 660	18 557	24.08
Total	652 552	71 541	144 173	10.96	600 563	70 735	115 670	11.78	628 376	77 291	124 505	12.30

Source: Special processing of census micro-data bases.

[a] The processing of micro-data gives data that do not coincide exactly with the data published by the INE in 1992 and 1982 (table 3). When the reasons for this discrepancy were investigated, it was found that in 1992 the INE placed all the answers "considered to be anomalous because they were too high" in the "don't know/don't answer" category: i.e., 15 years old with more than three children, 16 years old with more than four children, 17 years old with more than five children, 18 years old with more than six children, and 19 years old with more than seven children. In table 4 these cases (of which there were only a few in 1992) are included under the "mothers" category, because their marital and educational status is much more similar to that of girls with children: in other words, they gave inaccurate answers, but almost certainly had children. As regards the difference with 1982, this is because the INE publication used the filter question as to whether they had had children or not to identify "undeclared fertility", rather than the direct question about the number of children born alive which was used to obtain the data in table 4. Furthermore, a small number of cases (precisely the discrepancy between the official tabulation and the processed micro-data) where there was no answer to the filter question were classified in the "nulliparous" category in the question on the number of children born alive, without any explanation as to why this was done. At all events, the effect of this is irrelevant, since it refers to girls with "unknown fertility" and not to mothers, regarding whom the figures of the publication and the processed data coincide.

TABLE 5

**Chile, women between 15 and 19 years of age: Absolute
and relative figures on maternity status (with imputation
of maternal status to girls who did not answer or gave
anomalous answers), by simple age, 1982, 1992 and 2002**

Age	1982			1992			2002		
	Total	Mothers	% of mothers	Total	Mothers	% of mothers	Total	Mothers	% of mothers
15	132 898	3 058	2.30	112 098	5 012	4.47	140 646	11 331	8.05
16	128 085	5 761	4.50	116 439	7 959	6.84	123 619	7 392	5.97
17	131 254	12 465	9.50	122 678	14 320	11.67	120 195	13 316	11.07
18	131 725	21 554	16.36	127 211	23 332	18.34	120 763	21 472	17.78
19	128 590	33 322	25.91	122 137	32 636	26.73	123 153	31 271	25.39
Total	652 552	76 160	11.67	600 563	83 259	13.86	628 376	84 782	13.49

Source: Special processing of census micro-data bases.

confirm the main finding that adolescent maternity increased in Chile in the last 20 years and that this increase was most marked among the younger girls. Just as important as the relative proportion of mothers among adolescent girls (of the order of 13% in the census; see tables 4 and 5) —which could lead to hasty interpretations which assign less importance to early reproduction as a public policy issue, because it only affects a minority of girls— is the value registered for the 19 age group, which is the value that comes closest to the probability of becoming a mother in adolescence. According to this figure, at least one out of every four Chilean women has been an adolescent mother in the last two decades.

III

What is the nuptial context in which adolescent mothers have their children?

Historically, early maternity has been associated with a higher probability of occurring in an informal context (girls who are unmarried or merely cohabiting with a man) (Guzmán, Hakkert and others, 2001; Buvinic, 1998). The INE recently reconstructed fertility and maternity series by marital status of the mother which revealed that as many as 90% of 15 year old mothers are unmarried (INE, 2000, p. 4). As these figures are based on administrative records (vital statistics), however, they inflate the proportion of unmarried mothers because they do not recognize the status of common-law wife, which is taken into account in the census. In 1982 most adolescent mothers were married;[8] unmarried mothers accounted for 40% of the

total, but cohabitation was not frequent. In 1992, unmarried adolescent mothers were the majority among that age group, albeit only by a slight margin. By 2002, however, the change was already firmly established, since 55% of adolescent mothers declared themselves as unmarried[9] and those who were cohabiting outnumbered those who were legally married; indeed, only 17% of mothers between the ages of 15 and 19 were married (figure 3).

Figure 4 shows the evolution of the proportion of unmarried girls, by marital status, between 1982 and 2002. At all ages (except in the anomalous case of 15 year old girls in 2002) there was an increase in the proportion of unmarried girls among

FIGURE 3

Chile, girls between 15 and 19 years of age: Relative distribution by marital and maternity status, 1982, 1992 and 2002
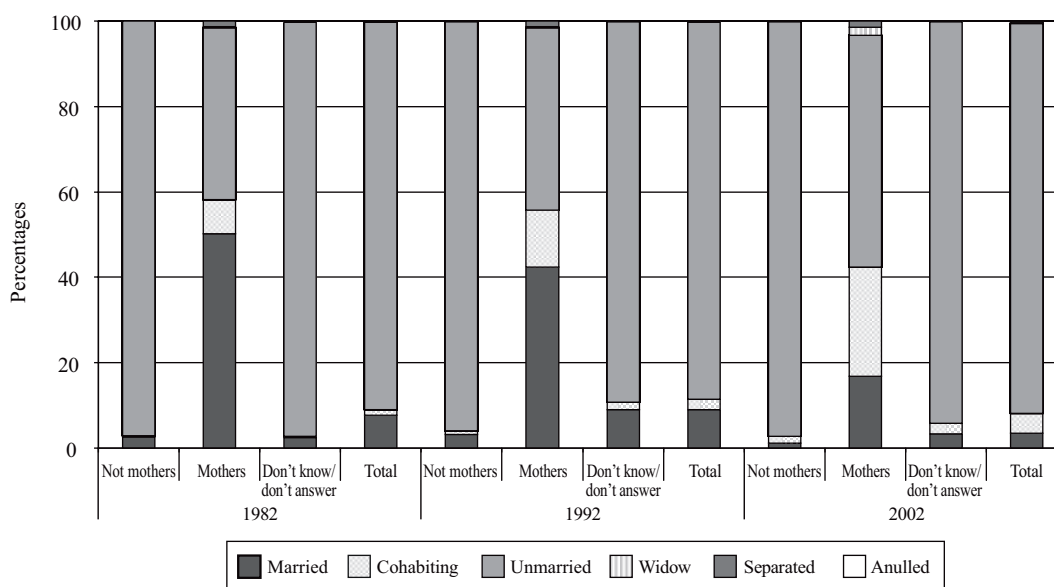
Source: Special processing of census micro-data bases.

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[8] Although not necessarily with the child's father.

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[9] This declaration does not mean that they had not been married but were no longer living with their husband at the time of the census. They could of course have cohabited with a partner at some point in their lives, but the census does not take this information into account.

FIGURE 4

Chile, girls between 15 and 19 years of age: Proportion of unmarried girls, by maternity status and simple age, 1982, 1992 and 2002
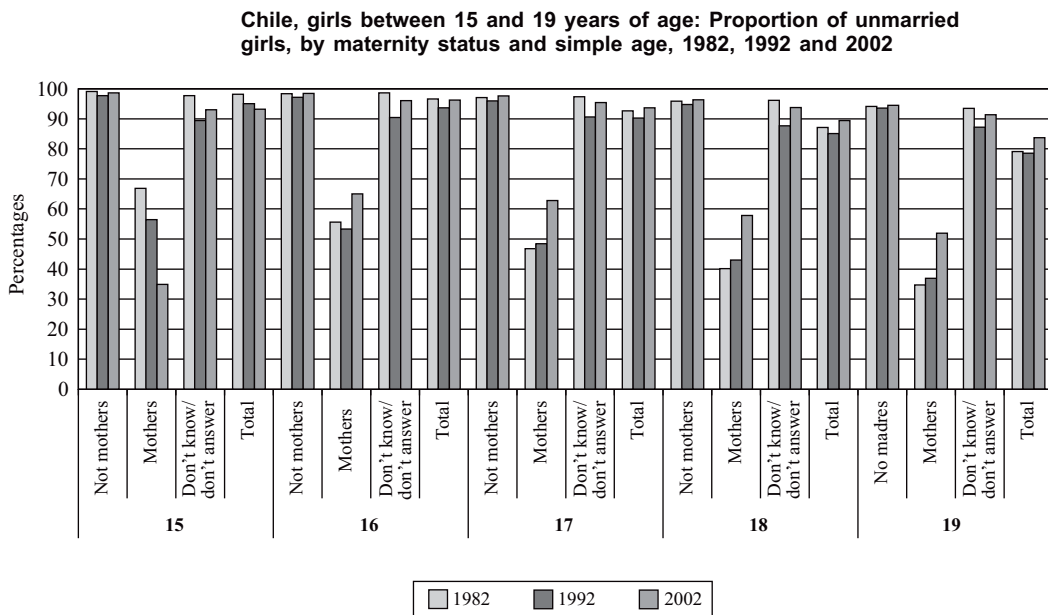
Source: Special processing of census micro-data bases.

adolescent mothers, which rules out the possibility that the evolution of the aggregate figures in figure 3 is due in some way to the age structure. It may also be noted that the earlier maternity takes place, the more likely it is that it will occur out of wedlock[10] (figures 3 and 4).

IV

Where do adolescent mothers live, and what do they do: emancipation or confinement?

Maternity involves a change of status for adolescents. When a traditional pattern prevails, this change is associated with nuptiality or is the result of it, and it therefore leads to the formation of a new household, sometimes in a dwelling other than that of the couple's parents, and other times in the dwelling of one of them. The form of adolescent maternity which is emerging, and which was described in the previous section, however, gives rise to a whole new scenario for girls who have children. This is because the lack of a stable partner makes it hard to think that pregnancy will lead to the formation of a family and/or independence of the household of origin. For these reasons, these girls must look for support elsewhere, which, according to the classic distinction of Esping-Andersen (1999), may

be: i) the family, which offers shelter and care, devotes time to looking after the child, and provides resources; ii) the State, which combats discrimination, provides schools, day nurseries and counselling services, grants benefits and defines guarantees; and iii) the market, which offers employment.

Figure 5 presents striking evidence on the support received by adolescent mothers: as might be expected, there is a differentiation between mothers and , since

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[10] "Out of wedlock" is not the same as absence of the father, because although for some adolescent couples maternity/paternity has nothing to do with being married or living together, this does not mean that there are no links of affection or that the couples do not see each other regularly (Buvinic, 1998, p. 5).

FIGURE 5

**Chile, girls between 15 and 19 years of age: Relative distribution
of position occupied in the household, by maternity status, 1992 and 2002**
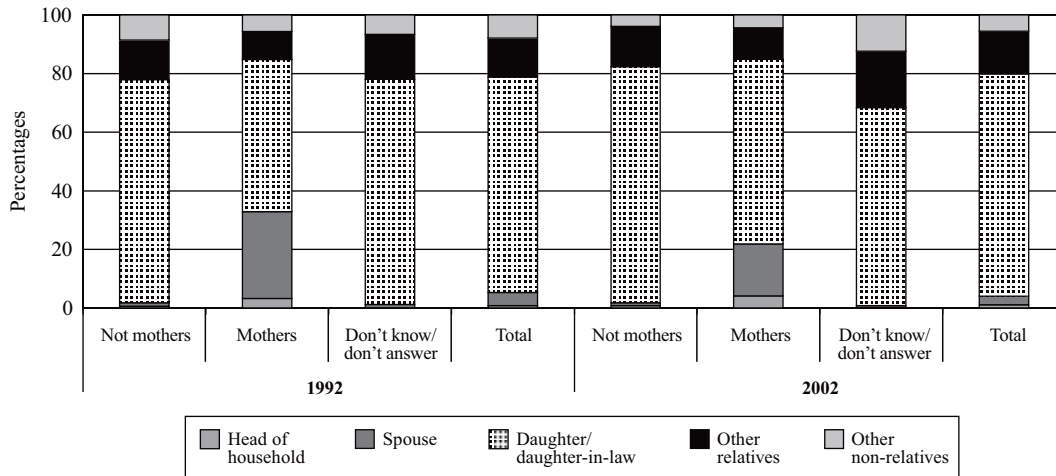
Source: Special processing of census micro-data bases.

the latter, almost without exception, live with their parents or other relatives, while a proportion of the former have formed an independent household (although not necessarily a dwelling of their own). The conclusion which emerges from those data, however, is that the family of adolescent mothers is the main source of support for bringing up their children. Thus, most of them live with their family or their partner's family, as shown by the fact that the predominant relationship to the head of household is that of daughter or daughter-in-law, and the most frequent place of residence is with the girl's family. Setting up an independent household seems difficult, since in 2002 there were more adolescent mothers living in the household of some secondary relative or non-relative (taken together) than those living in a household headed by the girl's spouse (figure 5). As might be anticipated, the earlier a girl's maternity, the more important is the role of the family of origin; even so, the majority of mothers aged 19 live with their parents or in-laws (figure 6).

The trend data (2002-1992) reveal that the role of the family as the place where adolescent mothers are taken in is increasingly important, which is connected with the already noted increase in unmarried adolescent motherhood (figures 5 and 6). In other words, the family of origin seems to fill, at least in part, the empty space left by the absence of the girl's partner. This statistical observation does not permit a more specific assessment of the effective support given by the family

to adolescent mothers and their children; the census data only show that the family provides food and lodging, but do not provide information on other forms of support such as the time devoted to looking after the children, transfers of resources, affection and care. More precisely focused research —some of it qualitative rather than quantitative— is needed to determine the exact role of the family in the development of the adolescent mother and her child.

The important support given by the family, however, does not seem to be sufficient to enable the girls to reconcile their duties in bringing up their children with school attendance or employment. Figure 7 is expressive in this respect, since according to the 2002 census the probability of studying full-time goes down from 80% for girls between 15 and 19 who have not had children to only 20% for those who have. Dropping out of the school system does not make adolescent mothers more likely to participate in the labour market, however: their daily activities correspond mostly to housework, which strengthens the hypothesis that early maternity simultaneously obstructs both education and employment. The evidence therefore indicates that early reproduction is associated with dropping out of school —in a complex relationship which will be explained below— but not with entry of the girls into the labour market (ECLAC/OIJ, 2004 and 2003; Rodríguez, 2004; SERNAM, 2004).

Examination by simple ages makes it possible to refine the analysis, because the universal educational

FIGURE 6

Chile, girls between 15 and 19 years of age: Relative distribution of position occupied in the household, by simple age and maternity status, 1992 and 2002
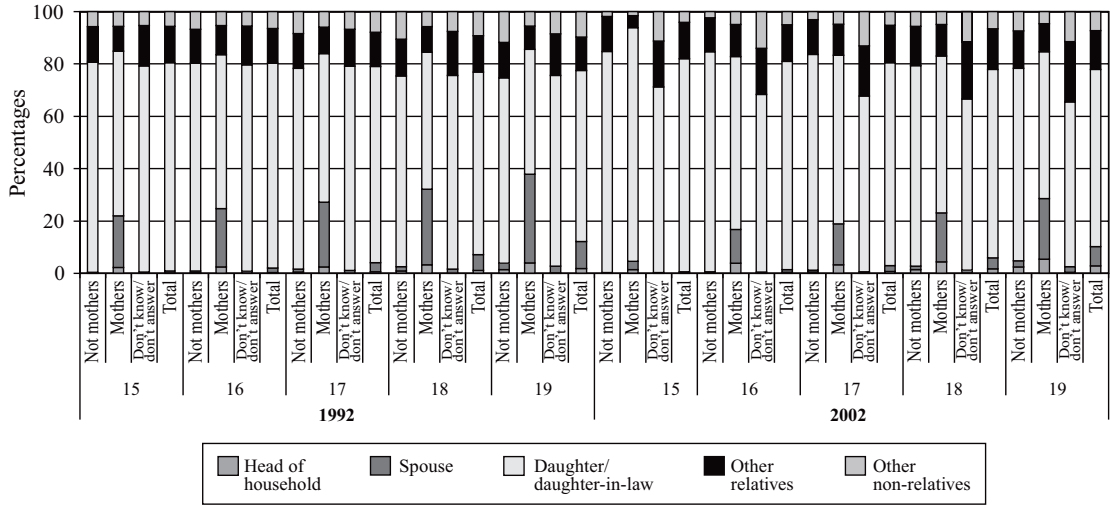
Source: Special processing of census micro-data bases.

FIGURE 7

Chile, girls between 15 and 19 years of age: Relative distribution of economic activity, by maternity status, 1992 and 2002
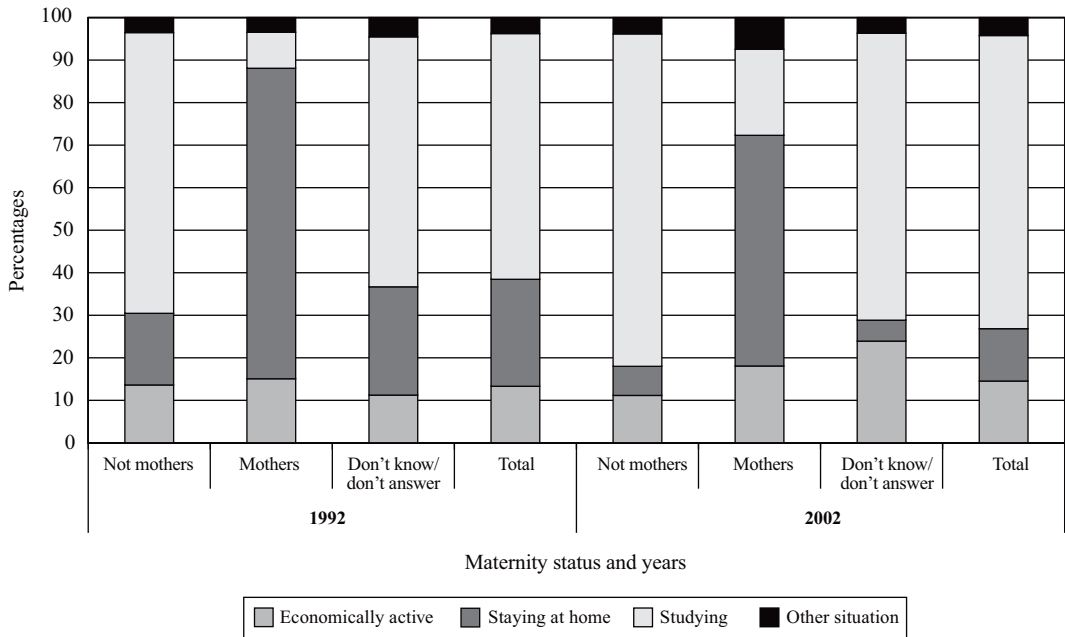
Source: Special processing of census micro-data bases.

process only extends to the end of secondary education, i.e., up to 17 or 18 years of age. Consequently, in the 15 to 19 age group there are different situations as regards the educational path completed. Figure 8 shows this information and presents some important findings. It confirms the pattern which distinguishes between adolescent mothers and : the former have a much greater likelihood of dropping out of the school system and devoting themselves solely to housework.[11] According to the 2002 census, 85% of girls aged 17 who have not had children are studying, whereas among girls of that age who have children the proportion is only 30%. It may be noted that the gap between the two groups is due to the fact that 17 year

old mothers are ten times more likely to be engaged solely in housework than girls of the same age who are not mothers, and they are only twice as likely to be economically active. Thus, there is no doubt that adolescent maternity tends to cause girls to tackle the problem of raising their children by devoting themselves solely to housework rather than working, even though, in principle, the support of their families would make possible a redistribution of responsibilities which would give adolescent mothers time to take a job. Indeed, when a comparison is made between mothers and aged 19 —an age when most girls are no longer studying— the former still have a higher probability of not being economically active (figure 8).

FIGURE 8

Chile, girls between 15 and 19 years of age: Relative distribution of economic situation, by simple age and maternity status, 1992 and 2002
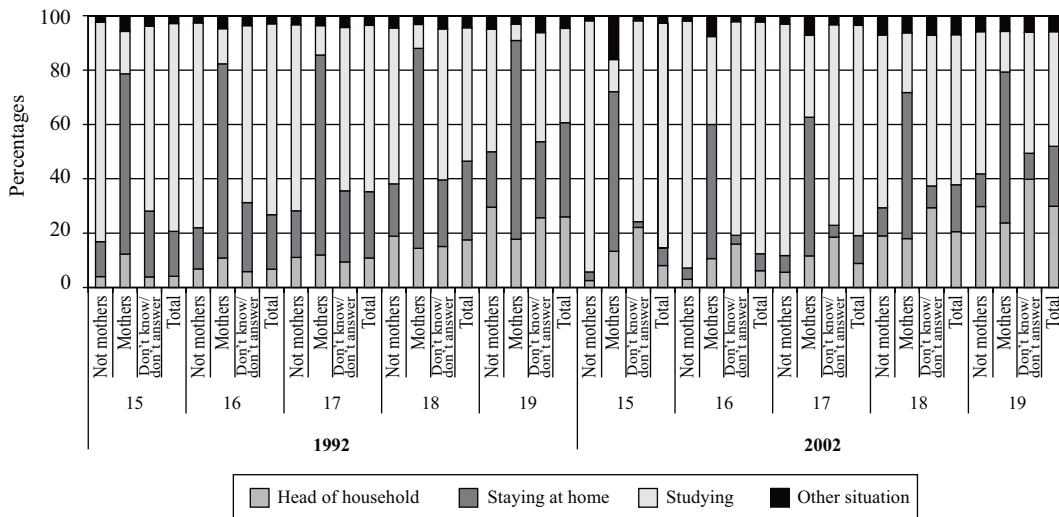
Source: Special processing of census micro-data bases.

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[11] The three censuses may present problems as regards the status of student. It is not possible to use the direct question on school attendance, because this question was not included in the 1992 and 2002 censuses. The question on the kind of activity carried out was therefore used, because this question figured in all three censuses and included the status of "student" among the possible answers. According to the census enumerators' manuals, the information collected in this respect is comparable, because all three censuses register the main activity of the persons enumerated in the week

before the census. The drafting and possible alternative answers in the 1992 census are different from those of the 1982 and 2002 censuses, however. Thus, in the 1992 census the question does not make it clear that it is about the "main activity", and moreover the possible answer refers to "studying but not working". The practical consequences of these differences are relatively predictable (a proportion of students who are classified as working, because they worked during part of the week, thus increasing the numbers of dropouts) but impossible to estimate accurately.

V

Adolescent maternity, school career and incidence of dropping out: areas of light and shadow

The figures presented above clearly suggest that early maternity is not very compatible with school attendance. The data in figure 9 confirm the previous findings, because they show that, systematically, adolescents who have had children are much more likely to be outside the school system: in 2002, only one out of every five adolescent mothers still attended school, whereas among those who had not had children, the proportion was four out of every five. This is particularly important in the case of girls of 16 and 17, because at that age they should be completing the

last two grades of secondary education, and the fact that they are not studying suggests that they have not reached the levels of compulsory education laid down in the law and considered to be minimum levels by present-day society and the labour market. In this age group,[12] maternity is associated with a probability of being outside the school system which is five times greater, and indeed, only 21% of mothers in this age group are still studying (figure 9).

Nevertheless, the results shown in figure 9 provide important information on the evolution of the status of

FIGURE 9

**Chile, girls between 15 and 19 years of age who no longer study,
by simple age and maternity status, 1982, 1992 and 2002**
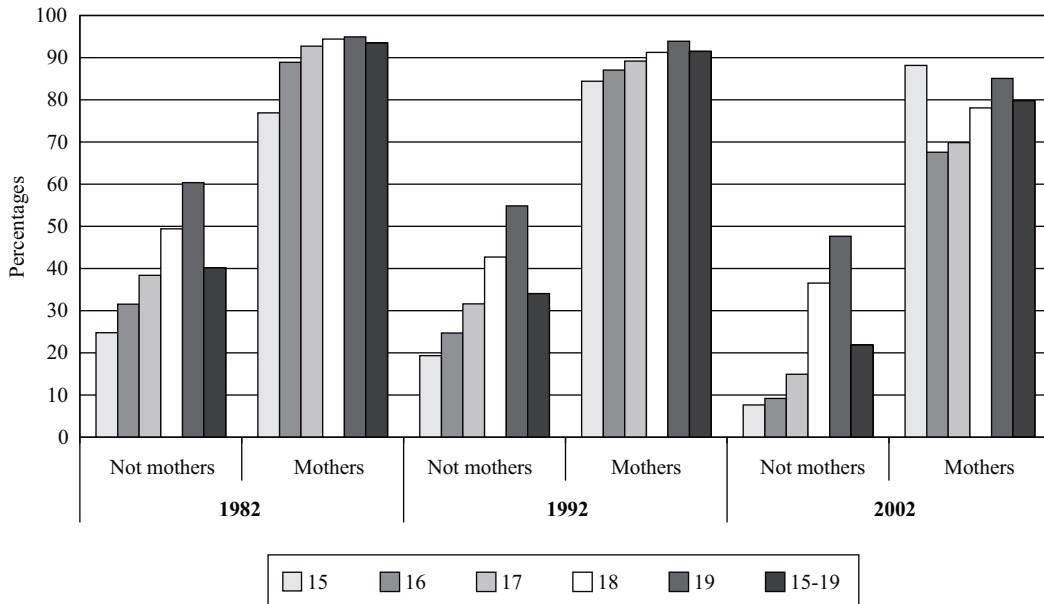
Source: Special processing of census micro-data bases.

[12] The ages of 16 and 17 were selected because the behaviour of 15 year old mothers is anomalous, while at the age of 18 the girls in question should normally have completed their secondary education

and ceased to study, without being dropouts. This is clear because of the jump registered in the 2002 census, between the age of 17 and 18, in the proportion of who no longer study (figure 9).

student among adolescent girls, the sustained increase for both mothers and nulliparous girls being particularly noteworthy. Thus, for nulliparous girls between 15 and 19, the probability of not being a student went down from 40% in 1982 to nearly 20% in 2002. In 1982, in contrast, the incompatibility between being a mother and continuing to study was almost total, with less than 10% of adolescent mothers continuing their studies. In 2002, however, the corresponding figure was slightly over 20%, and in the age groups where girls should normally have completed the 12 years of compulsory education, that likelihood was over 30% (figure 9).

Although it is strong, the above evidence is not in itself sufficient to conclude that early maternity is the reason why girls cease to study. There is much discussion on this possible relationship, because there are specialized studies in the region which suggest that in most cases girls drop out before they become pregnant. This discussion is in full progress in Chile, although the evidence available for contrasting the two positions empirically is only weak (Molina, Ferrada and others, 2004). Thus, some recent studies have arrived at controversial findings on the basis of samples which are not representative of adolescent boys and girls (Paz Ciudadana, Adimark and others, 2002), while other studies based on small samples give estimates that vary considerable (Molina, Ferrada and others, 2004). A more robust finding is that of the national economic and social profile survey (CASEN) carried out in 2000, according to which not more than 20% of female dropouts were due to pregnancy or maternity (www.mideplan.cl/sitio/Sitio/estudios/documentos/desercion19.pdf). This finding is corroborated by the Third Youth Survey, in which only 10% of young people who no longer studied declared that the reason was maternity or pregnancy.[13]

The census does not ask about the date of dropping out, or about whether the girl in question was pregnant or had given birth when she dropped out. By using the notion of the educational path as an analytical and operational tool, however, it is possible to go more deeply into this matter. In view of the tentative nature of this analysis and its contribution in terms of policy, only the results obtained with the 2002 census will be given. The notion of the educational path has been used

in previous studies (Rodríguez, 2004) in order to gain a first approximation to the relation between dropping out and pregnancy. This notion is defined according to a simple algorithm which links the age of the person in question and the grade reached, on the understanding that there is a "normal" path in line with which it may be expected that at a given age the person will have reached a certain school grade. In order to facilitate the calculations, the age of 17 was used, and only girls with known maternity status were taken into account. Three categories of educational path are defined: seriously behind (less than eight years' schooling), moderately behind (eight or nine years' schooling) and normal (ten or more years' schooling).[14]

A first result is given in table 6, which, taking advantage of one of the strong points of the census, also includes absolute figures. As might be expected, the educational profile differs significantly between mothers and non-mothers, to such a point that the educational category of "seriously behind" predominates among the former, whereas it is registered only to a marginal extent among non-mothers. This latter finding contributes, although only indirectly, to the discussion on the order in time of the relation between pregnancy and dropping out. Thus, if a girl has not managed to complete her basic education by the age of 17, there is a high probability that she is a dropout;[15] furthermore, in view of her age when the census was taken and the grade reached, it may be estimated that on average she dropped out of the school system between three and four years before the census, that is to say, when she was between 13 and 14. Moreover, the great majority of 17 year old mothers have children under two years of age: that is to say, they were mothers after completing the age of 15. It may be deduced from the foregoing that it is very likely that it is a question of dropping out before becoming pregnant. In the case of the "moderately behind" category, it is difficult to arrive at a tentative conclusion on the order of events. In the case of the "normal" category, in contrast, there

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[13] Strictly speaking, these data do not refer to dropping out from school, because they include young people who are no longer studying because they have completed their secondary education (www.injuv.gob.cl/cedoc_archivos/estudios/Tercera_encuesta.pdf).

[14] The years of schooling is a variable constructed on the basis of two questions which are systematically repeated in the three censuses used in this study: the last grade reached, and the educational level attained. Thus, a value of 12 corresponds to a person who has completed the fourth year of secondary education and who may have finished his or her education at that point or may be continuing to study in the first year of the tertiary level (university or technical college) or the so-called "fifth year" of technical or professional secondary educational establishments.

[15] Indeed, the census data themselves confirm this hypothesis: in 2002 only 392 of 5,049 mothers aged 17 with a "seriously behind" educational path were still studying.

TABLE 6

**Chile: Girls aged 17, with known maternity status,[a]
by educational path and maternity status, 2002**

(Absolute and relative figures)

Educational path	Number			Relative structure (%)		
	Non-mothers	Mothers	Total	Non-mothers	Mothers	Total
Seriously behind	7 919	5 049	12 968	9.4	41.4	13.5
Moderately behind	18 966	4 029	22 995	22.6	33.0	23.9
Normal	57 160	3 119	60 279	68.0	25.6	62.6
Total	*84 045*	*12 197*	*96 242*	*100.0*	*100.0*	*100.0*

Source: Special processing of census micro-data bases.

[a] Excluding girls of unknown maternity status.

FIGURE 10

**Chile: Girls aged 17, with known maternity status, by probability
of still studying, according to educational path and maternity status, 2002**
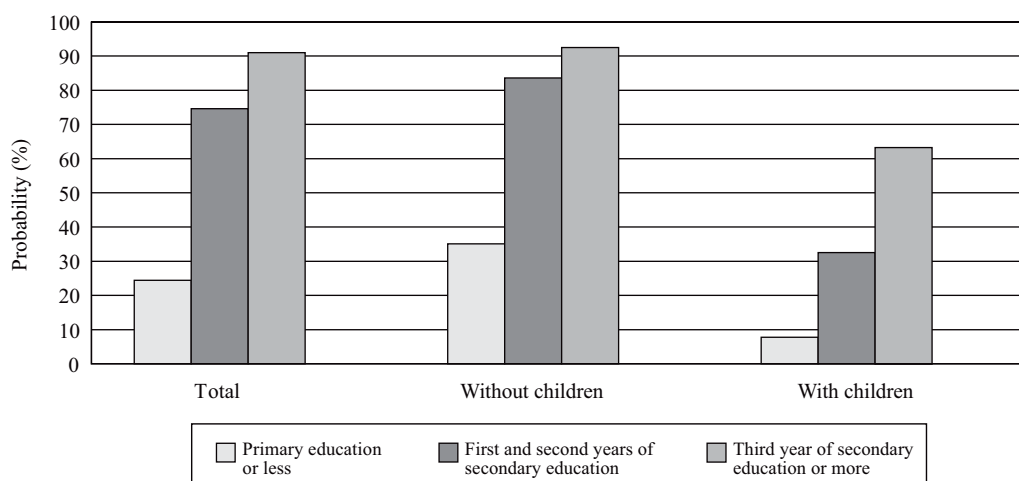
Source: Special processing of census micro-data bases.

is a high possibility that dropping out (which affects only 40% of adolescent mothers of that age and educational path) will have been due to pregnancy. In short, two tentative conclusions may be drawn: i) the case of dropping out and later pregnancy seems more frequent than the opposite case; ii) a "normal" educational path considerably increases the probability of staying in school after pregnancy. This is confirmed by figure 10, which shows that in the "seriously behind" category dropping out takes place almost independently of whether the girl is a mother or not, while among mothers of 17 in the "normal" category the likelihood of staying in school is twice that of girls in the "moderately behind" category, and seven times

higher than that of those who are seriously behind (see figure 10).

Finally, figure 11 completes the picture on the relation between educational path, type of activity, and adolescent maternity: among girls who are seriously behind educationally, maternity does not predispose them to greater participation in the labour market but leads them basically to carry out housework, probably in tasks connected with bringing up their children. This latter finding does not coincide with previous studies, such as that of Buvinic (1998), and reveals the cumulus of disadvantages that affect poor girls, for whom maternity coincides both with dropping out of school and remaining outside the labour market.

FIGURE 11
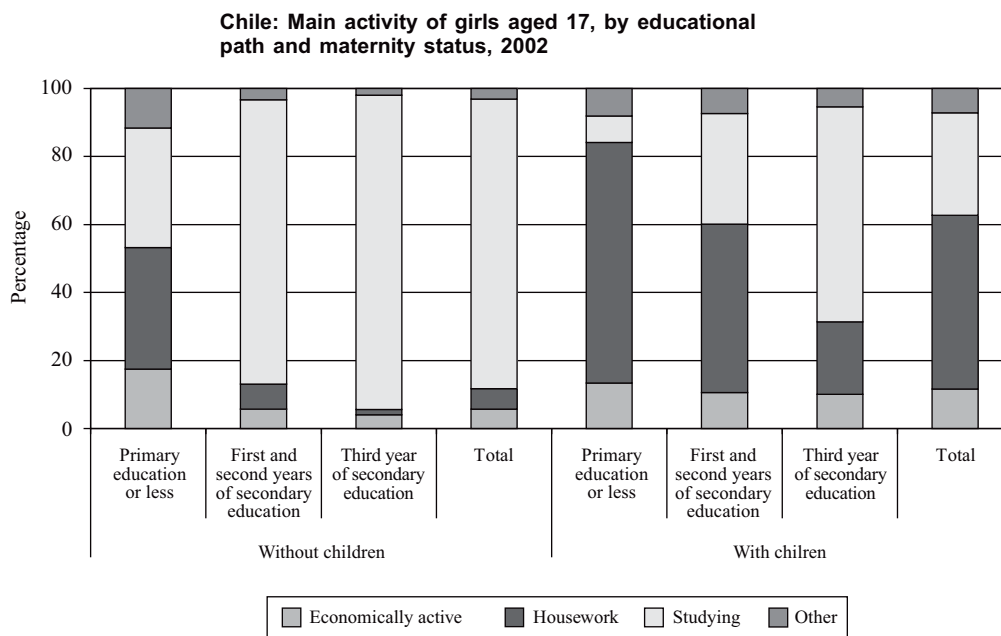
Chile: Main activity of girls aged 17, by educational path and maternity status, 2002

Source: Special processing of census micro-data bases.

FIGURE 12

Chile: Girls aged 17, by main activity, according to educational path and maternity status, 2002[a]
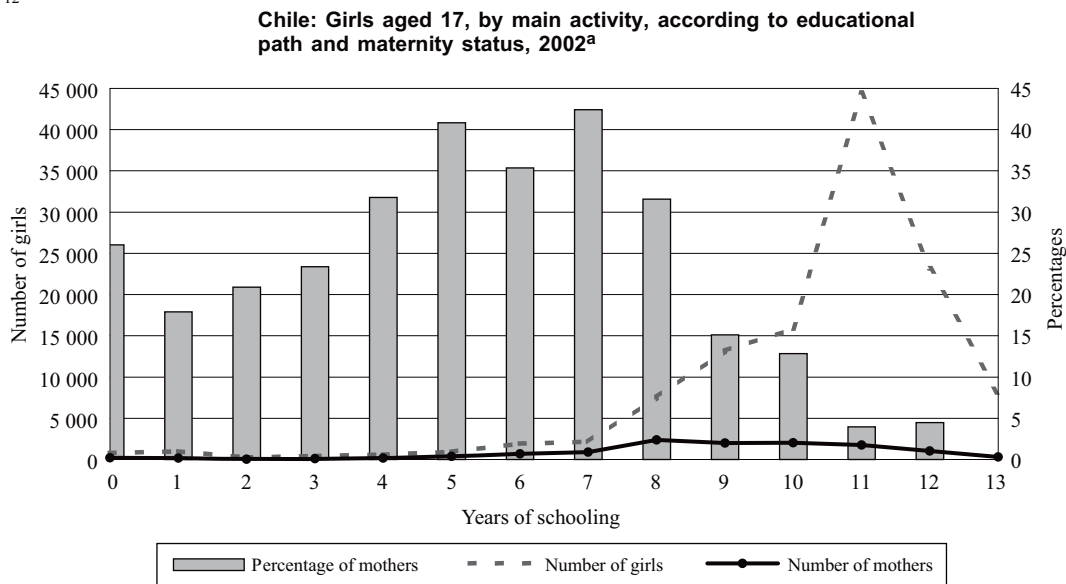
Source: Special processing of census micro-data bases.

[a] The probability takes account of all the girls in the age group, i.e., it imputes zero children to those who did not answer the question on the number of children born alive. The trends remain the same even if only the girls who answered are taken into account.

Two important results should be mentioned here: i) whereas the majority of 17 year old girls have already completed the third year of the secondary cycle and are probably studying in the fourth year or even higher levels, 57% of mothers[16] have not completed the second year, the modal frequency being the eighth year of primary education; that is to say, while adolescent mothers have less schooling than the average, they are far from being uneducated or poorly educated; ii) the probability of having been a mother at the age of 17 is closely linked with the level of schooling of girls, but this relation is not linear, since three groups must be distinguished: those who have not completed the fourth year of primary education (a probability of 26% or less); those who have completed between the fourth and eighth years of primary education (a probability of 30%, rising to 42.4% for those who completed only up to the seventh year of primary education; and those who have completed the first year of secondary education (nine years' schooling) or have completed higher levels of education, for whom the probability is 15% or less, sinking to less than 5% for those who

have completed the third year of secondary education or have even higher levels of schooling (see figure 12). It may thus be concluded that, in spite of the persistent and undeniable association between greater education and a lower probability of being an adolescent mother, there are signs that the completion of more years of schooling does not have a continuous protective effect against early maternity, since girls who have completed between four and eight years' schooling by the age of 17 are more exposed to the risk of being adolescent mothers than those with less schooling. In other words, it is necessary to have passed a certain threshold of accumulation of schooling in order to the protection against pregnancy to become active. This latter finding should be interpreted with caution, however, because there are very few girls with less than four years' schooling, and there are indications that some of them correspond to special cases of cutting short of the educational path simultaneously linked with a smaller probability of becoming a mother (disabling illnesses and/or accidents, severe learning retardation, etc.).

VI

Poverty and adolescent maternity: continuity and change of a historical relationship

The probability of being a mother at an early age is not distributed randomly among the socio-economic groups, since it is higher among the poor, excluded or socially disadvantaged groups. Using as a socio-economic stratification variable a simple equipment index which makes it possible to segment households into specific socio-economic terciles for urban and rural areas, it is found that in these situations girls in the bottom tercile have a much greater likelihood of having had children at all the ages covered by the term "adolescence". Approximately 50% of the girls in the bottom socio-economic tercile in rural areas had their first child before they were 20, while this situation only affected less than 15% of girls in the top urban tercile. It should be noted that the gaps are only moderate

because of the use of terciles based on a socio-economic equipment index as socio-economic categories. If the distinction had been the classic one between indigent, poor and non-poor persons (ECLAC, 1998) the disparity would have been greater.

It should also be noted that this difference in terms of adolescent fertility is observed even though in Chile there has tended to be convergence among the socio-economic groups in this respect. According to indirect estimates made with the P/F procedure (Brass, 2002), women without education had a total fertility rate (TFR) of 2.5 children; those with between 1 and 8 years' schooling had a TFR of 2.8 children; those with between 9 and 12 years' schooling had a TFR of 2.5 children, and finally, women with 13 or more years' schooling had a TFR of 1.8 children.[17] Comparison of figures 13 and 14,

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[16] Exactly 57% of them have only completed the first year of secondary education (a value of 9 for the schooling variable) or even less. This information is given because figure 11 does not make this clear visually.

[17] These differences were much more marked in 1982, when the respective TFRs were 4.1, 3.7, 2.5 and 2.1 (calculations based on census micro-data, using Brass's indirect P/F method of estimation).

FIGURE 13

Chile: Girls between 15 and 19 years of age, by simple age and probability of having had one or more children, according to socio-economic tercile and area of residence, 2002
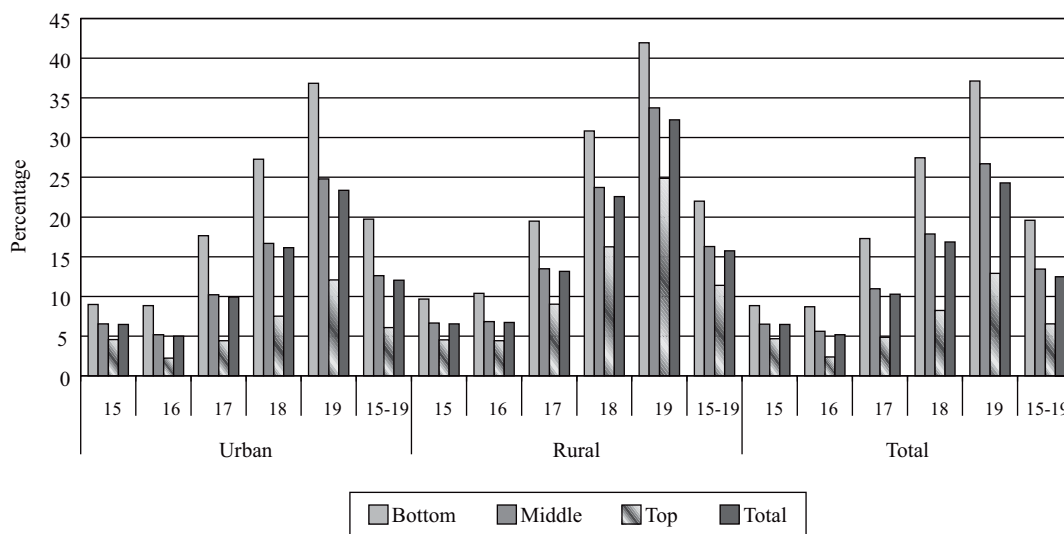
Source: Special processing of census micro-data bases.

FIGURE 14

Chile: Girls between 15 and 19 years of age, by simple age and probability of having had one or more children, according to socio-economic tercile and area of residence, 1992
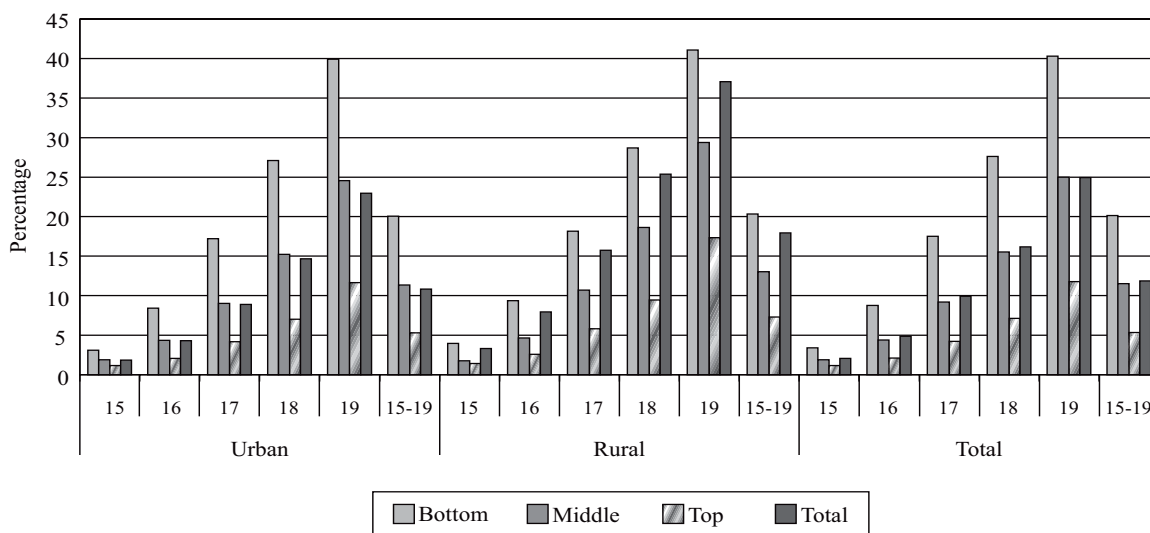
Source: Special processing of census micro-data bases.

in contrast, suggests that the differences between social groups in terms of adolescent maternity remained practically unchanged between 1992 and 2002; if we consider only the group of 19 year old women, for which the figure comes closest to the probability of having children during adolescence, there was a slight decline

in the bottom tercile (from 40% in 1992 to 37% in 2002), a slight increase in the middle tercile (from 25% in 1992 to 27% in 2002), and a slight rise in the top tercile also (from 11% in 1992 to 13% in 2002). In short,

while the disparities in intensity of reproduction between socio-economic groups have lessened, this has not occurred in terms of the age of first pregnancy, which continues to be much earlier among poor girls.

VII

On the determinants of adolescent pregnancy: a first approximation

The factors influencing the probability of being an adolescent mother have undoubted socio-economic dimensions: poverty, exclusion, and lack of options. These interact with other factors to configure both the specific forms of reproductive conduct of each adolescent and the aggregate trends formed by those individual forms of behaviour. Among these other factors are:

a) *psychological factors*, that is to say, personality traits to which surveys and censuses devote little or no attention, so that there is a serious lack of information on their large-scale action;

b) *individual factors*, i.e., personal attributes acquired in the socialization process which affect a person's conduct, such as religion;

c) *family factors*, which concern the domestic environment in which boys and girls live and which influence them through the models of conduct they provide, the limits they lay down, the rules they provide, and the forms of control they exercise;

d) *cultural factors*, which have various aspects: i) the traditions which affect adolescent maternity because they promote and/or accept early unions; ii) marginality, which may be directly linked with the exclusion and poverty already mentioned and which tends to make adolescent reproduction more frequent in a context of little supervision (parental, institutional or in health matters), and the lack of options other than that of early maternity; and iii) sexual tolerance, specifically in terms of pre-marital sexual initiation (although not necessarily at an early age), which, if not associated with greater tolerance of and access to contraceptive means (truncated sexual modernity), can favour adolescent maternity;

e) *political and institutional factors*, especially programmes, organizations, actions, laws and

regulatory frameworks which affect adolescents and define the forms of conduct permitted for them, and

f) *the mass media*, whose messages about eroticism, affection and sexuality are a powerful influence on boys and girls.

Disentangling the way these factors affect individual forms of behaviour is a task which is still outstanding and is outside the scope of this article. At all events, these are ultimate determinants, since, as laid down in the "framework for intermediate fertility variables" (Bay, del Popolo and Ferrando, 2003; Bongaarts, 1978), there is a set of "proximate fertility determinants" which are those that directly define the probability of having a child and the aggregate fertility trends. These proximate determinants are connected with biological conditions (fertile stage of life, total or transitory sterility, as usually occurs during breast-feeding, propensity for multiple pregnancies, etc.); with sexual behaviour (initiation, regularity, total or temporary abstinence for cultural reasons, etc.), which has historically been closely linked with patterns or formation and dissolution of unions; with contraceptive practices (initiation, regularity, efficiency and type of method), and with the frequency of spontaneous or induced abortion.

Adolescent fertility is directly affected by five proximate determinants: i) the age of menarche, ii) the indices of infertility, iii) the patterns of sexual initiation and activity, iv) the patterns of contraceptive use, and v) the indices of spontaneous or induced abortion. The first two are generally not taken into consideration because they do not help much to explain cross-sectional (between socio-economic groups) or longitudinal (evolution over time) differences in fertility. The third determinant is usually replaced by patterns of union, on the assumption that this information is easier to obtain. The last two

determinants are of crucial importance, mainly because they tend to prevail over the rest in present-day societies. In other words, when efficient contraceptive use is high, regular and begins at an early age, most couples will have the number of children they want. Consequently, the direct causes why adolescent fertility resists going down in Chile should be sought in the evolution of these proximate determinants. Unfortunately, there is no single, reliable and suitable source of information for obtaining these data; indeed, in the case of some of them (such as induced abortion) there are not even any reliable estimates, because induced abortion, for example, is a criminal offence under present Chilean law in any circumstances.

Nevertheless, there are some indications that allow the situation to be clarified a little more. Firstly, there is no reason why Chile should be an exception to the long-standing trend towards earlier menarche and an increase in the biological reproductive capacity of adolescents (Silber and Castells, 2003, p.24), although, because of the small number of births before the mother is 15, this tendency can hardly explain the evolution of adolescent maternity. Secondly, the pattern of union shows signs of becoming increasingly late, which likewise reduces its importance as a factor explaining adolescent fertility trends, because this

increasing lateness should cause adolescent fertility to be going down. Thirdly, the few nationwide studies on sexual and contraceptive patterns suggest that: i) over the last 60 years the age of sexual initiation has remained relatively stable, with a median for women going down from 21.3 years of age (for the cohort born between 1944 and 1948) to 18 years of age (for the cohort born between 1979 and 1980), although the youngest generations seem to be initiating their sexual life earlier (CONASIDA, 2000, pp.154-158; INJUV (undated), p.13); ii) men typically declare an earlier age of sexual initiation, although the differences between the sexes in this respect have tended to go down (INJUV (undated), pp.16-17); iii) there has been a considerable increase in the proportion of girls and boys who take contraceptive precautions in their sexual initiation: for example, in the year 2000 one out of every four women with sexual experience between 18 and 24 years of age had done so, compared with only six out of every hundred women aged between 45 and 69 in the same year; iv) in spite of this increase, contraceptive use among adolescents continues to be low, so that most adolescent girls are exposed to the risk of becoming pregnant.

In short, the earlier age of sexual initiation seems to offset the higher levels of contraceptive use in the

FIGURE 15

Ibero-America: Percentage of girls who used modern contraceptives in their first intercourse, [a] various years between 1991 and 2000
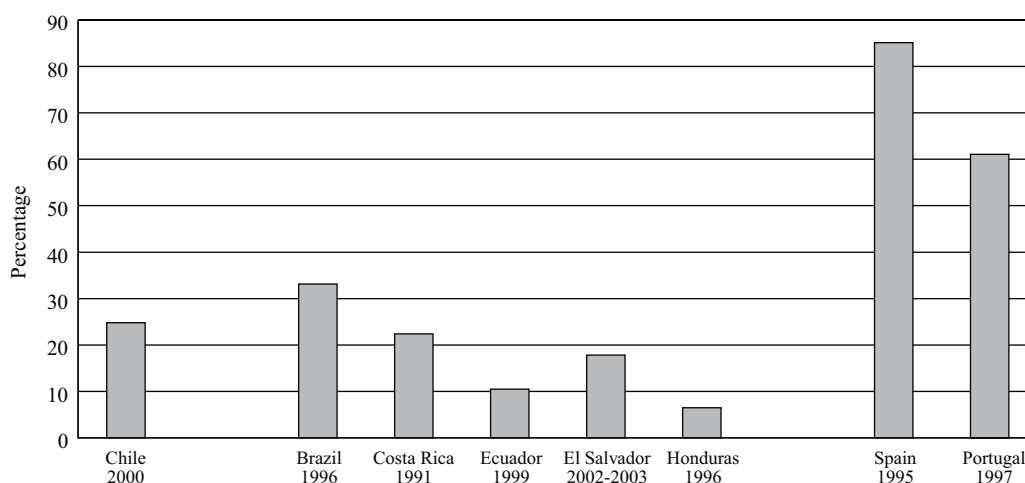
Source: Spain and Portugal: United Nations, Fertility and Family Surveys (various years). Latin American countries (except Chile and El Salvador): CEPEP/USAID/CDC (1999, p.72, table 7.13). El Salvador: ADS/CDC (2003, p.200, table 9.12). Chile: CONASIDA (2000, p.158).

[a] In Spain, the figures refer to the 18-19 age group, in Portugal to the 20-24 group, in Chile to the 18-24 group, and in the rest of the Latin American countries to the 15-24 age group.

first union. Moreover, this figure does not make it possible to estimate if contraception is practiced regularly once sexual life has been initiated, or if contraception is practiced carefully and efficiently. Recent data indicate that nearly 35% of persons between 15 and 19 years of age in 2003 did not use contraceptive protection in their last sexual intercourse and that 6% used unsafe forms such as *coitus interruptus* (INJUV (undated), pp.16-17). This tension between earlier sexual initiation and a pattern of contraception use which is not spreading as strongly or being used as regularly by adolescents (figure 15) is the reason for the persistent levels of adolescent maternity described in this study.

Unlike what happens with respect to general reproduction trends in adolescence, patterns of union do appear to have a relation with the economic and social disparities of adolescent maternity. Thus, the census evidence suggests that historically girls from the lower strata have had a tendency to enter into a union

(marry or cohabit) earlier, which favours earlier reproduction (ECLAC/OIJ, 2003). The high and growing frequency of maternity outside a stable union, however, suggests that the main factor differentiating between the socio-economic groups lies in their sexual and contraceptive conduct. Although the empirical evidence in this respect is not systematic, the survey carried out by CONASIDA in 2000 shows that sexual initiation takes place earlier among girls who have less education and/or belong to the lower strata; thus, the upper middle socio-economic group has a median initiation age of 19.4 years compared with 17.9 years for the low socio-economic group (CONASIDA, 2000, p.161). Unfortunately, the publication in question does not offer information on social inequalities as regards contraceptive use and still less as regards the use made of abortion, but in view of the characteristics of contraceptive supply in Chile it is probable that contraceptive use among sexually active adolescents is lower in the lower socio-economic groups.

VIII

Final analysis: policy inputs

In view of all the foregoing —adolescent maternity which resists going down; the increase in adolescent maternity among single girls; the much higher probability that adolescent mothers will be outside the school system and engaged basically in housework; the transfer to their parents of responsibility for bringing up the children of these girls, and the much higher probability that poor adolescent girls will be mothers before they are 20— there can be no doubt that adolescent pregnancy and maternity should be among the highest-priority items on the social agenda and should be the subject of coordinated public programmes. Indeed, the persistence of a high level of adolescent fertility may even erode the benefits of the decline in total fertility. In this respect, in policy formulation it is important to note that adolescent reproduction does not display the usual patterns of relation with the intermediate variables. This fact confirms the appeal made in the Programme of Action of the International Conference on Population and Development for governments, in collaboration with non-governmental organizations, to "meet the special needs of adolescents and to establish appropriate

programmes to respond to those needs" (http://www.unfpa.org/icpd/icpd_poa.htm#ch7e) and calls for a special effort to draft and implement measures that recognize the special features of adolescents of both sexes, especially as regards their conduct in terms of sexual behaviour at the level of the couple, and practices of self-care and protection.

A second important item to be taken into account in policy formulation concerns the distinction between at least two forms of reproductive behaviour in adolescence. The more traditional form has cultural roots which are difficult to remove, but measures designed to postpone unions and, above all, to expand the coverage of sexual and reproductive health services among girls who have established a union (assuming that procreation in these contexts takes place within unions) can give results in terms of both the age of initiation and the intensity of fertility. The form of reproductive behaviour connected with what has been called "truncated modernity" in this study, for its part, demands rapid and broad-ranging action. The most direct forms of this action concern education and the encouragement of responsible forms of conduct, both

to postpone the age of sexual initiation and to take contraceptive measures from the very beginning. In order to achieve this latter objective, education alone is not enough: it is necessary to bring closer to adolescents services in the areas of counselling, specialized support, and distribution of contraceptives (and training in their regular and proper use).

A third contribution which the present study seeks to make to policy formulation is the updating of the role of the school system and education in general with regard to reproduction during adolescence. Thus, there is evidence of a certain loss of influence of education as a factor protecting against adolescent maternity. At the aggregate level, this is linked with the lack of a direct connection between adolescent maternity (which has remained constant or risen slightly over the last 20 years) and the average level of schooling of adolescent girls and boys (which rose considerably over the same period). At the individual level, this means that those with the greatest probability of being adolescent mothers are not the girls with the least education, but those with between 5 and 7 years' schooling. Nevertheless, the main policy conclusion of the study is that a "normal" educational path in which the secondary cycle is completed at the age of 17 or 18 acts as powerful – albeit not infallible – protection against adolescent maternity, and it also considerably increases the likelihood that a girl will continue studying after giving birth. In short, avoiding premature abandonment of school becomes a multiple policy objective.

The contributions referred to above highlight at least six spheres of action. The **first is the *public* sphere**, and has to do with the general administrative and legal provisions which limit the access of adolescents to knowledge and proper use of contraceptive means. Comparative experience, especially the case of Western Europe, suggests that the main means for achieving low levels of reproduction during adolescence is access to contraceptives from the very beginning of sexual life and training in their regular, responsible and efficient use. It is paradoxical, in this respect, that while many countries of the region tend to lower the minimum age of responsibility, for example in penal matters, they maintain higher minimum age limits for the purchase or provision of contraceptive means. The experience of Latin America represents a warning against the shortcomings of measures that provide purely formal expansion of access to these means. In order for this expansion of access to give results, it must apply before

adolescent boys and girls enter into their first union or sexual relationship —which runs counter to the practice of accepting adolescents in family planning programmes only if they have already established a union or had a child— and it must be accompanied by different kinds of measures to strengthen desirable practices, especially as regards responsible conduct in sexual matters.

The **second sphere** is that of *cultural* aspects, and is connected with the contrast between supposedly serious discourses aimed at boys and girls (by institutions and their elders) which elude or ignore the realities of adolescent sexuality, on the one hand, and the constant exposure of these young people to images, symbols and stimuli that encourage early sexual activity, on the other. Thus, in addition to the necessary normative protective that pubescent and adolescent young people need against the insinuations, pressures and aggressions of adults, especially in sexual matters, and the essential need to give them the capacity to take responsible decisions, it is also of crucial importance to update the images transmitted by official and family circles. The idea that unmarried adolescent boys and girls (the majority, as we have seen) should not be engaging in sexual activities and hence do not need to use contraceptive means is in open contradiction with reality and with the everyday world that young people live in, which is full of sexual symbols and allegories.

The **third sphere** is the *sectoral sphere*, especially that of the health sector, where there is still much reluctance to give adolescent boys and girls special treatment and try to come closer to them, so that many of them remain distant from such services. As already emphasized, in order to bring girls and boys closer to health services it is necessary to provide them with spaces where they receive some degree of special attention, even within integral programmes of health attention.

The **fourth sphere** is that of *the school*, which can provide a wide range of mechanisms to protect against adolescent maternity. So far, some of these mechanisms seem to be based on the mere fact of "being there" and occupying time in an activity which helps to put order in everyday life, disciplines conduct and concentrates efforts, thus adding a positive externality to programmes designed to keep young people in school until they complete the secondary cycle. Others are based on the possibilities provided by education in terms of knowledge and use of contraceptive precautions, management of natural impulses, and technical and affective training in matters

of sexuality and reproduction. Others are associated with the expectations and horizons opened up by the accumulation of education, either for taking a job or for continuing to study at a higher level. While the school undoubtedly has a "protective" role with regard to adolescent pregnancy, however, the effects of this role should not be taken for granted. This space, like any other, makes possible interaction and sexual encounters between boys and girls and tends to promote lifestyles which are often more tolerant on sexual matters, so that consideration should be given to the provision of some kind of special training in informed and responsible sexuality; moreover, if secondary education loses some of its value as a factor of social mobility, this also weakens its capacity to act as a real alternative to adolescent pregnancy.

The last two spheres have to do with the more direct circle of adolescent boys and girls, namely, ***the family*** and ***the couple***. The family has an enormous influence on the conduct of boys and girls and is the main channel for their preparation and training as

responsible individuals. When families instruct and prepare their children properly, it is much more likely that the sexual conduct of the latter will be of a responsible nature. In some cases, this responsibility may lead them to put off their first sexual relationship, while in others it will lead them to take precautions to avoid unwanted pregnancies and health problems. It must be acknowledged, however, that in many cases there is little communication between the family and their adolescent children (because the family do not take an interest, because they hold principles that the adolescents do not share, or because they have an unrealistically idealized idea of their children's conduct), and in these circumstances, sooner or later, it is the adolescent who must take the decisions. Finally, with regard to the couple, the capacity to talk things over and share responsibilities is one of the most promising contexts for the promotion of responsible forms of sexual and reproductive conduct.

(Original: Spanish)

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The dynamic of employment
in Chilean industry

Sebastián Vergara M.

This paper uses descriptive and parametric information to analyse the dynamic of employment in Chilean industry at the industrial plant level between 1979 and 2000. It examines job creation, destruction and turnover and investigates the link between these and the business cycle, sectoral characteristics and plant size. It finds evidence of procyclical job creation and countercyclical job destruction; of countercyclical labour turnover associated inversely with size; of marked heterogeneity between sectors; of the great importance of corporate demography in employment changes, and of the predominant role played by large companies in employment flows. It then goes on to analyse the impact of trade liberalization, the exchange rate and comparative advantages on sectoral employment flows. It concludes that a tariff reduction increases job destruction and thence turnover, and that comparative advantages and exchange-rate depreciation have a positive effect on job creation and turnover.

Sebastián Vergara M.

Research Assistant

Division of Production, Productivity and

Management,

ECLAC

✎ sebastian.vergara@cepal.org

I

Introduction

Trade liberalization is a crucial part of globalization and has major effects on the production structure. Different theoretical models have highlighted the increased productivity it brings as resources are reallocated from unproductive businesses to more efficient ones (Melitz, 2003). The costs of liberalization, meanwhile, chiefly take the form of labour market adjustments. In recent years, the literature on international trade and liberalization has started to include heterogeneity in its models to capture the different ways in which businesses or sectors respond to market opening. For example, Bernard, Redding and Schott (2004) propose a model in which liberalization raises the productivity of sectors by causing production to be reallocated, and show that this effect is greatest in industries with comparative advantages.

The labour market, meanwhile, is usually analysed on the basis of net changes in employment, which masks a significant part of the phenomenon. Underlying these net changes are processes of job creation and destruction that are constantly affecting a large percentage of workers over the course of the business cycle (Davis, Haltinwanger and Schuh, 1996). Thus, jobs are being created and destroyed all the time as companies grow organically and as they move through their life cycle (birth and death of firms).

This paper uses two approaches to examine the dynamic of industrial employment in Chile between 1980 and 2000. First, it shows the general characteristics of job turnover and its link to the business cycle, industrial sectors and plant size. Second, it uses parametric estimates to investigate the impact of trade liberalization, comparative advantages and the exchange rate on sectoral employment flows. Information for this purpose is available at the industrial plant level for the period 1979-2000 from the Yearly National Industrial Survey (Encuesta Nacional Industrial Anual-ENIA) carried out by the National Institute of Statistics (Instituto Nacional de Estadísticas-INE).

In accordance with the analytical framework proposed by Davis and Haltinwanger (1992), the employment dynamic is analysed in terms of four employment flows: creation, destruction, turnover and net creation (see appendix). Job creation in period *t* is defined as the sum of new jobs in plants that increase their payroll between *t-1* and *t*, plus jobs created by plants that begin their operations during *t*. Similarly, job destruction in period *t* is the sum of jobs lost at plants reducing their payroll between *t-1* and *t*, plus jobs lost due to plants terminating their operations during *t*. Net job creation is the difference between job creation and job destruction, while turnover is the sum of the two. The advantage of this method of analysis is that it breaks down net changes, at the national or sectoral level, and thus provides a more in-depth understanding of the labour market dynamic.

A number of studies have analysed the employment dynamic in Chile. Roberts (1996), for example, investigates patterns of industrial job creation and destruction between 1979 and 1986. His results reveal the importance of corporate demography and technological factors at the sectoral level as determinants of employment flows. Levinsohn's (1999) analysis of employment changes differentiates by company size and export orientation. His conclusions suggest that size and sectoral orientation (tradable goods sector or non-tradable goods sector) are important for understanding employment movements. Camhi, Engel and Micco (1997) describe the heterogeneity of employment and productivity flows at the plant level, and Pavcnik (2002) shows that the reallocation of resources between sectors is a major source of productivity growth. Aravena (2003), on the other hand, analyses the impact of wage rigidity on employment by company size; his results suggest that microenterprises and small businesses have higher rates of creation and destruction, and that the ratio between the minimum wage and the average wage is useful for explaining the level of employment in these, but not in large companies. Ferrada and Reinecke (2004) argue that more research is needed to obtain robust findings on the causal relationship between employment and the minimum wage. They also conclude that small and medium-sized enterprises (SMEs) are the firms that contribute most to aggregate employment.

In this context, the present study makes a twofold contribution: it shows stylized patterns of employment flows, and it offers an initial empirical approach to the impact of trade-related variables on these flows. Section II that follows sets forth the main conclusions offered by the empirical literature; section III describes the patterns of the employment dynamic, and section IV uses econometric evidence to examine the impact of tariffs, the exchange rate and comparative advantages on employment flows.

II

A glance at the publications on the subject

In the last 10 years there has been a great expansion in the number of empirical studies on job creation and destruction, usually based on establishment-, company- or plant-level information, with periodic employment data (Bockerman, 1999; Schreyer, 1996). More studies are now starting to come out on the link between trade-related variables (exchange rate, comparative advantages, tariffs) and employment flows, but they are still few and far between, particularly in developing countries. For example, Davis, Haltinwanger and Schuh (1996) investigate employment flows in United States manufacturing industry between 1973 and 1986 and argue that no systematic relationship exists between job turnover levels and sectoral trade exposure. Klein, Schuh and Triest (2003a) show that in the United States the exchange rate plays an important role in employment flows and that its impact is growing in more open industries. The main contribution of the latter study is that it analyses the impact of cyclical changes and trend movements in the exchange rate separately.

Gourinchas (1998) also deals with industrial sectors in the United States, using autoregressive vectors to estimate the effect of the exchange rate on job creation and destruction. He concludes that an exchange-rate appreciation has a positive effect on both in tradable sectors, but zero impact in non-tradable sectors.[1] Bentivogli and Pagano (1999) study the manufacturing sectors of four European countries and find no evidence of any substantive impact from international trade. Klein, Schuh and Triest (2003b) examine the impact of the North American Free Trade Agreement (NAFTA) on three specific United States industries (textiles, chemicals and automobiles), and their results show that NAFTA has had very little impact either on net employment or on job turnover. Prominent among the few studies dealing with Latin America is the one conducted by Haltinwanger, Kuegler and others (2004), who investigate the impact of trade liberalization on net employment growth and job turnover in six countries of the region. To do this, they estimate a function for job creation and turnover over their own lags, tariffs, gross domestic product and exchange rate, plus a proxy variable for job security. The estimates show that tariff reductions and exchange-rate appreciations increase the degree of job turnover, although they also suggest that net employment growth diminishes as trade exposure rises.

While the basic premise of these studies is roughly the same, the objective being to ascertain whether market opening leads to greater job turnover, there are large differences in methodology. First, the econometric approach is specific to each study. Second, the analytical framework focuses on different factors in each case: greater competition, exchange-rate movements, tariff changes or trade agreements. What these studies show is that, on the whole, greater liberalization means greater employment flows, sometimes with net effects, although the evidence is still preliminary and there are no stylized patterns.

Employment flows do have some general characteristics, however. Thus, for example, while job creation is procyclical, destruction is countercyclical (i.e., it tends to diminish during economic upswings), although there is no symmetry between the two and destruction tends to be more volatile (Campbell and Fisher, 1998). There is no clear link between the job turnover rate and the business cycle: whereas in the United States there is evidence that it is countercyclical (Schuh and Triest, 1998), in some European countries and in Colombia and Morocco the evidence shows the

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[1] In a similar study for France between 1984 and 1992, Gourinchas (1999) concludes that the exchange rate affects employment flows even more there than in the United States.

opposite (Stigelbauer, Stahl and others, 2002; Boeri, 1996; Roberts, 1996). The entry and exit of firms, meanwhile, are major components of the employment dynamic and account for a significant share of employment flows (Castillo, Cesa and others, 2002; Barnes and Haskel, 2002). Furthermore, there is evidence that the entry and exit of firms affect employment flows more in developing countries than in developed ones (Roberts and Tybout, 1996).

There are sectoral patterns too. Manufacturing, for instance displays systematically lower levels of turnover than services. Furthermore, there is a great deal of heterogeneity within manufacturing (Davis, Haltinwanger and Schuh, 1996), which suggests that specific sectoral factors such as capital intensity, optimum production scale, entry and exit costs, sunk costs and patterns of technological innovation and progress are very influential. In fact, the greater capital intensity and the optimum production scale are, the smaller employment flows will be.[2] At the company level, meanwhile, there is an inverse relationship between job creation/destruction and size, company age, wages and human capital: the smaller and younger companies are, and the lower their wage and human capital levels, the more volatile employment will tend to be, with higher levels of both creation and

destruction (Acs, Armington and Robb, 1999; Davis, Haltinwanger and Schuh, 1996; Schreyer, 1996; Castillo, Cesa and others, 2002).

The role of small and medium-sized enterprises (SMEs) in job creation is still disputed. The claim that "SMEs are the largest source of new jobs" is often based on questionable specifications of methodological aspects. These aspects have to do primarily with changes in company size over time and the significant difference between working with net job creation and gross job creation. Indeed, opposite conclusions can be reached about the importance of SMEs, depending on how these aspects are defined. Since Birch's (1979) study established that about 80% of job creation in the United States resulted from the activities of small and medium-sized enterprises, different studies have been brought out to uphold or reject this conclusion. For example, Davis, Haltinwanger and Schuh (1996) conclude that it is large enterprises that dominate job creation in the United States, whereas both Barnes and Haskel (2002) and Picot, Baldwin and Dupuy (1994) stress the importance of SMEs in the United Kingdom and Canada, respectively. The curious thing is that the disagreement is due not only to conceptual differences but to methodological ones as well, as Kirchhoff and Greene (1995) show.

III

Industrial employment patterns

In recent decades, the Chilean economy has undergone major changes as it has passed through different stages of the business cycle. Indeed, the country has implemented reforms that have made the market increasingly dominant in resource allocation and consolidated an export model in a context of trade liberalization, deregulation and privatization. These reforms began in the 1970s, but have been broadened and deepened in the decades since. Chile was also a pioneer in trade liberalization and in the application of the Washington Consensus formula in the region.

Labour market reforms began to be implemented in the late 1970s with a view to making that market more flexible.[3]

Where the business cycle is concerned, Chile suffered a large fall in gross domestic product (GDP) in the early 1980s (ΔGDP –13% in 1982 and –3.5% in 1983), which took the unemployment rate to 20%. The subsequent recovery yielded strong growth (ΔGDP averaging 7.7% in 1986-1997) characterized by a steady decline in unemployment. Finally, there was an adjustment phase (ΔGDP –1.1% in 1999) associated with the Asian crisis, which raised unemployment to around 10% (figure 1). It is within this context of structural

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[2] Again, industrial sectors with high total factor productivity growth usually display higher net employment growth and higher job turnover. See Foster, Haltinwanger and Krizan (1998) and Loecker and Konings (2003) for a more detailed analysis of the link between productivity and employment flows.

[3] See Hachette (2000) for a more detailed review of the labour market reforms.

reform and stages in the macroeconomic cycle that industrial employment is analysed.

1. General patterns

The industrial employment situation has passed through three stages, in line with the business cycle: a large decline between 1979 and 1984, steady growth between 1986 and 1995 and, lastly, a sharp decline beginning in 1996 (figure 1). A positive correlation can also be seen between aggregate changes in employment and the recruitment of unskilled (blue-collar) workers, who form the base of industrial employment. Recruitment of more highly skilled (white-collar) workers shows less dispersion and more stable behaviour over the different stages of the cycle.

Job flows are a significant part of the employment dynamic, so that net employment growth "masks" processes of creation and destruction that are not only substantial, but continuous. Thus, job creation and destruction are continuous phenomena over the whole business cycle, even when the net change in employment is very small or non-existent (figure 2). In fact, job creation averaged 13% a year between 1980 and 2000, while destruction averaged 13.2% (table 1). Between them, these processes yielded average job turnover of 26.2% over the period.

Net job creation, meanwhile, went through two periods of negative rates (1980-1983 and 1996-2000) and one of positive net growth (1984-1995). This supports the intuitive perception that net job creation is directly associated with macroeconomic developments, and is thus procyclical. In fact, the index of correlation between the trend of ΔGDP and Δemployment is 0.4 (figure 3). The behaviour of net employment growth is a consequence of the procyclical evolution of job creation, on the one hand, and the countercyclical evolution of job destruction, on the other (appendix B). In fact, the indices of correlation between job creation and destruction and the trend of ΔGDP are 0.19 and –0.41, respectively. It is noteworthy that creation is less sensitive (as an absolute value) than destruction: whereas the elasticity of job creation to changes in ΔGDP is 0.02%, the elasticity of destruction is –0.25%. Thus, while job destruction increases strongly at times of recession, creation does not fall by as much.

One aspect that emerges from the non-symmetrical relationship between creation/destruction and the cycle is that job turnover tends to be countercyclical: the correlation between the turnover rate and ΔGDP is 0.27, whereas the correlation between turnover and Δnet employment is –0.37. In other words, job turnover tends to increase in periods of

FIGURE 1

Chile: Industrial employment by worker type and unemployment rate[a]
(Thousands and percentages)
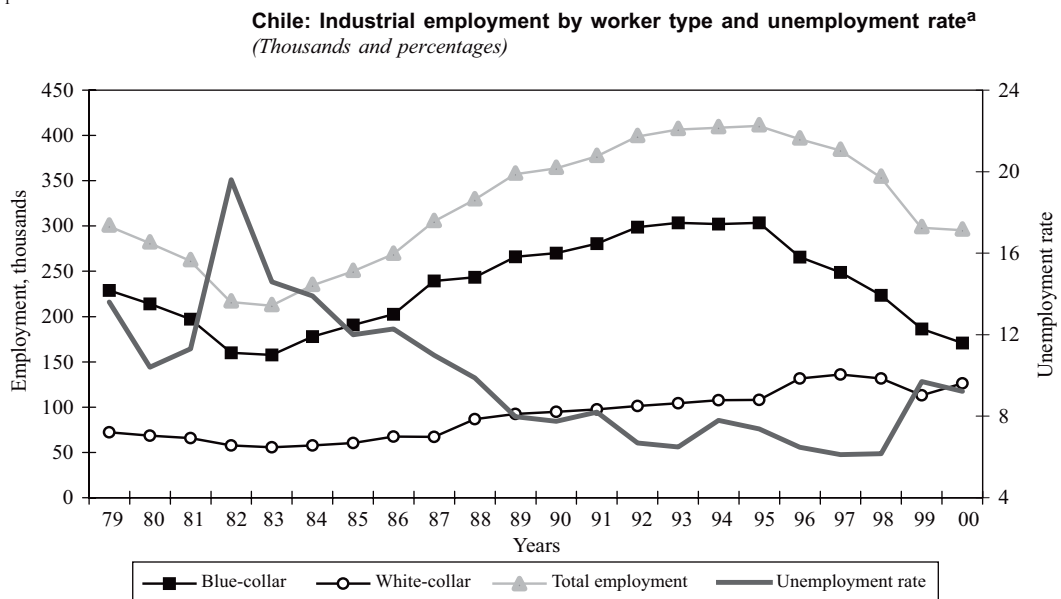
Source: Prepared by the author using data from the Yearly National Industrial Survey (ENIA) and the National Institute of Statistics (INE).

[a] White-collar: skilled personnel carrying out administrative duties. Blue-collar: low-skilled workers engaged in production work. The unemployment rate is the aggregate rate for the economy.

TABLE 1

Chile: Rates of creation, destruction, turnover and net creation of industrial employment, 1980-2000
(Percentages)

Year	Job creation (1)	Creation in new firms	Creation in continuing firms	Creation in new firms/ Total creation	Job destruction (2)	Destruction in exiting firms	Destruction in continuing firms	Destruction in exiting firms/ Total destruction	Turnover rate (3) = (1) + (2)	Net creation (4) = (1) - (2)
1980	11.4	2.3	9.1	20.2	15.0	6.3	8.7	42.0	26.4	-3.6
1981	9.1	1.8	7.3	19.8	15.6	6.0	9.6	38.5	24.7	-6.5
1982	5.6	1.4	4.2	25.0	23.1	4.7	18.4	20.3	28.7	-17.5
1983	11.1	2.9	8.2	26.1	13.3	5.0	8.3	37.6	24.4	-2.2
1984	16.6	4.9	11.7	29.5	9.1	3.3	5.8	36.3	25.7	7.5
1985	12.6	2.0	10.6	15.9	6.8	1.8	5.0	26.5	19.4	5.8
Average 1980-85	11.1	2.6	8.5	23.0	13.8	4.5	9.3	32.7	24.9	-2.8
1986	16.1	3.2	12.9	19.9	7.8	3.2	4.6	41.0	23.9	8.3
1987	19.0	5.9	13.1	31.1	8.5	2.7	5.8	31.8	27.5	10.5
1988	15.5	3.3	12.2	21.3	7.9	2.3	5.6	29.1	23.4	7.6
1989	15.3	3.7	11.6	24.2	8.5	2.7	5.8	31.8	23.8	6.8
1990	11.8	3.4	8.4	28.8	10.6	3.2	7.4	30.2	22.4	1.2
1991	12.8	4.0	8.8	31.3	9.1	1.8	7.3	19.8	21.9	3.7
1992	13.6	5.1	8.5	37.5	8.8	3.0	5.8	34.1	22.4	4.8
1993	11.9	4.0	7.9	33.6	10.2	3.1	7.1	30.4	22.1	1.7
1994	10.5	3.0	7.5	28.6	10.2	3.1	7.1	30.4	20.7	0.3
1995	11.6	4.9	6.7	42.2	11.2	3.3	7.9	29.5	22.8	0.4
1996	13.1	7.3	5.8	55.7	16.9	4.4	12.5	26.0	30.0	-3.8
1997	12.1	4.8	7.3	39.7	14.1	6.6	7.5	46.8	26.2	-2.0
Average 1986-97	13.6	4.4	9.2	32.2	10.3	3.3	7.0	31.8	23.9	3.3
1998	10.8	3.6	7.2	33.3	17.8	9.3	8.5	52.2	28.6	-7.0
1999	9.5	3.7	5.8	38.9	26.6	16.0	10.6	60.2	36.1	-17.1
2000	23.1	15.5	7.6	67.1	25.7	15.0	10.7	58.4	48.8	-2.6
Average 1980-2000	13.0	4.3	8.7	33.2	13.2	5.1	8.1	38.6	26.2	-0.2

Source: Prepared by the author on the basis of the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

FIGURE 2
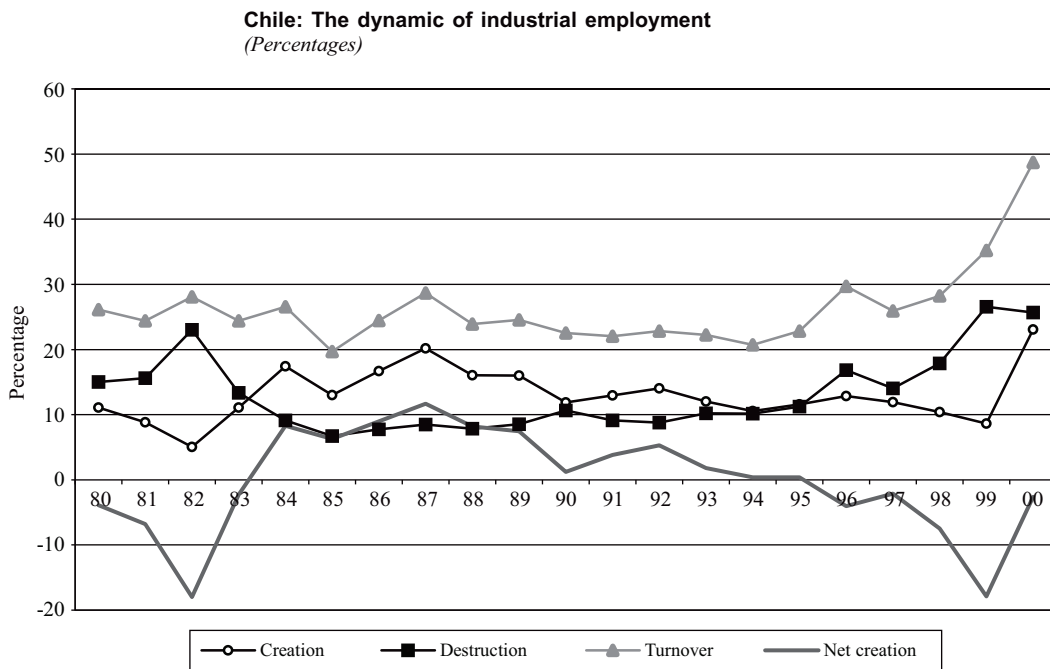
Chile: The dynamic of industrial employment
(Percentages)

Source: Prepared by the author on the basis of the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

recession, when adjustment costs are less because of low demand.[4] Despite this relative efficiency of employment turnover in Chile, the creation and destruction series present a negative correlation (of –0.26), suggesting a resource reallocation process that is not highly synchronized.

At the theoretical level, Caballero and Hammour (1996) propose a job turnover model with fixed entry costs, technological growth and cyclical demand fluctuations, and conclude that it is during recessions that an efficient economy should make its greatest efforts to reallocate productive resources, as opportunity costs are lower then. They also maintain that a poorly functioning labour market could erode the efficiency of job turnover and result in a stiffening of the production structure, characterized by a diminished capacity for renewal. In an empirical study dealing with the United States, Caballero and Hammour (1994) likewise find that destruction is more sensitive to the business cycle and that there is a negative correlation between the

creation and destruction series, and argue that recessions have a cleansing effect that manifests itself, among other things, in the replacement or disappearance of obsolete technologies, products or processes.

The data also show that the entry and exit of enterprises is of great importance in accounting for the dynamic of employment. Job creation due to the emergence of new companies contributed an average of 33.2% to total job creation in 1980-2000 (table 1). Companies exiting the market, meanwhile, were responsible for 38.6% of job destruction.

2. Sectoral characteristics

At a more disaggregated level, it transpires that most industrial sectors display significant rates of job creation and destruction, conjoined with great heterogeneity in turnover levels. This suggests that specific sectoral factors have a strong influence on labour mobility: for example, capital intensity, optimum plant size, sunk costs and technology patterns. When average data for 1980-2000 are used, the sectors that display the greatest employment turnover are: pottery, china and earthenware, wood, furniture, petroleum derivatives and apparel (table 2). These are

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[4] This result contradicts the one presented by Roberts (1996), who finds no cyclical patterns in industrial employment turnover in Chile between 1979 and 1986.

FIGURE 3

Chile: Cyclical patterns of employment flows
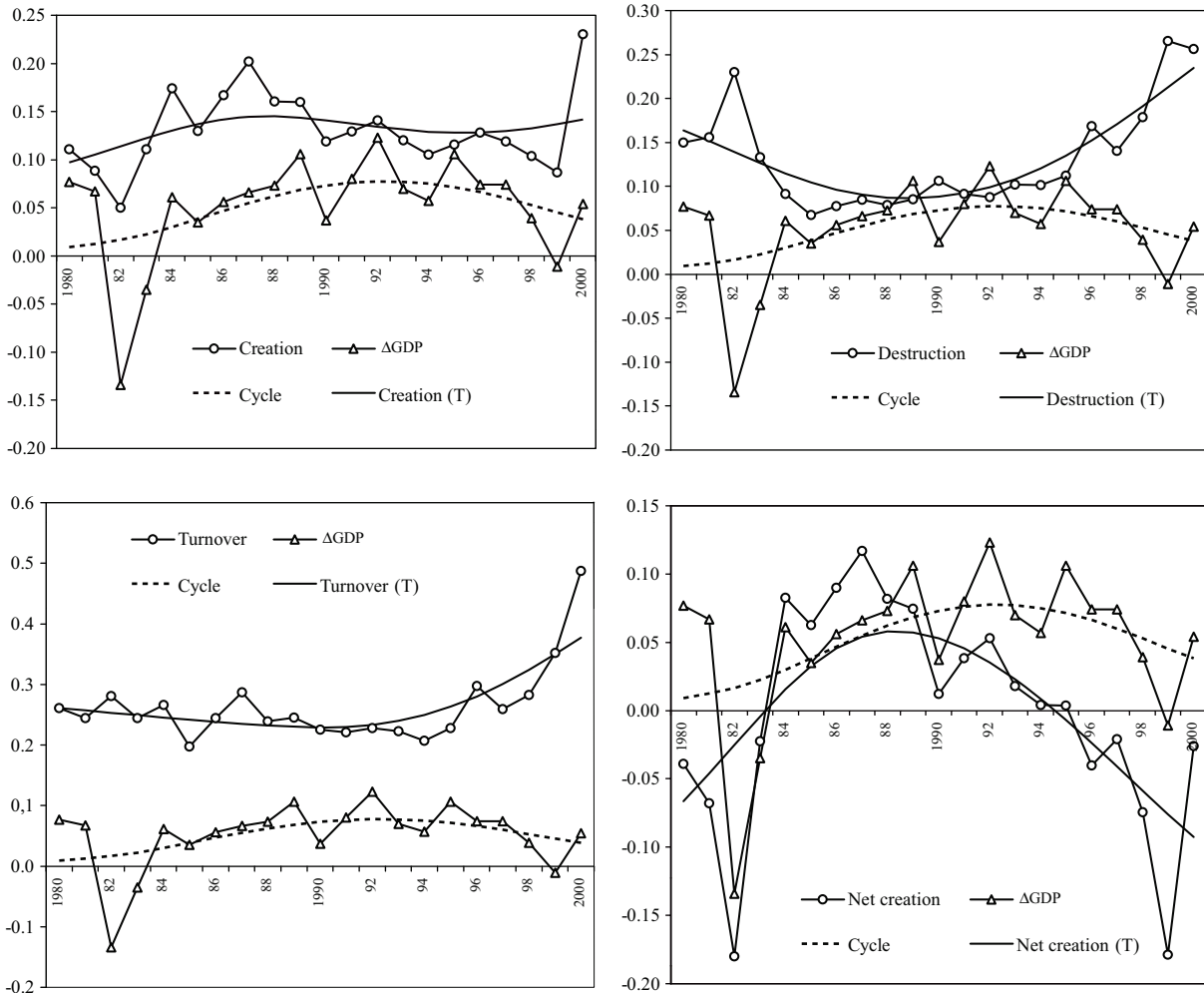
Source: Prepared by the author using 1979-2000 data from the National Industrial Employment Survey conducted by the National Institute of Statistics (INE, various years) and Central Bank of Chile data.

generally labour-intensive sectors. Conversely, oil refineries, iron and steel, other chemicals and tobacco, which are capital-intensive, have low job turnover.

Owing to its marked heterogeneity, sector 311-Foods is analysed at the 4-digit level of the International Standard Industrial Classification of All Economic Activities (ISIC/Rev. 2), and it also displays major differences. Processing of fish and crustaces, for example, has a remarkably high job turnover rate of some 39%, whereas sugar production has a rate of 17%. These data evince two stylized facts: first, job turnover declines as capital intensity increases and, second, there is a strong correlation between job creation and destruction (figure 4).

Sectoral patterns, meanwhile, confirm the countercyclical nature of job turnover: of 37 industrial sectors, 30 display countercyclical employment flows. There is also a negative correlation between the job creation and destruction series in 25 sectors. These results show that the economy has a certain degree of flexibility[5] and increases resource reallocation in the "down" part of the cycle. There is no synchrony, however, between job creation and destruction.

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[5] Caballero, Engel and Micco (2004) analyse microeconomic flexibility in a number of Latin American countries and conclude that Chile, while less flexible than the United States, is more flexible than Mexico or Venezuela.

TABLE 2

**The dynamic of industrial employment by sector of the
International Standard Industrial Classification of All Economic
Activities (ISIC/Rev. 2), 1980-2000 averages**

(Percentages)

Sector	Job creation (1)	Job destruction (2)	Job turnover (3) = (1) + (2)	Correlation (1) and (2)
361 - Pottery, china and earthenware	14.0	19.2	33.2	0.06
331 - Wood	16.1	17.0	33.1	-0.14
332 - Furniture	13.9	14.1	28.0	-0.19
354 - Petroleum products	14.4	13.5	27.9	0.12
322 - Wearing apparel	12.2	14.7	26.9	-0.24
351 - Chemicals	14.5	11.5	25.9	-0.27
384 - Transport equipment	13.0	12.8	25.8	-0.36
390 - Other industries	12.7	13.1	25.8	0.02
381 - Metal products	12.7	12.3	25.0	-0.61
312 - Other foodstuffs	13.3	11.5	24.9	-0.29
369 - Other non-metallic mineral products	12.6	12.2	24.9	0.06
323 - Leather	9.2	15.2	24.5	-0.04
372 - Non-ferrous metals	12.9	10.3	23.1	-0.13
382 - Non-electrical machinery	10.4	12.5	22.9	-0.33
313 - Beverages	11.0	11.5	22.5	-0.07
356 - Plastics	12.6	9.5	22.2	-0.65
324 - Footwear	10.1	11.5	21.7	0.11
355 - Rubber products	10.2	11.5	21.7	-0.45
383 - Electrical machinery and appliances	10.3	11.2	21.5	-0.48
362 - Glass	8.9	12.3	21.2	-0.11
385 - Professional and scientific equipment	10.5	10.6	21.1	0.21
341 - Paper and paper products	10.7	10.0	20.7	0.08
321 - Textiles	82	11.5	19.8	-0.59
342 - Printing and publishing	8.9	9.1	18.0	-0.31
314 - Tobacco	7.4	10.5	17.9	0.41
352 - Other chemicals	9.3	8.5	17.8	-0.11
371 - Iron and steel	4.4	5.7	10.1	-0.35
353 - Oil refineries	1.9	3.6	5.5	0.33
3114 - Processing of fish, crustaces and others	22.4	16.8	39.2	-0.59
3113 - Canning and preserving fruits/veg.	17.8	16.6	34.4	-0.29
3115 - Manufacture veg./animal oils and fats	12.9	16.2	29.1	-0.07
3112 - Dairy products	12.4	10.2	22.6	-0.33
3117 - Bakery products	11.1	11.4	22.5	0.42
3111 - Slaughter, preparing, preserving meat	12.5	9.7	22.2	-0.15
3116 - Grain mill products	9.9	11.9	21.8	0.03
3119 - Cocoa, chocolate, sugar confectionery	10.3	9.7	20.0	0.33
3118 - Sugar factories and refineries	7.0	10.2	17.2	-0.18

Source: Prepared by the author using 1979-2000 data from the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

3. Company size

Although small companies are the most numerous in the industrial sector, large enterprises are the most important for employment. According to the classification of size by sales used by the Production Development Corporation (Corporación de Fomento de la Producción-CORFO), small enterprises represent 46% of all establishments, medium-sized ones 17% and large companies 37%. In employment terms, on the other hand, large companies account for 73% and small

ones for 16%. Following the methodology proposed by Davis, Haltinwanger and Schuh (1996), we analysed job creation and destruction by size and the share of each category in the total number of jobs created and destroyed.

What is striking at first sight is the close relationship between job creation/destruction and size. Job creation proves to be much the highest in microenterprises, with an average of 27% for the whole period (table 3). Small and medium-sized enterprises, meanwhile, had a creation rate of about 15%, which

TABLE 3

Chile: Rate of industrial job creation and destruction by company size, 1980-2000[a]
(*Percentages*)

Year	Job creation				Job destrucción			
	Micro	Small	Medium	Large	Micro	Small	Medium	Large
1980	5.0	11.2	14.4	10.7	50.1	21.7	14.3	12.7
1981	15.7	10.8	11.8	7.9	36.2	20.2	19.2	13.8
1982	13.4	6.9	8.2	3.9	62.5	28.7	28.2	20.0
1983	17.6	12.7	15.5	9.7	42.5	18.3	18.1	10.4
1984	11.8	22.5	24.9	14.8	39.1	13.2	10.0	7.4
1985	12.2	13.8	16.1	12.3	27.9	11.0	9.3	5.0
1980-1985 average	12.6	13.0	15.2	9.9	43.1	18.8	16.5	11.5
1986	14.6	17.3	19.2	16.2	57.2	13.2	10.4	5.8
1987	38.8	26.3	22.3	18.6	44.8	16.5	12.3	6.2
1988	12.4	14.1	18.2	16.1	48.0	15.9	8.8	6.2
1989	22.1	13.1	17.9	16.2	64.5	17.0	11.2	6.9
1990	28.1	13.1	15.4	11.3	55.0	20.8	14.2	8.7
1991	36.5	16.0	19.2	11.8	38.6	11.9	9.5	8.6
1992	17.4	14.5	15.3	13.9	35.7	15.7	9.5	7.7
1993	31.8	13.4	15.8	11.4	36.9	14.9	12.6	9.3
1994	18.0	12.6	13.4	10.0	48.6	14.3	12.2	9.4
1995	5.4	12.4	13.9	11.3	87.8	19.7	14.5	9.7
1996	56.8	22.1	21.2	10.8	64.9	22.4	16.4	16.1
1997	36.6	15.2	13.3	11.3	61.8	23.1	19.6	12.2
1986-1997 average	26.5	15.8	17.1	13.2	53.7	17.1	12.6	8.9
1998	27.0	11.4	12.7	10.0	24.8	25.9	20.4	16.5
1999	10.9	12.9	12.9	7.6	130.7	27.8	28.7	25.6
2000	134.2	21.6	22.2	22.5	30.4	34.9	31.2	23.8
1980-2000 average	27.0	14.9	16.4	12.3	51.8	19.4	15.7	11.5

Source: Prepared by the author using 1979-2000 data from the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

[a] Company classification by sales using the criteria of the Production Development Corporation (CORFO), based on development units (unidades de fomento-UF): microenterprises (0 to 2,400 UF), small (2,401 to 25,000 UF), medium-sized (25,000 to 100,000 UF) and large (100,000 UF and over).

TABLE 4

Chile: Share of total industrial jobs created and destroyed, by company size, 1980-2000ᵃ
(Percentages)

Year	Job creater (Share of total jobs created, by company size)				Jobs destroyed (Share of total jobs destroyed, by company size)			
	Micro	Small	Medium	Large	Micro	Small	Medium	Large
1980	0.5	19.3	12.7	67.5	3.5	27.6	9.4	59.5
1981	1.2	21.6	13.4	63.8	1.6	22.9	12.3	63.2
1982	2.6	27.6	17.5	52.4	2.6	25.2	13.1	59.1
1983	1.8	24.9	15.1	58.2	3.6	29.8	14.6	52.0
1984	0.6	26.6	15.1	57.7	3.8	29.6	11.5	55.1
1985	0.6	20.0	13.5	65.9	2.7	30.9	15.0	51.4
1980-1985 average	1.2	23.3	14.6	60.9	3.0	27.7	12.7	56.7
1986	0.4	17.2	12.2	70.3	3.2	28.4	14.2	54.2
1987	0.6	19.7	10.9	68.8	1.6	29.4	14.3	54.7
1988	0.2	12.1	10.5	77.3	1.5	27.7	10.4	60.4
1989	0.2	9.6	9.9	80.3	1.2	23.4	11.5	63.9
1990	0.3	12.5	11.2	75.9	0.8	22.2	11.5	65.5
1991	0.5	14.3	12.7	72.5	0.7	15.0	9.0	75.3
1992	0.2	11.1	9.4	79.4	0.6	19.3	9.4	70.7
1993	0.4	11.4	10.8	77.4	0.5	15.0	10.1	74.4
1994	0.3	12.2	10.4	77.2	0.7	14.4	9.8	75.1
1995	0.1	10.7	9.7	79.5	1.1	17.6	10.4	70.9
1996	0.6	17.5	13.6	68.3	0.5	13.5	8.0	77.9
1997	0.5	13.4	9.2	76.9	0.7	17.2	11.6	70.5
1986-1997 average	0.4	13.5	10.9	75.3	1.1	20.3	10.9	67.8
1998	0.9	11.5	9.5	78.1	0.5	15.1	8.9	75.5
1999	0.5	16.4	12.0	71.0	2.1	11.5	8.7	77.7
2000	3.5	10.6	7.7	78.2	0.7	15.4	9.7	74.1
1980-2000 average	0.8	16.2	11.8	71.3	3.5	27.6	9.4	59.5

Source: Prepared by the author using 1979-2000 data from the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

ᵃ Company classification by turnover (sales) using the criteria of the Production Development Corporation (CORFO), based on development units (unidades de fomento-UF): microenterprises (0 to 2,400 UF), small (2,401 to 25,000 UF), medium-sized (25,000 to 100,000 UF) and large (100,000 UF and over).

FIGURE 4

Chile: Job creation and destruction by sector, 1980-2000 average[a]
(Percentages)
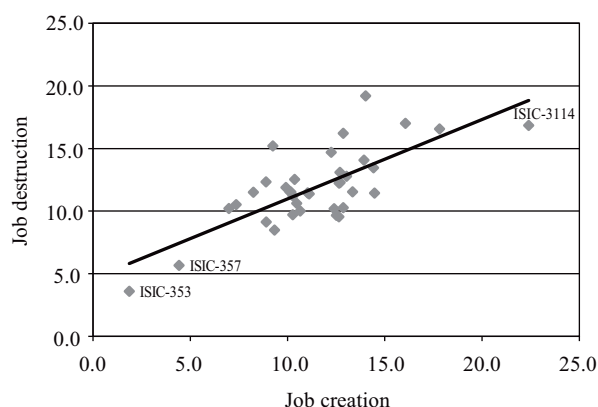
Source: Prepared by the author using 1979-2000 data from the Yearly National Industrial Survey conducted by the National Institute of Statistics (INE, various years).

was higher than the 12.3% of large companies. Thus, the larger companies are, the lower their job creation

rates. Job destruction also grows as company size diminishes: the rate is 11.5% in large companies, 15.7% in medium-sized ones and 19.4% in small ones, while in microenterprises the rate is 51.8%. These patterns suggest that job turnover is negatively associated with size.[6] Again, it also transpires that microenterprises display greater variance than larger enterprises in their employment flows and in respect of business cycle fluctuations. In other words, microenterprises are more volatile in their employment flows, while large companies behave more homogeneously over the period.

Turning to the share of different-sized companies in total job creation and destruction, it is found that the share of large companies (71% and 59%, respectively) is very large, while that of microenterprises (1% and 3%) is very minor (table 4). We can conclude, then, that smaller companies have higher job creation and destruction rates, but it is large companies that dominate gross creation and destruction flows.[7] This is because large companies account for a greater proportion of the industrial employment base.

IV

Employment flows and market opening

Market opening and trade liberalization feed through into the production structure through a variety of mechanisms. The formal routes are tariff cuts and trade agreements (bilateral and multilateral), while the informal routes include aspects such as more and better access to information, lower transport costs and, in a word, globalization. Taken together, these factors reduce the cost of trade and encourage businesses, industries and the economy as a whole to increase their participation in the world economy. In this context, increased participation in global trade and greater

competition between economies raise the elasticity of employment vis-à-vis changes in relative prices, such as the exchange rate, increasing the importance of this as an allocation "price" and a determinant of factor location.[8] Currency appreciation, for example, may reduce domestic demand for labour because it makes imported products cheaper and increases competition. However, appreciation also increases imports of machinery and equipment, generating investment that

[6] Company size is strongly correlated with aspects such as company age and pay levels. While employment flows are not analysed in relation to these characteristics, newer companies with low pay levels can also be expected to have higher creation and destruction rates. Bergoeing, Hernando and Repetto (2003), for example, show that company age is negatively associated with turnover.
[7] Complementary calculations were carried out using the INE size classification. According to this classification, small companies are those with less than 50 employees, medium-sized companies those

with 50 to 200 employees, and large companies those with 200 employees or more. Creation rates are 14% for small companies, 14% for medium-sized ones and 12% for large ones, while destruction rates are 18% for small companies, 14% for medium-sized ones and 9% for large ones. Their respective shares of gross creation (destruction), therefore, are 24.6% (33.6%) for small companies, 34.2% (35.3%) for medium-sized ones and 41.2% (31.1%) for large ones.
[8] From an economic point of view, market opening in itself tends to weaken the exchange rate; if appreciation occurs, this is probably for another reason (e.g., capital-account liberalization).

needs to be complemented by human resources, and that may increase the demand for labour in consequence.

Market opening yields benefits mainly through the reallocation of resources to more efficient uses, the incorporation of productivity-enhancing equipment and technology, and the development of exports. This process, in turn, is linked to comparative advantages and depends on resource endowment and capabilities. Market opening also creates costs, as increased external competition affects employment and wages and heightens the uncertainty of agents. Traditional trade models predict that trade liberalization will be followed by a rise in employment in sectors with comparative advantages and a decrease in sectors without such advantages. It is also clear that the effects of liberalization are heterogeneous, so that it is possible to identify gainers and losers both between sectors and between companies in a given sector.

Accordingly, theoretical models have recently been produced for international trade and market opening with non-homogeneous companies, to capture these different types of responses to liberalization. Bernard, Redding and Schott (2004), for example, combine traditional trade and comparative advantage theories with this new literature on heterogeneous firms (Melitz, 2003; Bernard, Jensen and Schott, 2003) and propose a model for the industrial dynamic in a context of liberalization and falling trade costs. Conceptually, market opening may have a variety of effects on firms: a greater likelihood of corporate death in the case of companies with low productivity, a greater likelihood that high-productivity enterprises will become exporters, and higher growth expectations for those that already export. In this situation, sectoral characteristics are important and have a direct effect on job turnover, relative wages and productivity in the industry concerned. The model shows that market opening raises the productivity of sectors as production is reallocated from unproductive firms to more productive ones, something that is most evident in industries with comparative advantages. This is because companies in those industries are more likely to be exporters, and this increases the entry rate of new enterprises while forcing low-productivity firms out of the market. One implication of the model described is that job turnover tends to be greater in industries with comparative advantages, owing to the greater number of businesses entering and exiting the market.

Trade reform in Chile began in 1974, and from then on tariffs were quickly cut and almost all non-tariff barriers removed. By 1979 the average tariff was just 10%. The process was reversed, however, because of the severe economic crisis of 1982-1983 and the average tariff rose to 20% in 1983 and 35% in 1984 (figure 5). At the same time, the exchange rate weakened sharply in 1983-1984 and a period of export promotion began (Moguillansky, 1999). After the crisis, trade liberalization acquired a new impetus and there were successive rounds of tariff cuts, bringing the tariff down to 11% in 1991. In 1999 tariffs began to be reduced by a further 1% a year, so that by 2003 they stood at 6%. These changes fostered a process of internationalization based on comparative advantages and Chile experienced strong export development in natural resource-related sectors. In this climate of increasing openness to trade (a number of international trade agreements were also signed), the index of industrial openness (exports plus imports over sales) rose from 38% in 1985 to over 58% in 2000 (figure 5).

We shall now analyse the impact of the exchange rate, tariffs and comparative advantages on employment flows at the sectoral level. The hypotheses to be investigated are as follows: i) whether comparative advantages have positive effects on job turnover, as suggested by Bernard, Jensen and Schott's (2003) model; ii) whether the impact of the exchange rate is significant and, if so, whether it is heterogeneous between sectors, and iii) whether tariff cuts actually do increase job destruction.

1. The econometric model and methodology

To analyse the link between employment and the exchange rate, tariffs and comparative advantages, three employment flow models —creation, destruction and turnover— were applied to a set of variables. The models were specified at the sectoral level, to three digits of ISIC/Rev. 2 (four digits in the case of 311-Foods), with annual periodicity for 1980-2000. Among the explanatory variables included were output growth, changes in the exchange rate and the import tariff, and a variable representing comparative advantages, defined as net exports. A multiplication variable was also established for the exchange rate and comparative advantages to test degrees of employment response by sector. A lagged dependent variable was included to verify the existence of a time dynamic in employment flows. Thus, the equations to be calculated were:

$$JC_{it} = \beta_0 \cdot JC_{it-1} + \beta_1 \cdot \Delta PIB_t + \beta_2 \cdot \Delta TCR_t + \beta_3 \cdot \Delta T_{t-1} + \beta_4 \cdot A_{it} + \beta_5 \cdot A_{it} \cdot \Delta TCR_t + \eta_i + \mu_t + \varepsilon_{it} \quad (1)$$

FIGURE 5

**Chile: Real exchange rate, average tariff and index
of industrial openness,[a] 1980-2000**
(Percentages and index)
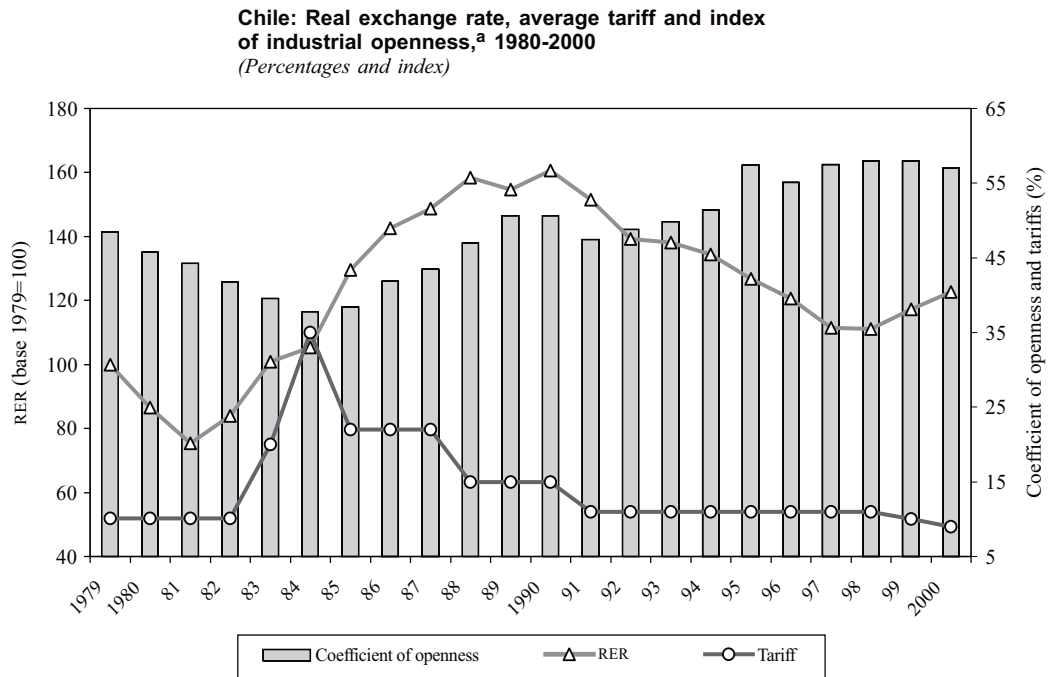
Source: Prepared by the author using data from the Central Bank of Chile and the Industrial Performance Analysis Programme of the ECLAC Division of Production, Productivity and Management.

$$JD_{it} = \beta_0 \cdot JD_{it-1} + \beta_1 \cdot \Delta PIB_t + \beta_2 \cdot \Delta TCR_t + \beta_3 \cdot \Delta T_{t-1} + \beta_4 \cdot A_{it} + \beta_5 \cdot A_{it} \cdot \Delta TCR_t + \eta_i + \mu_t + \varepsilon_{it} \qquad (2)$$

$$JR_{it} = \beta_0 \cdot JR_{it-1} + \beta_1 \cdot \Delta PIB_t + \beta_2 \cdot \Delta TCR_t + \beta_3 \cdot \Delta T_{t-1} + \beta_4 \cdot A_{it} + \beta_5 \cdot A_{it} \cdot \Delta TCR_t + \eta_i + \mu_t + \varepsilon_{it} \qquad (3)$$

where subindex i corresponds to the industrial sector ($i=1,\ldots,37$) and t to the time period ($t:1,\ldots,21$), while JC_{it} is job creation, JD_{it} destruction and JT_{it} turnover; ΔGDP_t is the annual variation in gross domestic product; ΔRER_t is the annual variation in the real exchange rate; ΔT_{t-1} is the change in the import tariff (lagged one period) and A_{it} is an index of comparative advantages defined as exports minus imports ($A_{it}=X_{it}-I_{it}$). Meanwhile, H_i is the fixed effect that is constant over time but different between sectors; Δ_t are random shocks that are homogeneous between sectors but different in time and Δ_{it} is the traditional random error. The employment data are from the Yearly National Industrial Survey (Encuesta Nacional Industrial Anual-ENIA), the data on GDP, tariffs and the exchange rate were obtained from the Central Bank of Chile, and the

sectoral information on comparative advantages (A_{it}) was prepared using BADECEL data.[9]

Separate calculation of each of these three autoregressive models, where one of the explanatory variables is the lagged dependent variable, yields a correlation between the error term and the lagged dependent variable (JC_{it-1}, JD_{it-1} and JT_{it-1}). For this reason, the calculation of each ordinary least squares (OLS) equation is inconsistent. A traditional approach to estimating panel models of this kind is to use the fixed effect (FE) methodology and express the original variables as deviations from means. While this transformation eliminates the η_i component, there may still be problems because a correlation remains between the lagged dependent variable and the transformed error term. Still, when the sample size is fairly large, the bias will be less. Benavente and Melo (2003) show that while OLS estimation produces an upward bias in the β_0 coefficient of each model, FE estimation

[9] Foreign Trade Data Bank for Latin America and the Caribbean, maintained by the Statistics and Economic Projections Division of ECLAC.

produces a downward bias, although in this case it would not be very large owing to the time dimension of the panel (T=21).

In these circumstances, a more suitable econometric approach would be to use the generalized method of moments (GMM). GMM estimation consists in transforming the model into first differences and then using lags of the variables in levels as instruments of the endogenous variables. On the assumption that there is no autocorrelation, then, the error term in the transformed equation $\Delta\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{i,t-1}$ is orthogonal to past values of the variables of the model in levels. Arellano and Bond (1991) propose to carry out the estimation by transforming the equation into first differences and then using the past levels of the dependent variable and predetermined variables,[10] and the differences of the endogenous variables, as instruments of the lagged explanatory variable. This methodology presupposes the existence of a correlation between the explanatory variables and the error and, at the same time, the absence of any second-order autocorrelation.

2. Results

This subsection presents the results of the estimates carried out using the OLS, FE and GMM methodologies (the last of which was proposed by Arellano and Bond, 1991). Because GMM estimation corrects the inconsistency resulting from the correlation between the error term and the lagged dependent variable of each of the equations to be estimated, the analysis of the results is centred on this methodology. The empirical evidence shows, furthermore, that the GMM estimates satisfy the suppositions for their application: the instruments are not correlated with the error and there is no second-order autocorrelation, as is shown by the Sargan overidentification test and the Lagrange multiplier, respectively (table 5).

First, there is the fact that the coefficients associated with the lagged dependent variables (JC_{it-1}, JD_{it-1} and JT_{it-1}) are significant and FE<GMM<OLS, owing to the downward bias of the FE estimator and the upward bias of the OLS estimator. The results of the

coefficients associated with ΔGDP confirm that there has been procyclical job creation and countercyclical job destruction. Support for countercyclical job turnover, however, is provided only by the FE estimation. The variable that captures comparative advantages (A_{it}), meanwhile, shows a positive and significant impact on job turnover. This is explained by the effect of this variable on job creation, with a coefficient that is significant at 1%. Thus, there is evidence that comparative advantages, in a context of market opening, have a positive effect on labour reallocation, as Bernard, Redding and Schott's (2004) model shows.

Import tariffs, meanwhile, are also important in explaining employment flows. The fact is that while the impact on job creation is nil, a tariff cut has a positive and significant effect on destruction. It could be inferred, then, that a tariff cut increases external competition, so that the demand for labour falls and companies recruit less, with some even having to exit the market altogether. Indeed, Alvarez and Vergara (2004) show that in Chile it was plants in sectors competing with imports that were the most affected by trade liberalization. One consequence of the impact of liberalization on job destruction is a rise in job turnover, supporting the argument that liberalization hastens the reallocation of resources.

A depreciation in the real exchange rate (ΔRER_t), meanwhile, has a positive, if moderate, effect on job creation. Thus, a 10% depreciation in ΔRER yields a rise of 2.7% in job creation. The effect of the real exchange rate on job destruction, on the other hand, is not significant. Given that exchange-rate depreciations have a positive effect on job creation, it is not surprising if this results in greater job turnover. The coefficients associated with Z_{it}, as an interactive variable between comparative advantages and the exchange rate, offer a profounder insight into the phenomenon, for while the coefficient estimated in the destruction model is not significant, in the creation model it is positive and significant. This indicates that when the RER depreciates, the increase in job creation is greater in sectors with comparative advantages. Thus, in the event of depreciation, the growth in job creation will be greater in export-oriented sectors (such as 372-Non-ferrous metals or 341-Paper and cellulose) than in sectors that compete with imports (such as 385-Machinery). From these results it follows, then, that a real exchange-rate depreciation leads to an increase in labour reallocation as a result of greater job creation, and this is most marked in sectors with comparative advantages.

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[10] X_{ix} is predetermined if $E[X_{ix}, \varepsilon_{is}] \neq 0$ for $s<t$, but $E[X_{ix}, \varepsilon_{it}]=0$ for all $s \leq t$. Intuitively, if the error term at t has any effect on subsequent realizations of x_{it}, then x_{it} is predetermined.

TABLE 5

Chile: Parametric evidence
(Estimated coefficients and t test in parentheses)

Methodology	→	→	Generalized method of moments (GM) (Arellano and Bond, 1991)			Fixed effect (FE)			Ordinary least squares (OLS)		
Dependent variables			Creation (JC_{it}) (1)	Destruction (JD_{it}) (2)	Turnover (JT_{it}) (3)	Creation (JC_{it}) (4)	Destruction (JD_{it}) (5)	Turnover (JT_{it}) (6)	Creation (JC_{it}) (7)	Destruction (JD_{it}) (8)	Turnover (JT_{it}) (9)
Job creation	$[JC_{it-1}]$		−0.09 (−2.14)a			−0.10 (−2.53)b			0.17 (4.48)a		
Job destruction	$[JD_{it-1}]$			0.08 (2.18)b			0.22 (5.88)a			0.31 (8.55)a	
Job turnover	$[JT_{it-1}]$				0.12 (2.75)b			0.18 (4.07)a			0.43 (10.90)a
GDP growth	$[\Delta GDP_t]$		0.65 (8.44)a	−0.49 (−5.39)a	0.13 (1.09)	0.60 (10.39)a	−0.79 (−10.72)a	−0.32 (−3.40)a	0.49 (7.74)a	−0.75 (−1.06)a	−0.30 (−3.03)b
Variation in RER	$[\Delta RER_t]$		0.27 (6.81)a	−0.01 (−0.23)	0.25 (3.82)a	0.24 (6.15)a	−0.18 (−3.69)b	0.01 (0.17)	0.21 (4.84)	−0.18 (−3.53)a	0.003 (0.05)
Variation in tariffs	$[\Delta T_{t-1}]$		−0.04 (−0.08)	−0.37 (−6.37)	−0.45 (−6.10)a	0.08 (1.02)	−0.32 (−3.20)b	−0.26 (−1.97)b	0.06 (0.75)	−0.34 (−3.28)b	−0.31 (−2.20)b
Net exp	$[A_{it} = (X_{it} - I_{it})]$		0.005 (6.26)a	0.01 (1.10)	0.005 (4.38)a	0.004 (5.89)a	−0.0005 (0.07)	0.004 (2.91)	0.001 (3.46)b	−0.000 (−0.07)	0.001 (1.94)c
Net exp.*ΔTCR	$[Z_{it} = A_{it} * \Delta RER_t]$		0.0002 (4.14)a	0.000 (0.87)	0.0003 (3.23)a	0.0002 (3.83)	0.000 (0.07)	0.0003 (2.52)b	0.0001 (2.30)b	0.000 (0.18)	0.0001 (1.70)c
Observations			703	703	703	740	740	740	740	740	740
Sectors			37	37	37	37	37	37	37	37	37
Wald chi² (6) / F(6.697)			169.9	356.3	123.9	26.2	36.0	8.4	21.11	41.4	24.1
Sargan test (Prob>chi²)			0.81	0.93	0.77						
LM Test Ar (1) (Prob>z)			0.00	0.00	0.00						
LM Test Ar (2) (Prob>z)			0.25	0.11	0.55						
R^2						0.18	0.23	0.06	0.14	0.25	0.16

Source: Prepared by the author.

[a] Coefficient significant at 1%.   [b] Coefficient significant at 5%.   [c] Coefficient significant at 10%.

V

Conclusions

The analysis of employment flows shows that, underlying net changes in employment, there are continuous creation and destruction phenomena that are significant at every point of the economic cycle, entailing a substantial turnover of resources. Between 1980 and 2000, job creation averaged 13% and destruction 13.2%, yielding job turnover in excess of 26%. Job creation is procyclical in nature, while destruction is strongly countercyclical. Both phenomena also behave asymmetrically in respect of macro performance: destruction is more volatile and presents greater elasticity vis-à-vis changes in GDP growth. This explains why job turnover also behaves countercyclically. Meanwhile, company demography (birth and death) is also an important factor in job creation and destruction: on average, the birth of companies accounts for 33% of job creation, while the death of companies accounts for 38% of job destruction.

In sectoral terms, what is striking is the great heterogeneity of employment flows, revealing how important sector-specific factors are. The more labour-intensive a sector is, in fact, the greater the job turnover. In turn, sectoral statistics confirm that job turnover patterns are countercyclical: the lower opportunity costs are, the higher labour reallocation is,

reflecting the relative efficiency of the resource reallocation process in the economy. Nonetheless, the negative correlation between job creation and destruction suggests there is no time synchrony between the two. The evidence also suggests that creation and destruction rates (and turnover rates) are negatively associated with company size, and that it is large enterprises that dominate the job creation and destruction totals.

Three conclusions can be drawn from the econometric estimates. First, comparative advantages have a positive effect on job creation, and thence on job turnover. Bernard, Redding and Schott (2004) suggest that this could be due to companies in sectors with comparative advantages being more likely to export, which increases the number of company start-ups and forces low-productivity firms out of the market. Second, an exchange-rate depreciation has a positive effect on job creation, and thus on job turnover. The empirical evidence also shows that these phenomena are more pronounced in export-oriented sectors, precisely because the additional benefits deriving from higher export returns result in greater demand for labour. Third, trade liberalization increases employment turnover, and this is due to the rise in job destruction. Specifically, this is probably because of increased competition in import sectors, illustrating the adverse effects of market opening on employment.

APPENDIX

Definition of variables

Information is available at the industrial plant level with annual periodicity for the period 1979-2000. The data come from the Yearly National Industrial Survey (ENIA) conducted by the National Institute of Statistics (INE). This is a panel database that includes about 15,000 manufacturing establishments, catalogued to four digits in the International Standard Industrial Classification of All Economic Activities (ISIC/Rev.2). The employment information is broken down between white-collar workers (relatively highly skilled staff performing administrative duties) and blue-collar workers (staff engaged in production work). Following Davis and Haltinwanger (1992), if we consider that n is plant-level employment, then aggregate job creation (JC) and aggregate job destruction (JD) in an industry are defined as:

$$JC_t = \sum i\epsilon S; \Delta N > 0 \ (n_{it} - n_{it-1}) + \sum i\epsilon E(n_{it})$$

$$JD_t = \sum i\epsilon S; \Delta N < 0 \ |(n_{it} - n_{it-1})| + \sum i\epsilon X(n_{it-1})$$

where subindex i refers to the industrial plant, S are companies with a continuous presence in the market between t-1 and t, E are companies entering the market in period t, and X are companies exiting it in period t. Creation and destruction rates are defined simply by dividing each variable by the average of the aggregate employment level (L) at t and t-1:

$$JC_t = \left\{ \sum i\varepsilon S; \Delta N > 0 \ (n_{it} - n_{it-1}) + \sum i\varepsilon E(n_{it}) \right\} /$$
$$\left(\sum i(n_{it}) + \sum i(n_{it-1}) \right) * 1/2$$

$$JD_t = \sum i\varepsilon S; \Delta N < 0 | (n_{it} - n_{it-1}) | + \sum i\varepsilon X(n_{it-1}) /$$
$$\left(\sum i(n_{it}) + \sum i(n_{it-1}) \right) * 1/2$$

Job creation and destruction at the sectoral level, meanwhile, are defined as:

$$JC_{It} = \sum i\varepsilon I, S; \Delta N > 0 \ (n_{it} - n_{it-1}) + \sum i\varepsilon I, E(n_{it})$$

$$JD_{It} = \sum i\varepsilon I, S; \Delta N < 0 | (n_{it} - n_{it-1}) | + \sum i\varepsilon I, X(n_{it-1})$$

where I refers to each manufacturing sector at the three-digit level of ISIC/Rev. 2 (four digits in the case of 311). Much as in the aggregate case, creation rates are obtained by dividing the above by average employment between t and t-1 in each sector:

$$JC_{It} = \sum i\varepsilon I, S; \Delta N < 0 \ (n_{it} - n_{it-1}) + \sum i\varepsilon I, E(n_{it}) /$$
$$\left(\sum i\varepsilon I(n_{it}) + \sum i\varepsilon I(n_{it-1}) \right) * 1/2$$

$$JD_{It} = \sum i\varepsilon I, S; \Delta N < 0 | (n_{it} - n_{it-1}) | + \sum i\varepsilon I, X(n_{it-1}) /$$
$$\left(\sum i\varepsilon I(n_{it}) + \sum i\varepsilon I(n_{it-1}) \right) * 1/2$$

Lastly, net creation (JCN) and job turnover (JT), at both the aggregate and sectoral levels, are defined as:

$$JCN_t = JC_t - JD_t \ \text{(industry)} \ ; \ JCN_{It} = JC_{It} - JD_{It} \ \text{(sector)}$$
$$JT_t = JC_t + JD_t \ \text{(industry)} \ ; \ JT_{It} = JC_{It} + JD_{It} \ \text{(sector)}$$

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Uruguay 1998-2002: income distribution
during the crisis

Marisa Bucheli and Magdalena Furtado

Following a period of growth in the 1990s, Uruguay experienced a 17.5% fall in output between 1998 and 2002. This study sets out to analyse the distribution of income in that period of crisis and to ascertain which population groups were worst affected. The results indicate that a tendency towards income concentration which had begun in the mid-1990s became more pronounced. Furthermore, analysis of different population groups by sociodemographic and socio-economic characteristics reveals two other ongoing phenomena: a widening of the income gap between people from households with different levels of education, and between people from households dependent on pensions and allowances on the one hand, and earnings on the other. This was reflected in the age structure of the population: minors were worse affected than older adults, so that the tendency for children to concentrate in the lower income strata was entrenched.

Marisa Bucheli

Researcher at the Economics Department, Social Sciences Faculty, University of the Republic, and consultant with the ECLAC office in Montevideo

✎ marisa@decon.edu.uy

Magdalena Furtado

Economist with the United Nations Population Fund (UNFPA) and consultant with the ECLAC office in Montevideo

✎ furtado@unfpa.org

I

Introduction

In the first half of the 1990s, when income inequality was increasing in several of the region's countries, Uruguay maintained a relatively stable distribution (Vigorito, 1999). For this reason, it was cited as the Latin American country best placed to deal with the adverse social effects of market opening, macroeconomic adjustment and reform (Kaztman, Filgueira and Furtado, 2000).

In the second half of the decade, however, a slight increase in income dispersion began to be perceived. With the deep economic slump that began in 1999, the tendency towards concentration consolidated. Against this background, the present study sets out to analyse how income distribution developed between 1998 and 2002 and, in particular, to describe the changes that occurred in different population groups. The population groups analysed were classified both by sociodemographic criteria and by socio-economic ones (origin of household income), making it possible not only to characterize social structures but to explore the causes of inequality trends as well.

Section II that follows offers a medium-term overview of income distribution, while section III focuses on the five years from 1998 to 2002. The results obtained by analysing inequality in relation to the sociodemographic structure and the socio-economic structure (origin of household income) of the population are given in sections IV and V, respectively. The distribution among individuals of per capita household income was taken for this purpose, using the 1998 and 2002 findings of the Continuous Household Survey (Encuesta Continua de Hogares-ECH) conducted by the National Institute of Statistics (Instituto Nacional de Estadísticas-INE). The income of each individual was deemed to be the per capita income of his or her household, including the value of housing. Certain social benefits were excluded because a change in the ECH questionnaire affected measurements of inequality, as detailed in appendix A. Appendix B presents the methodology used to analyse the population groups.

II

The 1990s: growth with the first signs of greater inequality

From the mid-1980s until 1998, the country's economy went through a period of growth with only one year of decline (-1.5%), in 1995. Per capita household income, however, showed a rising tendency only up until 1994, after which it grew in only one year, 1998 (figure 1). It is often argued that the evolution of per capita household income was due less to gross domestic product (GDP) growth rates than to changes in the unemployment rate and the behaviour of the labour market in general. Certainly, unemployment rose in 1995 and then more sharply in 1996, despite the economic recovery; and although it then diminished over the course of 1997 and 1998, it remained higher than at the start of the decade.

Income inequality remained stable until the mid-1990s, but from then until 2002 income concentration increased. This was due in some measure to the fact that income from pensions and allowances increased by more than earnings (Bucheli and Rossi, 1994; Machado and Reggio, 1999; Vigorito, 1999; Arim and Furtado, 2000), but the most important role was played by labour market changes in the 1990s. Not only did unemployment increase in the second half of that decade, but so did wage dispersion (Vigorito, 1999; Bucheli and Furtado, 2000a; Kaztman, Filgueira and Furtado, 2000; UNDP, 2001).

Where the dispersion of earnings is concerned, one of the best-documented phenomena was the growth

FIGURE 1

Urban areas of Uruguay: Annual percentage variation in per capita income and GDP, unemployment rate and Gini index, 1987-2002

Source: Prepared by the authors using data from the Central Bank of Uruguay and the National Institute of Statistics (INE).

In the latter half of the 1980s, wages in each sector of activity were set by negotiations between the trade union and the relevant employers' association. Agreements were ratified by the government and were thus binding on all economic units engaged in the activities covered by them. Miles and Rossi (2001) note that the greatest beneficiaries from this centralized bargaining were workers in the lower part of the income distribution, at a time when union membership was high. In 1991, the State withdrew from this wage-setting procedure, leaving businesses and workers to negotiate on a voluntary bipartite basis. As union membership fell and trade liberalization measures were implemented, this change in the role of the State contributed to an increase in wage dispersion between companies in the same sector, with growing differences, for example, by size, by union membership rates, and indeed by education level.

A third factor contributing to greater wage dispersion has been public policy. Miles and Rossi (2001) attribute part of the increase in this dispersion in the 1990s to the rise in public-sector wages and the fall in the national minimum wage.

On the one hand, whereas the public-sector pay index rose by less than the private-sector pay index in the first half of the decade, in 1995 it began to rise by more. Thus, between 1995 and 1999 public-sector pay grew by 11% and private-sector pay by 2%. Using household surveys from the beginning and end of the 1990s, Miles and Rossi found that in each quantile of the public- and private-sector pay distribution, public-sector pay rose by more or fell by less than private-sector pay, resulting in an increase in overall wage dispersion.

Second, during that decade the minimum wage tended to decline in real terms. This development did not affect the capital, where just under half the country's population live, since the bargaining process enabled workers to secure minimum wages higher than the official level. However, it did affect the country's other urban areas (where pay has traditionally been lower than in the capital), because the geographical dispersion of workers made it easier for companies to exercise monopsonic power. Consequently, the fall in the minimum wage led to a sharp decline in real pay among the lower strata in those areas.

in returns on education in the latter half of the 1990s. Wage equations calculated for private-sector workers showed that towards the end of the decade the returns on higher levels of education increased, widening the pay differentials between workers with different education levels (Bucheli and Furtado, 2000b).

Arim and Zoppolo (2000) found that the increase in the relative pay of more highly educated workers accounted for about half the increase in dispersion, something that is consistent with growth in the demand for skilled labour outstripping growth in the supply. According to Casacuberta and Vaillant (2002), this shift in demand resulted from the introduction of new technologies that complemented skilled labour, driven by trade liberalization.

The greater dispersion of earnings was not only due to the change in the returns on education. Arim and Zoppolo (2000) highlight the role of a second factor: the new form of pay-setting in the 1990s, when a centralized sector-level system was replaced by decentralized bargaining at the company level.

III

The years from 1998 to 2002:
crisis and deepening inequality

The evolution of the indicators presented in figure 1 reflects the recent crisis: the decline in economic activity resulted in lower household incomes and higher unemployment.

The recession that began in 1999 deepened over the following years, resulting in a cumulative output fall of some 17.5% between 1998 and 2002. The decline in activity was initially associated with a loss of competitiveness vis-à-vis Brazil owing to the latter's currency devaluation, which came on top of the loss of competitiveness that Uruguay was already experiencing in relation to the rest of the world. The effects were compounded by other factors: higher international interest rates and oil prices, falling international prices for certain goods exported by Uruguay (meat, wool and rice, among others), a drought that hit the agricultural and electricity generation sectors particularly hard, and the appearance of foot-and-mouth disease in early 2001, which resulted in a number of external markets being closed to Uruguayan exports. All this was made yet worse by the sudden abandonment of the convertibility system and the outbreak of financial crisis in Argentina, followed by the financial crisis in Uruguay, which culminated in 2002 with a 10.8% fall in GDP.

In these circumstances, the unemployment rate climbed to its highest ever levels, averaging 17% in 2002, while long-term unemployment also rose. At the same time, the average values of pensions and allowances fell in real terms, as did earnings and income from capital.

The drop in income from capital can be put down to the financial crisis which resulted, among other things, in lower interest rates, the closure of financial institutions and lower rents as the volume of real-estate transactions dwindled.

The drop in pensions and allowances was largely related to a change in the personal income tax (impuesto a las retribuciones personales-IRP) in 2002. This tax, which applies both to pensions and allowances and to wages, rises progressively up the income bands. The change increased the number of bands and widened the spread of taxation rates, so that after-tax pensions and allowances fell.

Obviously, this change also affected the after-tax income of formal-sector workers. The decline in earnings, however, had more to do with the crisis and the dynamic of the labour market, while wage dispersion also increased. This ongoing concentration of earnings had characteristics similar to those described for the second half of the 1990s.

First, the public-sector and private-sector pay indices continued to diverge. Having risen by more than private-sector pay up until 1999, public-sector pay now fell by less. Thus, public-sector pay fell by a cumulative 8% in real terms between 1998 and 2000 and private-sector pay by 12%, which indicates that, while public-sector workers were not immune to the crisis, they did have some "protection".

Second, education-linked pay differentials continued to widen (Amarante and Arim, 2003). Furthermore, while unemployment affected all workers, the likelihood of becoming unemployed increased less for those with higher levels of education (Bucheli and Casacuberta, 2003). Where jobs with social security coverage are concerned, the trend cannot be analysed owing to a change in the way information was gathered in 2001. It is likely, however, that the trend towards higher growth in informal working seen among less educated workers in the 1990s continued into 2001 and 2002: given the differentiated impact of unemployment, this may have acted as a survival strategy for workers in response to the crisis. Indeed, between 1998 and 2002 the share of workers doing own-account work without premises increased from 7% of all employment to 10%.

In this general context, average per capita incomes fell by 20% between 1998 and 2002, and the process of income concentration continued. Calculated for the distribution among individuals of per capita household income, the Gini index rose from 0.437 to 0.459, the Theil index from 0.344 to 0.382, and the entropy 0 index from 0.336 to 0.367.

IV

Changes in the sociodemographic structure

The positions of different sociodemographic groups have been extensively studied in Uruguay. Children and adolescents, extended households and households formed by adults with little education have traditionally been over-represented in the lower-income strata. This

is reflected in table 1, which presents the share of the different groups in the individual per capita income distribution quintiles.

Thus, in 2002, 40% of those in quintile 1 were under 14 and only 4% were over 59; in quintile 5. 35%

TABLE 1

Urban areas of Uruguay: Shares of the different sociodemographic groups in the quintiles and the population as a whole, 2002[a]
(Percentages)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Age groups						
0 to 13	40	26	18	12	9	21
14 to 20	15	14	11	8	7	11
21 to 59	40	49	50	49	50	48
60 and over	4	12	21	31	35	21
	100	100	100	100	100	100
Sex and age of household head						
Man<60	67	61	53	46	43	54
Man>=60	9	15	23	26	26	20
Woman<60	20	16	13	14	14	15
Woman>=60	4	8	11	14	17	11
	100	100	100	100	100	100
Type of household						
Single-person	0	1	3	8	17	6
Couple without children	1	4	10	18	20	11
Couple with children	56	51	45	38	38	45
Single-parent	8	8	10	9	10	9
Other	35	36	33	27	16	29
	100	100	100	100	100	100
Education of household head						
Primary	61	49	47	38	21	43
Incomplete intermediate	29	35	31	29	23	29
Complete intermediate	7	11	14	17	19	14
Incomplete tertiary	0	2	3	6	11	5
Complete tertiary	0	1	3	8	25	8
N/A	2	2	2	1	0	2
	100	100	100	100	100	100

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

[a] Grey highlighting means that the group is more heavily represented in the quintile than in the population as a whole.

were older adults and only 9% were children. While 31% of the population lived in households whose head was over 59, this group represented 13% of quintile 1 and 43% of quintile 5. As regards household type, the proportion of people living alone or with only their partner (a situation associated with older age groups) was higher in the upper strata than in the lower ones: while such people accounted for 17% of the total population, they made up 37% of quintile 5.

Lastly, there is a clear relationship between the educational level of the household head and people's position in the income scale. Overall, 43% of people lived in households headed by someone with only primary education, but the proportion was 61% in quintile 1 and just 21% in quintile 5. At the other extreme, in quintile 1 there were no members of households headed by someone with complete tertiary education, whereas this group accounted for a quarter of the population in quintile 5.

Table 2 provides a breakdown of entropy indices 0 and 1 for 1998 and 2002, revealing the explanatory power of the characteristics presented. The "within" component expresses the contribution of the groups' internal inequality, while the "between" component reflects the contribution of inequality between groups (appendix B). The results indicate that the education level of the household head was the characteristic that produced the classification with the greatest inequality between groups. Furthermore, its explanatory power

increased between 1998 and 2002, which fits with the information presented in table 3.

The share of the different sociodemographic groups in the population has undergone some changes over the long term, such as the increased incidence of higher educational levels, female heads of household and single-parent households. Between 1998 and 2002, though, these changes were small (table 3). At the same time, changes in the inequality indices of each group generally indicate an increase (i.e., greater concentration), meaning that each of the four classifications analysed in the table tended to become less homogeneous.

Concerning changes in average per capita income, the gap between the groups widened. While all groups' average incomes fell for all classifications, they fell by more in some groups (table 3), particularly under-14s, couples with children and households headed by someone with a lower educational level. These are the very groups whose structural positions in the distribution were the worst to begin with. Thus, if the analysis is by age group, income fell by 15% for over-59s, but by 21% and 24% for under-14s and those aged 14 to 20, respectively. Again, if the analysis is related to the educational level of the household head, the greatest drop affected the group where household heads had incomplete intermediate education (-27%), followed by the group whose heads had primary education (-21%). At the other extreme, the least

TABLE 2

Urban areas of Uruguay: Breakdown of entropy indices 0 and 1 into two components: the contribution to overall inequality of inequality within and between sociodemographic groups, 1998 and 2002
(Percentages)

	Entropy 0		Entropy 1	
	1998	2002	1998	2002
Age groups				
Inequality within groups	92	90	92	91
Inequality between groups	8	10	8	9
Sex and age of household head				
Inequality within groups	98	97	98	97
Inequality between groups	2	3	2	3
Type of household				
Inequality within groups	90	88	89	86
Inequality between groups	10	12	11	14
Education of household head				
Inequality within groups	79	77	77	74
Inequality between groups	21	23	23	26

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

TABLE 3

Urban areas of Uruguay: Variation in the population share, average per capita income and inequality of the different sociodemographic groups between 1998 and 2002

	Variation in population share (%)	Variation in average per capita income (%)	Variation in entropy 0 index (percentage points)	Variation in entropy 1 index (percentage points)
Whole population		–20	3.1	3.8
Age groups				
0 to 13	–3	–24	1.8	5.1
14 to 20	–3	–21	3.6	4.8
21 to 59	0	–23	3.2	4.0
60 or over	9	–15	0.4	0.8
Sex and age of household head				
Man<60	–7	–22	3.9	5.6
Man>=60	6	–18	–0.2	0.5
Woman<60	16	–24	1.7	3.5
Woman>=60	12	–14	2.6	1.5
Type of household				
Single-person	19	–12	0.1	1.0
Couple without children	8	–21	–1.3	–0.4
Couple with children	–6	–22	3.9	5.2
Singe-parent	5	–22	–0.9	–0.9
Other	4	–22	1.9	3.0
Education of household head				
Primary	–6	–21	1.3	1.4
Incomplete intermediate	8	–27	2.3	3.3
Complete intermediate	7	–19	1.5	1.0
Incomplete tertiary	–5	–18	2.8	2.4
Complete tertiary	3	–12	2.3	2.3

Fuente: Elaboración propia con datos de la Encuesta Continua de Hogares del Instituto Nacional de Estadísticas (INE).

disadvantaged in the period were members of households whose heads had complete tertiary education, as their income fell by just 12%, followed by those whose heads had incomplete tertiary education (-18%). Consequently, the tendency over those five years was for average income differentials by the educational level of the household head to widen yet further, something that is reflected in the increasing explanatory power of this classification, as discussed earlier.

V

Changes in the socio-economic structure: the distribution and origin of income

This section analyses inequality from the point of view of the origin of household income. For this purpose, the population is classified by the following criteria: first, the main income source of the household and the educational level of its head and, second, the type of activity engaged in by the income recipients.

In the first case, people are divided into 10 groups: one consists of people living in households that derive more than 65% of their income from one clearly identified source (earnings from work, income from capital, or pensions and allowances), while the remainder are groupings of people whose income

TABLE 4

**Urban areas of Uruguay: Breakdown of entropy indices 0 and 1
into two components: the contribution to overall inequality
of inequality within and between socio-economic groups, 1998 and 2002**
(Percentages)

	Entropy 0		Entropy 1	
	1998	2002	1998	2002
By main household income source and education of the household head				
Inequality within groups	77	77	7	7
Inequality between groups	23	23	2	26
By activity of household income recipients				
Inequality within groups	89	89	89	89
Inequality between groups	11	11	1	11

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

derives from a combination of sources. For those living from work and from pensions and allowances, account is also taken of the educational level of the household head, distinguishing between primary, intermediate and tertiary education.

In the second case, a distinction is made between people living in households composed solely of workers, owners of capital (employers and investors) or the inactive (those living from pensions or allowances). Also covered are combinations of workers and the inactive and, lastly, combinations of owners of capital and workers or retirees. In addition, the presence of unemployed people (other than those seeking work for the first time) is considered within two groups of households: those composed solely of workers and those that combine workers with inactive members.

As table 4 shows, the first of these classifications is the one that goes furthest towards accounting for income inequality.

1. Main household income source and educational level of the household head

Earnings from work were the main source of income throughout the five years covered. In 2002, for example, 54% of people lived in households where more than 65% of income originated in the labour market. By contrast, 13% of people depended on pensions or allowances and just 3% on income from capital. Everyone else depended on a combination of different income sources (table 5).

The situation of the groups reflects the relationship between income and the educational level of the household head. It can also be seen that those

who depended on pensions and allowances were better placed than those who supported themselves from earnings. Thus, people in earnings-dependent households whose head had primary education were over-represented in quintiles 1 and 2, whereas most of those living from pensions and allowances were situated in quintiles 3 and 4. In the case of households whose head had intermediate education, if the main source was work then the group was over-represented in quintiles 2 to 4; conversely, if pensions were the main source, then the over-representation was in quintiles 4 and 5. Lastly, if the head had tertiary education, there was over-representation in quintiles 4 and 5 when income was from work and only in quintile 5 when it was from pensions and allowances.

Meanwhile, people with income from capital were over-represented in quintiles 4 and 5, thus forming the top stratum along with the groups whose household heads had higher education.

Table 6 shows variations in the population share of the socio-economic groups and in their average per capita income and distribution indices. Unlike the sociodemographic classifications of the previous section, this one reveals major changes in structure by population group. In particular, the proportion of people in households with multiple income sources ("other") increased by 70%, rising from 8% of the population to 14% between 1998 and 2002. This happened especially in quintiles 1 and 2, which could reflect the merging of households as a way of coping with the crisis. The proportion of households receiving family assistance and/or public subsidies, especially unemployment insurance, also rose.

As regards variations in the groups' average per capita income, the first thing to note is that the widening

TABLE 5

**Urban areas of Uruguay: Shares of socio-economic groups in the
quintiles and the population as a whole, 2002[a]**
(Percentages)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Main household income source and education level of the household head						
Work of head with primary education	33	26	21	13	6	20
Work of head with intermediate education	24	33	31	29	20	27
Work of head with tertiary education	0	2	4	9	21	7
Pension of head with primary education	4	7	11	14	9	9
Pension of head with intermediate education	1	2	3	5	8	3
Pension of head with tertiary education	0	0%	0	1	5	1
Capital	1	1	2	5	8	3
Work and pension	9	15	17	15	10	13
Capital and pension	0	0	0	1	3	1
Other	29	14	10	8	10	14
	100	100	100	100	100	100
Activity of household income recipients						
Work, no unemployed	49	45	44	40	41	44
Work, with unemployed	27	20	13	8	5	15
Employers or investors	0	0	1	2	3	1
Pension or allowance recipients	4	8	13	19	22	13
Work and pensions, no unemployed	8	16	20	22	16	16
Work and pensions, with unemployed	5	7	6	3	1	4
Employers or investors (plus pension or work)	1	1	3	5	10	4
Other	6	3	2	2	2	3
	100	100	100	100	100	100

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

[a] Grey highlighting means that the group is more heavily represented in the quintile than in the population as a whole.

of income differentials by education level described in the previous section occurred only in the group whose income came from work. For those who lived from pensions and allowances and were more subject to institutional decisions than to economic fluctuations, the change in incomes was independent of the educational level of the household head, with falls of between 10% and 12% for all three educational levels.

For those living in households that depended on work, average per capita income fell by 10% when the household head had tertiary education and by between 23% and 24% when the head had a low or intermediate level of education. Note should be taken of certain changes in the labour market that may help explain this divergence: first, unemployment affected less educated workers more; second, informal activity increased in these sectors, probably as a refuge strategy. Both factors tended to reduce the income of this population.

Again, inequality increased within each work-dependent group: this suggests that other factors besides the differentiation between education levels tended to concentrate earnings.

Movements in average per capita incomes produced a second major development: for the low and intermediate education levels, the disparity between those depending on work and those depending on pensions and allowances tended to grow. Thus, from their starting positions, the groups tended to diverge by income source.

The third development of interest were the large relative losses experienced by members of households depending on income from capital: their income fell by about 24% between 1998 and 2002, something that can be put down to the financial crisis. Thus, the greatest losses were experienced by groups at the top and bottom of the distribution.

TABLE 6

**Urban areas of Uruguay: Variation in the population share,
average per capita income and inequality of the different
socio-economic groups between 1998 and 2002**

	Variation in population share (%)	Variation in average per capita income (%)	Variation in entropy 0 index (percentage points)	Variation in entropy 1 index (percentage points)
Whole population		–20%	3.1	3.8
Main source of household income and education level of household head				
Work of head with primary education	–24	–23	–0.2	1.0
Work of head with intermediate education	–3	–24	1.7	1.9
Work of head with tertiary education	1	–10	4.6	5.0
Pension of head with primary education	12	–10	0.2	0.6
Pension of head with intermediate education	39	–12	2.0	3.4
Pension of head with tertiary education	10	–11	–1.3	–1.7
Capital	–24	–24	0.4	4.4
Work and pension	1	–17	–1.8	–0.8
Capital and pension	–9	–12	0.1	–0.7
Other	70	–41	3.4	8.0
Activity of household income recipients				
Work, no unemployed	–12	–17	4.8	6.4
Work, with unemployed	52	–22	3.0	5.6
Employers or investors	–31	–18	3.8	7.2
Pension or allowance recipients	24	–12	1.1	1.9
Work and pensions, no unemployed	–16	–13	–0.2	0.7
Work and pensions, with unemployed	58	–22	–2.9	–2.7
Employers or investors (plus pension or work)	–17	–23	–0.9	–0.5
Other	57	–38	2.7	4.9

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

2. Activity of household income recipients

The placing of groups by the activity of income recipients is consistent with the results of the previous classification. People in working households were over-represented in the poorer strata, while those living in households with recipients of income from capital and/or pensions and allowances tended to be found in the higher strata.

The new element introduced by this classification is that it takes account of the presence of unemployed people in households: members of households containing unemployed people were more unfavourably placed. Since the definition of unemployment used does not include those seeking work for the first time, this outcome is unsurprising: basically, these are households that lost a breadwinner during the crisis. The average per capita income of people in these households was not just the lowest in this classification but the lowest of any group in any of the classifications. At the same time, the indices of internal inequality among these households were fairly

low compared to the rest. These are households in depressed situations, then, that also display a relative internal homogeneity.

The gap between the incomes of people in households with one or more unemployed members and those of other groups tended to widen. Thus, in households with working members, average per capita income fell by 17% when there were no unemployed and by 22% when there was an unemployed member or members. For people depending on pensions and allowances or living in households that combined inactive members and workers but no unemployed, income fell by between 12% and 13%. Lastly, in households containing inactive and unemployed members, income fell by 22%.

The widening of the gap between the incomes of those living in households with unemployed members and those of other groups could be due to the fact that in 2002 unemployed people occupied an important position as income recipients in the household. Some indicators suggest that this explanation could be important: in 1998, the unemployed member was the

household head in 17% of "workers with unemployed" households; in 2002, this was the case in 22% of such households. Thus, in 2002 households with unemployed members would have been worse affected by the loss of their main breadwinner's income; furthermore, it is possible that the educational level of households with unemployed members was lower in 2002 than in 1998. Given that unemployment tended to affect less educated people disproportionately, and considering that education levels were homogeneous within households and that incomes had a positive correlation with years of education completed, the larger rise in unemployment among the least skilled may have been reflected in lower per capita income in households with unemployed members in 2002.

Lastly, the crisis led to an increase in the percentage of people living in households that contained workers and one or more unemployed (from 10% in 1998 to 15% in 2002). The small number of cases notwithstanding, the results also suggest a slight increase both in the proportion of people in households with unemployed members combining workers and pension or allowance recipients, and in "others", where the role of subsidies is important. This is consistent with a fall in private-sector employment over the period of about 80,000 jobs, and with the public-sector recruitment freeze (Amarante and Arim, 2003).

3. Summary of the changes

To analyse the impact of changes related to the origin of income, the variation in total inequality as measured by the entropy 0 index was broken down into the components that explain it. These components are the changes in groups' internal inequality, alterations in the population structure between groups, and variations in the groups' average per capita income differentials (appendix B). The results are given in table 7.

The variation in the entropy 0 index between 1998 and 2002 was 3.1 percentage points. The net impact of the rise in inequality within groups is summed up in term A, where a positive sign indicates a concentrating effect. In the classification by recipient type, this component was essential in accounting for the rise in concentration. Consequently, this classification in itself accounted for a minor share of the changes and, strictly speaking, lost some explanatory power, since some variables not included in it must obviously have gained in importance during the period.

Mention was made in the previous section, however, of the large shift of population into the group living in households with one or more unemployed members, which ought to have increased the proportion of people at the lower end of the distribution. The effects of such shifts are summarized in terms B and C in table 7. Term B has a negative sign because the direction of change in the composition of the population was from high-concentration groups to groups with greater internal equality. It should be recalled that it was the groups containing unemployed people that recorded the lowest indices of inequality, indicative of depressed situations with a relatively high degree of internal homogeneity. In this way, then, the net effect of these shifts was to reduce concentration. By contrast, the route through term C had the effect

TABLE 7

**Urban areas of Uruguay: Contribution of different components
to the variation in inequality between 1998 and 2002**
(Percentage points)

	Main income source and education of household head	Activity of household income recipients
Variation in entropy 0 index	3.1	3.1
Component of inequality within groups		
Term A	1.0	2.7
Term B	1.0	–0.3
Subtotal	*2.0*	*2.4*
Component of inequality between groups		
Term C	–0.8	0.3
Term D	2.0	0.3
Subtotal	*1.2*	*0.7*

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

of increasing concentration, as this is the route reflecting shifts of individuals from the intermediate strata to the high or low ones. Note that while the sign of the term was positive, the net effect of the shifts was zero.

Lastly, term D records the impact of the changes on the average per capita income differentials of the groups. The fact that it is positive in both columns of table 7 indicates a concentrating effect, and its large value in the second column reflects the major impact of widening income gaps on the increase in overall inequality. In particular, term D reflects what happened to the relationship between pension and allowance income and earnings and, within the latter, to income associated with tertiary education versus intermediate or low levels of education. However, the table also reveals that rising inequality within groups had a concentrating effect.

VI

Conclusions

Uruguay passed through a period of growth with the first signs of increasing inequality in the late 1990s. Rising inequality was largely related to changes in the labour market, where unemployment rose in the second half of the decade, and with an increase in wage dispersion.

Concerning the increase in the dispersion of earnings in the 1990s, the three best-documented developments were: i) the widening of pay differentials between workers with different education levels; ii) the change in wage bargaining arrangements, with a centralized sector-level regime being replaced by a decentralized company-level one, and iii) government involvement in the labour market, in particular the growth of public-sector wages compared to private-sector ones, and the decline in the national minimum wage.

An economic recession began in 1999 and worsened in the following years, resulting in a cumulative output decline of some 17.5% between 1998 and 2002. The unemployment rate rose to an unprecedented high, averaging 17% in 2002; long-term unemployment rose, and average incomes from work, capital and pensions and allowances fell in real terms. Even as earnings diminished, wage dispersion continued to increase, in a context of widening pay gaps between educational levels and higher growth in public-sector than in private-sector pay.

In this period of crisis, incomes fell across the board and inequality worsened.

Analysis of different sociodemographic classifications (by age group, by sex and age of the household head, by household type and by the head's education level) revealed a worsening of the situation for all groups. Some came off worse than others, however: minors, couples with children and households with less educated heads. It should be noted that the widening of the income differential both between over-59s and children and adolescents, and between households with heads of different educational levels, had been in progress since the mid-1990s, and that the process intensified with the crisis. Furthermore, income concentration increased within the groups, reflecting a greater heterogeneity of situations.

Two criteria were used to analyse socio-economic characteristics: i) the main source of household income and the educational level of the household head, and ii) the type of activity engaged in by income recipients. Between them, these picked up major changes in the share of the socio-economic groups in the population: the percentage of people in households combining workers with one or more unemployed members rose, as did that of people in households combining multiple income sources. These changes are a reflection of employment problems, which had a concentrating effect on inequality, although the net impact of the shifts was fairly low.

Again, while all groups saw their income fall, the gaps between the incomes of the different groups widened, and concentration increased as a result. The analysis of incomes identified four major developments.

First, in the classification by recipient type, the drop in average per capita incomes was more pronounced for working households than for households that depended on pensions and allowances. Second, within the earnings-dependent group, the gaps between households whose heads had different levels

of education widened. There were some changes in the labour market which may help explain this divergence: unemployment affected the less educated most, while wage differences between workers of different skill levels continued to widen. Third, people living in

households that depended on income from capital sustained a major loss in relative terms, attributable to the financial crisis. Last, the income gap between people in households with one or more unemployed members and those in other groups tended to widen.

APPENDIX A

The data used

The data used come from the Continuous Household Survey (Encuesta Continua de Hogares-ECH) conducted by the Uruguayan National Institute of Statistics (Instituto Nacional de Estadística-INE), and relate especially to the years from 1998 to 2002.

The ECH is a weighted urban survey representative of households living in localities with more than 5,000 inhabitants. It gathers information on personal, occupational and income characteristics. It covers the income of all household members, distinguishing between income from work, capital and transfers. In all cases what is reported is the net income received, i.e., after taxes.

In 2001, the INE changed its questionnaire; in particular, it started to collect more detailed information on the different income categories. This change improved the collection of data on the following social benefits: *hogar constituido* (an extra payment for civil servants with dependants), the family allowance and the health-care contribution. As a result, the proportion of people recorded as being in receipt of these benefits rose from 1.5% in 2000 to 21.9% in 2001 and the average real value of benefits per recipient increased by 50%. The improvement also affected measures of inequality, tending to reduce income concentration. To compare the changes between 1998 and 2002, therefore, it was decided to measure income exclusive of social benefits.

APPENDIX B

Breakdowns

a)   Breakdown between and within the entropy indices

The indices of entropy of grade 0 (E_0) and 1 (E_1) of per capita income distribution among individuals correspond respectively to:

$$E_0 = (1/n) \; \Sigma_i \; ln \; (\mu \, / \, y_i) \qquad\qquad i = 1, \, ..., \, n$$

$$E_1 = \Sigma_i \; (x_i) \; ln \; (nx_i) = (1/n) \; \Sigma_i \; (y_i/\mu) \; ln \; (y_i/\mu) \qquad i = 1, \, ..., \, n$$

where y_i represents the per capita income corresponding to person i, μ is the average income of the population and x_i is the income share of person i.

One property that has made this family of inequality indices attractive is that they can be broken down additively into two components that express the contribution of inequality within and between population groups to overall inequality. Thus:

$$E_0 = \Big\{ \Sigma_g \, [(n_g/n)] \, E_{0g} \Big\} + \Big\{ (1/n) \, \Sigma_g \, n_g \, ln \, (\mu/\mu_g \,) \, \Big\}$$

$$E_1 = \Big\{ \Sigma_g \, [(n_g/n) \, (\mu_g/\mu)] \, E_{1g} \Big\} + \Big\{ (1/n) \, \Sigma_g \, n_g \, (\, \mu_g/\mu) \, ln \, (\mu_g/\mu) \, \Big\}$$

Note that the first term is the weighted sum of the entropy indices of each group, so that its value is a measure of the contribution made by the degree of concentration within groups to overall inequality. In the case of E_0 the weighting is by the share of each group in the population,

while in the case of E_1 it is by their share in total income. The second term is the index value calculated for the average incomes of each group. Thus, this component can be interpreted as a measure of inequality whereby all individuals within a group are assumed to have the same per capita income, so that attention is concentrated on the differences between the groups.

This breakdown can be used to measure the explanatory power of a classification, since the higher the percentage contribution of the component is, the more powerful the classification will be in accounting for overall inequality.

b)   Breakdown of changes in overall inequality over time

Aggregate inequality can change for three reasons. First, because of changes in distribution within groups: when inequality in a group rises, there is a concentrating effect on the total population. Second, changes in the share of each group also influence overall inequality: a shift of people from the group with the lowest dispersion to the most unequal group has a concentrating effect. Furthermore, changes in the shares of groups affect the relationship between the average income of each group and average income overall; thus shifts of people from the intermediate strata to the high or low strata have a concentrating effect. Third, variations in average income also affect the distribution, since increases in income differentials between groups result in greater inequality.

For the analysis of changes by origin of income, use was made of Mookherjee and Shorrocks' (1982) decomposition, which enables the variation in the entropy 0 index between year t and $t+i$ to be broken down into four components, to ascertain the effect of changes in the origin of income on aggregate inequality. Thus, the authors propose the following approach:

$$\Delta E_0 \approx \Sigma_g \overline{v_g} \Delta E_{0,g} + \Sigma_g \overline{E_{0,g}} \Delta v_g +$$

$$\Sigma_g \left(\overline{\lambda_g} - \overline{\ln \lambda_g} \right) \Delta v_g + \Sigma_g \left(\overline{\theta_g} - \overline{v_g} \right) \Delta \ln \mu_g$$

where v_g is the group's share of the population, λg is the ratio between the group's average per capita income and average per capita income overall and θg is the group's share of total income.

The first addend (term A) represents pure inequality changes within each group; the next two addends (terms B and C) changes in the structure of the groups and the last (term D) variations in their average incomes. For each term, a positive sign indicates a concentrating effect, as they go to increase the general entropy index.

A more detailed analysis of each of the terms reveals the power of this methodological approach.

Term A is the weighted sum of the variation in the entropy indices of each group. The weights are positive and their sum is identical to one. Consequently, when inequality increases within groups, term A has a concentrating effect and its size will depend on the share of the groups in the population. If the rise in overall inequality is fundamentally due to this term, then the origin of people's income will strictly speaking have lost explanatory power, as other variables not included in the classification will have gained in importance during the period.

Term B is another of the components of the variation in inequality within groups, but it represents changes in the share of individuals and is calculated as the sum of these weighted by the entropy indices of each group. Note that the sum of Δv_g is zero, so that the sign of term B will depend strongly on the value of the weights. For example, if the population were classified into two groups, the term would have a positive sign when there was a shift of individuals from the group with the least internal inequality to the one with the highest concentration. Broadly speaking, then, changes in the composition of groups due to a rise in the share of those with less internal equity will have a concentrating effect on overall inequality.

Term C also expresses changes in the structure of the groups, but in this case the weight for the variation in the shares is a parabolic function of relative average income, whose minimum value is $(\lambda_g, \lambda_g - \ln \lambda_g) = (1.1)$. Consequently, shifts of individuals from middle-income strata to high and/or low strata will be synthesized in a positive sign for term C. Intuitively, it is easy to accept that a reduction in the number of people with incomes close to the average will tend to increase the explanatory power of the differences between groups and have a concentrating effect on overall inequality.

Lastly, term D is the weighted sum of variations in the groups' average income (in logarithms). Note that the weight $\theta_g - v_g$ is positive when the average income of the group is above the average. In this case, if group income rises, the effect on D is positive. Conversely, if $\theta_g - v_g$ is negative, growth in the income of the group will have a negative impact. Since the sum of the weights is zero, the final result of term D will depend on the extent to which the effects of the different groups offset each other. Consequently, a positive sign for the term indicates that changes in average incomes had the effect of increasing the degree of inequality between individuals as the result of an increase in the average differences between the groups.

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Social and economic problems in Cuba
during the crisis and subsequent recovery

Carmelo Mesa–Lago

U p to 1989, social policy in Cuba achieved very notable advances in education, health, social security, employment and income distribution. The collapse of the socialist bloc and other internal and external factors, however, gave rise to a severe crisis, which reached its bottom in 1993 and led to a deterioration in almost all the social indicators. The modest market-oriented reforms introduced in 1993-1996 generated a partial recovery but were later interrupted and have been reversed since 2003. The social indicators improved after 1994, but in 2003 some of them had still not regained their 1989 levels and poverty and inequality had increased. This article evaluates the economic and especially the social evolution of Cuba between 1989 and 2004, on the basis of Cuban statistics and publications, ECLAC documents, and a recent study of economic and social aspects in 1997-2002 jointly published by ECLAC, the National Economic Research Institute of Cuba, and the United Nations Development Programme.

Carmelo Mesa-Lago

Distinguished Service Professor

Emeritus of Economics,

University of Pittsburgh

✓ cmesa@usa.net

I

Introduction

Up to the end of the 1980s, social policy in Cuba had achieved very notable advances in education, health, social security, employment and income distribution, thanks to the priorities and financial resources assigned by the government and the aid amounting to US$ 65 billion provided by the Soviet Union between 1960 and 1990 (Mesa-Lago, 2000) as well as the assistance of the other member countries of the Council for Mutual Economic Assistance (CMEA). The collapse of the socialist bloc, preceded in Cuba by the recession caused by the anti-market approach taken during the Rectification Process (1986-1990), and the inability of the Cuban model to generate sustainable economic growth, expand and diversify exports, and achieve import substitution provoked a severe crisis, which reached its worst point in 1993. Because of this, almost all the social indicators deteriorated, in spite of the efforts of the government. The modest market-oriented reforms, mostly introduced between 1993 and 1996, generated a partial recovery, but it slackened in 2000-2002, partly because of the virtual paralyzation of the reform process. The social indicators improved after 1994, but in 2003 some of them had still not regained their 1989 levels and poverty and inequality had increased (Mesa-Lago, 2003a and 2003b; Mesa-Lago and Pérez-López, 2005).

This article evaluates the economic and especially the social evolution of Cuba during "The Special Period in Time of Peace" (1990-2004), which makes it different from the treatment often given to this subject in the literature, limited to certain phases in that period and lacking an integrated long-term analysis. For simplicity's sake, however, the statistics provided correspond to years which correspond to three different

points in that evolution: 1989 (the eve of the crisis), 1993 (the worst moment in the crisis) and 2003 (the most recent year for which data are available). The analysis is based on Cuban statistics and publications, several documents of ECLAC and other international organizations, and recent works by this and other authors. Among the ECLAC documents, special mention is made of those on structural reforms and economic and social performance in the 1989-1998 period (ECLAC, 1997 and 2000a). Detailed references are also made of a recent work entitled *Política social y reformas estructurales: Cuba a principios del siglo XXI* (Álvarez and Máttar, eds., 2004),[1] published jointly by ECLAC, the National Economic Research Institute of Cuba (INIE), and the United Nations Development Programme (UNDP), which concentrates on social aspects and is restricted to the 1997-2002 period.

In the following sections, this article presents a summary of Cuba's economic evolution (section II), an evaluation of social problems —poverty, income distribution, unemployment, nutrition, education, health, social security and assistance, and housing— during the crisis and subsequent recovery (section III), and a discussion on whether Cuba is an integral development model for the region (section IV).

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[1] The main topics of the relevant chapters in Álvarez and Máttar (2004) and their authors are as follows: a summary of economic performance (Jesús M. García Molina); an overview of social policy and nutrition (Angela Ferriol); education, health and employment (Victoria Pérez Izquierdo); water supply, sanitation and housing (Aída Atienza); social security and assistance (Maribel Ramos), and conclusions and future prospects (Beatrice Dhaynaut and Jorge Máttar). There is also a statistical annex which is available on the web site of the ECLAC Subregional Headquarters in Mexico (www.ecla.cl/mexico/) and which will henceforth be referred to as "Anexo Estadístico", followed by the corresponding table number. All the authors except two are Cuban, and the chapters on social policy were written by researchers of the National Economic Research Institute of Cuba (INIE). Frequent references are made in the present article to those authors, giving as the source their contributions to Álvarez and Máttar (2004).

II

A summary of Cuba's economic evolution

Table 1 summarizes the main Cuban economic indicators from 1989 to 2003: the internal macroeconomic indicators, those on physical production, and the external indicators.

1. Internal macroeconomic indicators

A serious obstacle to evaluating the evolution of GDP over the 1989-2003 period is the fact that in 2001 the base year for calculations at constant prices was changed from 1981 prices to 1997 prices. The new series of the National Statistical Office (ONE, 2002 and 2003) only covers the 1996-2003 period, and when it is compared with the same years in the previous series (ONE, 1998 and 2001) it results in a systematic annual increase of 60% in the value of the GDP, without the authorities having given any explanation of this anomaly. As the new series does not go back to 1989,

TABLE 1

Cuba: Economic indicators, 1989, 1993 and 2003

Indicators	1989	1993	2003	Variation 2003/1989 (%)
International macroeconomic indicators				
Average annual GDP growth, 1981-1989 and 1990-2003 (%)	2.9		−0.5[a]	−83
Per capita GDP (constant pesos)	1 852	1 172	1 538[b]	−17
Investment/GDP (%)	15.2	6.7	7.8[c]	−49
Inflation rate (%)	0.5	25.7	−1.0	−100
Monetary liquidity/GDP (%)	21.6	73.2	42.7	98
Fiscal balance/GDP (%)	−7.2	−33.5	−3.2	−56
Physical production (thousands tons)				
Sugar	8 121	4 246	2 200	−73
Nickel	47	30	72	53
Oil	718	1 107	3 609	402
Electricity (millions of kwh)	16	11	16	0
Cement	3 759	1 049	1 345	−64
Textiles (millions of square meters)	220	51	28	−87
Fertilizers	898	94	72	−91
Cigars (units)	308	208	308	0
Livestock (millions of head)	4.9	4.6	4.0	−18
Fish and shellfish	192	94	67	−65
Cow's milk	1 131	585	607	−46
Eggs (million units)	2 673	1 512	1 785	−33
Citrus fruit	1 016	644	793	−22
External indicators (thousand millions)				
Exports of goods (pesos)	5.4	1.1	1.6	−70
Imports of goods (pesos)	8.1	2.0	4.6	−43
Merchandise trade deficit (pesos)	2.7	0.9	3.0	11
Terms of trade (1989=100)	100.0	54.4	44.3	−56
External debt (dollars)	6.2	8.8	11.0	77
Foreign aid/investment (dollars)	6.0[c]	2.5[c]		−58
Exchange rate (pesos per dollar)	7	78	26	271
Gross income from tourism (dollars)	550	700	1 996	262
Remittances (dollars)	0	0	915	

Source: Figures for 1989: Comité Estatal de Estadísticas (1991); 1993: ONE (1998); 2002-2003: ONE (2003 and 2004) and ECLAC (2004); on aid/investment and terms of trade: Mesa-Lago and Pérez-López (2005); on remittances: ECLAC (2003a).

[a] Average for 1990-2000 at 1981 prices, combined with average for 2001-2003 at 1997 prices.
[b] The per capita GDP for the year 2000 at 1981 prices was projected to 2003 on the basis of the 2001-2003 growth rate at 1997 prices.
[c] Soviet aid only in 1989.
[d] Total accumulated disbursed investment, 1991-2002.

it is impossible to compare the GDP in the two series for 1989-1995 (Mesa-Lago and Pérez-López, 2005). Furthermore, since 2002 the Cuban authorities have criticized the methodology used to calculate GDP in the System of National Accounts, claiming that it adversely affects Cuba because it underestimates the value of free social services and consumer price subsidies, and in the last two years they have therefore published alternative figures which increase the value of GDP still further (Rodríguez, 2002, 2003 and 2004).

Table 1 shows that GDP grew at an annual rate of 2.9% in 1981-1989 but, because of its sharp drop in 1990-1993, averaged –1.4% for the 1991-2000 period: the lowest rate for the whole of Latin America and the Caribbean, according to data from the *Preliminary Overview of the Economies of Latin America and the Caribbean* (ECLAC, 2000c).[2] In an attempt to make up for the lack of a continuous series, I have added the years 2001 to 2003 to the average for the 1990-2000 period, estimating an average annual rate of –0.5% in 1991-2003. A rough calculation of per capita GDP in 2003 indicates that that year was still 17% below the 1989 level.

The gross investment rate at current prices (not published in Cuba at constant prices) went down by 49% between 1989 and 2002, from 15.2% to 7.8% of GDP.[3] The ECLAC series on gross domestic investment at constant prices gives higher figures: for example, 12.2% versus 7.8% in 2002 (ONE, 2003; ECLAC, 2004). García Molina (2004, pp. 19 and 36) states that "Cuba stands out in the region by its low investment coefficient"; between 1977 and 2003 that coefficient went down from 16.2% to 10.8% and external saving sank from 1.9% to 0.6%, which means "a serious process of decapitalization" that could hinder medium-term growth.

According to official figures, the inflation rate, which stood at 25.7% in 1994, went down markedly, and there was deflation in the six years from 1995 on (inflation in 2003 was 1%). No official information is available, however, on the calculation of the consumer price index and the GDP deflator, which are crucial not

only for estimating inflation but also the GDP growth rate at constant prices, real wages, real budgetary expenditure, etc.[4] Monetary liquidity decreased with the economic recovery, but in 2003 it was nevertheless equal to 43% of GDP: twice as much as in 1989. García Molina considers that the increase in liquidity in 2002 affected the upsurge of inflation to 7% in that year, but it is hard to understand why, although total monetary liquidity increased by 27% between 1999 and 2001, there was average deflation of 2.2% over the same period (García Molina, 2004, p. 43; ONE, 2003).

An important achievement was the reduction of the fiscal deficit from 33.5% of GDP in 1993 to 3.2% in 2003 (half the 1989 level). A contributory factor in this was the improvement in tax revenue after the 1994 tax reform, but in 2003 60.6% of such revenue came from indirect taxes with regressive effects, while only 39.4% was generated by direct progressive taxes (Anexo Estadístico, I-20). On the expenditure side, subsidies for the losses of State enterprises went down to 1.3% of GDP in 2001 but rose again to 2.8% in 2002 and 3.9% in 2003 (Álvarez and Máttar, 2004; Anexo Estadístico, I-20).[5] Furthermore, according to García Molina (2004, pp. 39-40) GDP growth has been based on the expansion of government consumption represented by increased fiscal spending, and the high defence and internal security expenditure —which amounted to 4% of GDP, the second highest percentage in the region (UNDP, 2004)— were due solely to the "dispute between Cuba and the United States", leaving out internal factors such as the increase in the size of the police force and the high cost of armed forces pensions.

2. Physical production

Table 1 shows that after sharp declines in the main products of the agricultural, mining and manufacturing

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[2] After 2000, the *Preliminary Overview*, published annually by ECLAC, suspended the series giving the annual average GDP for the last ten years.

[3] In actual fact, there are two Cuban investment series at current prices: that published up to 2000 gave a level of gross domestic investment higher than that published since 2001, although the change in the base year for calculating constant prices should not affect the figures at current prices (ONE, 2001 and 2003).

[4] There is no published information on the components of the "shopping basket", the prices and weights of goods and services provided through rationing, the agricultural market, stores that only accept foreign currency, and own-account workers, nor on the way those components have varied in importance over time, nor on how the foreign-currency value of economic activity is converted into pesos.

[5] García Molina says that in 2002 there were "increasing subsidies granted to cover losses by State agricultural enterprises" and that the reduction of such subsidies would "help significantly to put fiscal expenditure on a sounder basis and free resources to aid in the recovery of investment" (García Molina, 2004, pp. 33 and 54). Subsidies for losses by State enterprises grew by 210% between 2001 and 2003, reaching 3.9% of GDP (ECLAC, 2004).

sectors, especially in 1993, there was a recovery, but in 2003 only two products had exceeded their 1989 levels (oil, by 402%, and nickel, by 53%). Two others had recovered the 1989 levels (electricity and cigars), but the other nine were between 18% and 91% below such levels. García Molina attributes the drop in sugar production (by 2.3% per year in the 1998-2002 period) to hurricane damage, but output went down steadily from 8 million tons in 1989 to 4 million in 1993 and 2 million in 2003 (73% below the 1989 level). Internal problems such as high costs, low levels of competitiveness and profits, technological backwardness and lack of incentives, together with low world prices, forced the reorganization of the sugar industry in late 1992, the closing down on 46% of the sugar mills, and the shifting of half the area planted with sugar cane to other crops. García Molina highlights the increase in the production of roots and tubers, green vegetables and pulses in 1997-2002 but says nothing of the following drops in production: 45% in poultry meat and 20% in beef, 14% in the number of head of livestock and 7% in milk production in the same period, as well as 45% in the catch of fish and shellfish in 1997-2002 and 26% in rice production in 1996-2003 (ONE, 2003; ECLAC, 2004). While acknowledging some of the domestic problems, García Molina maintains that a deepening of the agricultural reforms would help to raise food production and reduce the need for imports, as well as bringing down prices, which continue to be high (García Molina, 2004, p. 28).

Outputs of cement, textiles and fertilizers in 2003 were between 64% and 91% below the 1989 levels. García Molina notes that there are shortcomings in terms of industrialization: little change in the composition of exports, low value added, minimal levels of integration, little inter-firm cooperation and technical backwardness. After reporting that manufacturing production stagnated in 1998-2002, he highlights the notable increases in the output of oil, gas and non-metallic minerals (sectors in which there has been foreign investment), but fails to note that nickel production fell by 6.3% in 2001-2003, while in 1998-2002 the output of textiles went down by 44%, that of fertilizers by 39%, and that of cement by 22% (ONE, 2003; García Molina, 2004).

3. The external sector

In spite of the recovery, in 2003 the value of exports was 70% below the 1989 level and that of imports was 43% lower, giving a trade balance deficit of 2,957 pesos (table 1). Although this deficit was only 11% greater than that of 1989, at that time 84% of the deficit was with the Soviet Union, which gave Cuba automatic credits to cover it that were never repaid; now, however, Cuba has to seek scarce loans for short terms at high interest rates. García Molina does not touch upon this crucial problem, asserting that in 1998-2002 the volume of goods exported rose while that of imports went down, and that "there was an increase in external sales of non-traditional products with high value added, such as biotechnological and pharmaceutical goods, medical equipment and advanced diagnostic media" (García Molina, 2004, p. 49). The official figures, however, show a 20% drop in the value of exports between 1998 and 2002, as well as a 1% increase in the value of imports in the same period, giving rise to and increase of 10.8% in the merchandise trade deficit (ONE, 2004). Moreover, in 2002 the value of pharmaceutical and medical products was only 3% of the total value of exports and went down to only 1% in 2003; furthermore, the *Anuario estadístico de Cuba* does not disaggregate exports of medical equipment and advanced diagnostic media (ONE, 2003 and 2004). In contrast the respective proportions of traditional exports in the total in 2002 were: sugar, 32%; nickel, 29%; tobacco, 10%, and fishery products, 7%. The terms of trade deteriorated by 56% in 1989-2003.

The share of food imports increased from 12% to 19% between 1989 and 2002, while those of manufactures rose from 14% to 23%; imports of machinery and transport equipment, however, declined from 31% to 24% (Comité Estatal de Estadísticas, 1991; ONE, 2003). This indicates a deterioration in the level of self-sufficiency in food production, import substitution and industrialization. García Molina (2004, p. 46) warns that the "meagre agricultural performance" has an adverse impact on the fiscal and external deficits, because it "makes it necessary to import large volumes of foodstuffs [since 2002, mainly from the United States] and hinders the growth and diversification of exports". Cuba is now a net food importer, foreign exchange outlays exceed income in this respect, and the agricultural food export sector now registers a deficit instead of a surplus. As production of meat, milk, rice and beans is insufficient, these products must now be imported and account for half the total value of food imports (Ferriol, 2004b, p. 143).

Tourism and remittances from abroad were positive factors in the balance of payments. Tourism generated nearly US$ 2 billion of **gross income** in

2003 and became the main source of foreign exchange, but the cost of the necessary imports per peso of income was high (reducing the **net income** by 35% in that year), while the occupancy level of the hotel infrastructure was low, thus "causing the immobilization of resources despite the big investment effort" (García Molina, 2004, p. 23). In fact, the occupancy level went down from 64% in 1998 to 55% in 2003, while average daily income per visitor fell by 13% (Álvarez and Máttar, 2004; Anexo Estadístico, I-15). The second largest source of foreign exchange for Cuba (exceeding that generated by sugar and nickel together) was remittances from abroad, which were estimated by ECLAC to amount to US$ 915 million in 2003 (table 1).[6]

The external debt, measured in US dollars, increased by 77% between 1989 and 2003, but García Molina reports that it went down from 43.3% of GDP in 1997 to 35.5% in 2002 because of the appreciation of the dollar over the euro and the yen in that period and the accumulation of interest arrears (García Molina, 2004, p. 50). As a percentage of the value of exports of goods and services, however (an indicator traditionally used by ECLAC), the debt increased from 255% in 1997 to 262% in 2003, and in the latter year it amply exceeded the regional average of 172% (ECLAC, 2003a). Moreover, whereas in 1989 Cuba received US$ 6 billion of aid from the Soviet Union, total foreign direct investment accumulated in the period 1991-2002 was only US$ 2.5 billion, equivalent to an annual average of US$ 200 million, and it has gone down in recent years. The United States embargo has been a negative factor, and it was stepped up in 1996 and 2004, but it is not the fundamental culprit of Cuba's poor economic performance (Mesa-Lago and Pérez-López, 2005).

III

Social problems during the crisis and subsequent recovery

This section contains an analysis of the main social problems during the worst stage of the crisis and their subsequent improvement, though not always complete recovery: namely, poverty, inequality, unemployment, nutrition, education, health, social security and assistance, and housing.

1. Poverty

Cuba has not published official statistics on poverty incidence. In 1997 it introduced the concept of the "population at risk" of poverty, defined as persons without sufficient income to acquire a basic basket of food and non-food goods (equivalent to the poverty line). The methodology calculates the cost and nutritional contribution of the foodstuffs sold at subsidized prices[7] and assumes that the rest of the basic basket is obtained on the free market at the prices prevailing there; it also incorporates into the income of the population the value of the social services provided free of charge (*Informe de Cuba,* 1997; Ferriol, 2004a, p. 78; Ferriol and others, 1998). A Cuban economist (Togores, 1999) has estimated Amartya Sen's "poverty severity index" for the whole of the Cuban population (not only the urban population) in 1995, as well as the poverty incidence without taking into account the free social services and price subsidies. Lastly, in 2002 a survey was made of the personal perception of poverty in the capital, in which the interviewees were asked to classify themselves in one of three categories: poor, almost poor and not poor. Table 2 summarizes all these rough estimates: the urban population at risk trebled between 1988 and 1999, increasing from 6.3% to 20%, and

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[6] This figure is taken from ECLAC (2003a), but the 2000-2003 figures do not appear in the annual reports by ECLAC on the economic evolution and future prospects of Cuba (ECLAC, 2003b and 2004). Other estimates of the remittances vary from only US$ 100 to 400 million (see Mesa-Lago and Pérez-López, 2005).

[7] The average monthly subsidy per inhabitant through the system of rationing was 6 pesos in 2002, equivalent to 2% of the average wage according to my calculations.

TABLE 2

Cuba: Poverty estimates, 1988-2002

	1988	1995	1996	1999	2002
Estimates by Ferriol					
Total urban population at risk (% of population)	6,3		14,7	20,0	a
Population at risk in the city of Havana (% of population)	4,3	20,1	11,5		
Perception of poverty in terms of income inthe city of Havana (% of population)					31,0[b]
Estimates by Togores					
Sen's index (severity of poverty)[c]		0,39 - 0,42[d]			
Poverty incidence (% of total population)		61 - 67[d]			

Source: Ferriol (2004a; 2003) and Togores (1999).

[a] According to Ferriol (2003), the preliminary calculations for 2001 confirm a resistance to a downward movement of the percentage of the population at risk, which would indicate that that percentage remained around 20%.

[b] Also, 23% of "almost poor".

[c] For a large population, Amartya Sen's poverty severity index (P) may be expressed as follows: $P = H[I + (1-I) G_p]$, where H is the incidence of poverty (population under the poverty line, divided by the total population); I is the income gap, understood as the difference between the poverty line and the average income of the poor population, in relation to the poverty line; and G_p is the Gini coefficient for the income distribution of the poor. P varies between 0 and 1, having a value of 0 if the whole population has an income higher than the poverty line, and 1, if the income of the whole population is zero.

[d] Variants obtained by using different income distributions.

remained at the latter level in 2001; in the capital it increased from 4.3% to 20% between 1988 and 1995 but subsequently went down to 11.6% in only one year.[8] The figures of other estimates are much higher: the poverty severity index was 0.39-0.42, the poverty incidence in the population as a whole was 61%-67% in 1995, and the perception of poverty in the capital was 31% in 2002. Although the measurement techniques used were very diverse, these figures all indicate an increase in poverty throughout the period.

Ferriol (2004a, p. 81) compared the urban population at risk in Cuba in 1999 with the incidence of poverty in four Latin American countries in 2001-2002, placing Cuba after Uruguay as one of the countries with the least "urban poverty". She left out Costa Rica, however, which had a lower poverty incidence than the population at risk in Cuba, and Chile, which had a similar incidence, and included instead Colombia and Ecuador, which are countries with a high incidence of poverty (ECLAC, 2001).

2. Inequality

In the second half of the 1980s (during the anti-market Rectification Process), "society tended to become more homogeneous" through two means: more equal access to consumption, and the reduction of wage differences. This weakened wages as an incentive to work harder, however, and up to 1994 there was "high absenteeism" and a "high level of disguised unemployment". The reforms made in the 1990s restored incentives to work harder, but widened wage differences and created a segmented consumption market, thus increasing inequality (Ferriol, 2004a, pp. 67-71).

Average real wages in the State sector fell by 45% in 1989-1998 according to ECLAC, and by 32% in 1989-2002, according to a Cuban economist (Togores, 1999; Togores and García, 2003; Togores, 2004), measured in both cases at 1981 prices. Pérez Izquierdo, in contrast, shows an increase of 17.4% in 1998-2002, based on 1997 prices. The change in base year results in a real wage almost three times higher in 1998, 2000 and 2002 (table 3). At the same time that real wages declined in the State sector, private sector incomes grew considerably, and remittances heightened the inequality. In 1989 the ratio between the highest and lowest wages was 4.5:1. Although the comparison is not exact, in 1995 the ratio between the average income of the top decile and that of the lowest decile of households in the capital was 150:1, and it increased to 199:1 in 2001 (Quintana, Nova and others, 1995; Espina, 2003).

Ferriol claims that rationing at subsidized prices reaches all families and covers at least 50% of nutritional requirements. It is very well known, however, that nowadays the foodstuffs included in the

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[8] The greater increase of the "population at risk" in the capital over urban areas as a whole is explained by growing inequality, but this is in contradiction with the reduction of the "population at risk" in 1996 despite the overall increase in inequality; furthermore, the reduction of almost 9 percentage points in a single year is doubtful.

TABLE 3

**Cuba: Estimates of average real monthly wages
in the State sector, 1989-2002**

Estimates	1989	1998	2000	2002	Variation (%)
ECLAC (index 1990=100)[a]	104	57			–45
Togores (pesos)[a]	130	73	83	89	–32
Izquierdo (pesos)[b]		206	242	242	17

Source: ECLAC (2000a), Togores (1999), Togores and García (2003), Togores (2004), Pérez Izquierdo (2004c).

[a] At 1981 prices.
[b] At 1997 prices.

TABLE 4

Cuba: Estimates of inequality, 1986-1999

Year	Gini coefficient	Income quintiles		
		Poorest (0-20%)	Richest (81-100%)	Ratio of richest to poorest
1986	0.22	11.3	33.8	3.3
1989	0.25	8.8	33.9	3.8
1995	0.55			
1996	0.39	4.8	54.4	11.3
1996-98	0.38			
1999	0.407	4.3	58.1	13.5

Source: Brundenius (2002) for 1986, 1989, 1996 y 1999; Añé (2000) for 1996 and 1999; Fabienke (2001) for 1995, and Ferriol (2004a) for 1996-1998.

rationing system only cover about a week's needs, and the rest of the month it is necessary to buy food in the free farmers' markets, stores that only accept foreign exchange, and the illegal informal market, where prices are much higher than those of rationed goods and/or demand the possession of foreign exchange. The lowest income deciles spend 88% of their total food budget in those markets; moreover, 62% of households receive foreign exchange mainly from remittances from abroad, which further heightens the social inequality between those who have access to foreign exchange and those who have not (Ferriol, 2004a, pp. 66 and 72-78; Ferriol, 2004b, pp. 147-150).

The foregoing indicates that there has been an increase in inequality in income distribution. This is also indicated by some estimates made by Cuban and foreign economists (table 4).[9] The Gini coefficient went up from 0.22 in 1986 to 0.407 in 1999; the percentage of total income received by the poorest quintile went down from 11.3% to 4.3% over the same period, while the percentage received by the richest quintile rose from 33.8% to 58.1%, and the ratio between the average income of the richest quintile and that of the poorest rose from 3.3 to 13.5. In spite of this, Ferriol (2004a, p. 83) asserts that "the Cuban population continues to be that with the lowest inequality in Latin America and the Caribbean". This assertion is taken from a previous study (ECLAC, 2000b, pp. 37-38) that compared the Gini coefficient of 13 countries but did not include Cuba.[10] On the other hand, Fabienke (2001) estimates for the year 1995 a level of inequality much higher than that shown by other authors for years close to that date.

[9] The estimates do not specify the concept of income used: whether it includes that generated by the market, the State and by remittances; whether it is before or after taxes (including the very high surcharge applied in the stores that only accept hard currency), and whether or not it includes social benefits and services or extra payments in convertible pesos and in kind. They are therefore not strictly comparable.

[10] In the 33 tables and 18 figures of the ECLAC study, many of which refer to equity, Cuba only appears in three: two which are irrelevant because they refer to demographic matters, and one on the coverage of services.

TABLE 5

Cuba: Comparison of estimates of economically active population, employment and unemployment, 1998 and 2000

	1998		2000	
	Pérez Izquierdo	ILO/ONE	Pérez Izquierdo	ILO/ONE
EAP (thousands)	4 573	5 438[a]	4 632	5 552[a]
Employment (thousands)	4 288	3 754[b]	4 379	3 843[b]
Estimate of non-civil sector[c]		534		536
Unemployment (thousands)	285		252	
Residue		1 150[d]		1 173[d]
Unemployment rate (%)	6.2	21.1[e]	5.4	21.1[e]

Source: Álvarez and Máttar (2004), ILO (2004a), ONE (2003), Pérez Izquierdo (2004c).

[a] ILO estimate; the figure for 1998 is my interpolation between 1995 and 2000.
[b] "Total employed persons in the economy" according to the ONE, probably only the civil sector.
[c] Subtraction of Pérez Izquierdo's estimated employment from the ONE's employment figure; probably persons employed in the armed forces and internal security.
[d] Subtraction of Pérez Izquierdo's employment figure from the ILO's estimate of the EAP.
[e] Residue as a percentage of the EAP estimated by the ILO.

3. Employment, unemployment and productivity

The open unemployment rate went down from 7.9% in 1989 to 7% in 1997 and 2.3% in 2003 (ECLAC, 2000a and 2004). The abrupt drop of almost five percentage points in the last six years is doubtful or conceals considerable under-utilization, for various reasons:

i) in 1995 the Secretary-General of the Cuban Trade Union Confederation (CTC) estimated that between 500,000 and 800,000 State workers were unnecessary (surplus) and should be relocated (cited in Mesa-Lago, 2000), but the corresponding number was reported as only 19,000 in 1997 (Pérez Izquierdo, 2004c, p. 191);

ii) ECLAC (2000a, pp. 252-253) estimated that the "equivalent unemployment" rate was 25.7% in 1997 (7% of open unemployment plus 18.7% of under-utilization) and 25.1% in 1998 (6.6% and 18.5%, respectively): this series was later suspended;

iii) average gross investment per job created was seven times greater in 1975-1989 than in 1995-2000, so that the 800,000 new jobs created in the latter period must be of lower productivity (García Díaz, 2004);

iv) 219,600 sugar workers were affected in 2000 by the closure of 45% of the sugar mills and cane plantations;

v) non-State employment shrank from 23.4% to 20.8% in 2001-2002;[11]

vi) in 2002 "high levels of underemployment" still prevailed (Dhaynaut and Máttar, 2004, p. 317), and

vii) in 2002, 14% of those interviewed in the survey on poverty in the capital considered themselves to be poor in terms of employment, and 13% considered themselves to be almost poor (Ferriol, 2003).

Table 5 compares the estimates of Pérez Izquierdo (2004c) on the economically active population (EAP), employment and unemployment in 1998 and 2000 with those of the International Labour Organisation (ILO) and the National Statistical Office of Cuba (ONE). For 2000, Pérez's estimate of the EAP is 920,000 lower than that of the ILO, while his estimate of employment is 536,000 higher than the figure for "total employed persons in the economy" given by the ONE. If the total employed persons in the economy refers only to employment in the civil sector, then the difference of 536,000 (almost 10% of the EAP) must be accounted for by persons employed in the armed forces and internal security. Assuming that the sum of the civil and military sectors is 4,379,000 (the figure given by Pérez Izquierdo), then according to that author unemployment should be only 5.4%. If we use the EAP estimated by the ILO, however (which is 20% higher than that of Pérez Izquierdo), this leaves a residue of 1,173,000, which could be the number of unemployed and would be equivalent to 21% of the EAP (in 1998 and 2000), almost four times the percentage estimated by Pérez Izquierdo. Such a rate would be similar to the rate of between 16% and 28% in the 1994-2000 period calculated by a former Vice-Chairman of the Central Planning Board of Cuba (García Díaz, 2004).

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[11] Self-employment decreased from 3.8% to 3.4% of total employment, members of cooperatives from 8% to 7%, and the private sector from 14.7% to 13.1% (Pérez Izquierdo, 2004c, p. 201).

Apart from the problem of statistical credibility, the extremely low official rate of open unemployment in 2003 conceals the persistence of high levels of underemployment which probably also include many persons who are not employed at all. Since 2001, the government has created five new "full employment" and "study as employment" programmes:

i)   326,000 in the cultivation of food crops in backyards or urban gardens, partly on a part-time basis and for family consumption;

ii) 238,000 for disabled persons in regular jobs, work to be carried out at home, cultivation of gardens, or studying on socio-cultural courses;

iii) 116,000 young people enrolled in night-school courses and receiving remuneration for this;

iv) 44,000 sugar workers who were laid off but are now studying ("study as employment") and receiving a wage, plus another 20,000 who are in higher education;

v)   8,500 who are taking ten-month courses in social work and who are guaranteed subsequent employment or entry into university courses in the humanities, and

vi) 10,514 "interrupted" workers laid off due to the temporary closure of their places of employment, who are sent home with 60% of their normal wage, and 1,654 "available" workers who have not yet been relocated but also receive a wage (Pérez Izquierdo, 2004c, pp. 193-198 and 214; Dhaynaut and Máttar, 2004, p. 317).

In 2002, the 764,668 persons participating in these programmes were equivalent to 16% of the EAP of 4.7 million estimated by Pérez Izquierdo, and although this author does not specify how many of them are considered to be employed, the vast majority, if not all of them, have probably been counted as such.

Pérez Izquierdo rightly notes that the policy applied in the 1990s – maintaining the jobs and wages of workers of enterprises which closed down or interrupted production because of the crisis – caused under-utilization of the labour force and a decline in productivity. He claims, however, that the recovery and business improvement programme succeeded in relocating workers, creating 435,000 new jobs, reducing underemployment and raising average labour productivity by 1.8% per year in 1998-2002 (Pérez Izquierdo, 2004c, pp. 190-192 and 216). According to ECLAC (2000a, p. 235), however, productivity in 1997 was still 20 percentage points below the 1989 level, and in 1998-2002 it went down still further or stagnated. On the basis of the annual rates estimated

by Pérez Izquierdo for 1998-2002, I calculate that productivity in 2002 was still 12.6 percentage points below the 1989 level. Moreover, after the start of the "full employment" and "study as employment" programmes, the rate of change of productivity was 0.1% in 2001 and –0.1% in 2002 (Pérez Izquierdo, 2004c, p. 216).

Wages rose faster than productivity in 1998-2002, according to Pérez Izquierdo, because of the creation of new jobs of a social nature with wages higher than the national average, the de-linking of pay from work results in some activities, and the insufficient evaluation of the application of payment and incentive systems (Pérez Izquierdo, 2004c, pp. 206-207). The crisis and the employment policies applied led to a drastic change in the composition of the EAP by sectors of activity between 1991 and 2002 (in percentage points): according to data from ECLAC (2000a, table A-46) and Alvarez and Máttar (2004, p. 199), there were declines in manufacturing (–4.1), construction (–3.6), transport and communications (–1.3) and mining (–0.4), but increases in community, social and personal services (7.8), agriculture (1.2), and commerce, hotels and restaurants (0.7). In 1997-2002, most jobs were created in community, social and personal services (which grew by 68%), but this was the sector that suffered the biggest drop in average productivity (–3.7%). Although Pérez Izquierdo (2004c, pp. 209 and 215) does not analyse these problems, he does issue a warning: "The government continues to apply an employment and wage policy which involves two very different rationales: those of economic and of social considerations. Because of the government's humanistic calling, priority is given to the second of these, [but the present difficult conditions] … demand that solutions be found to the problems which are limiting the country's economic performance".

4.   Food

Before the crisis, rationing satisfied the nutritional needs of the population, even if only in a meagre manner, but at present —in Havana, which has the best supply of rationed foodstuffs in the country— it only satisfies 51% of the recommended intake of calories, 43% of that of proteins, and 17% of that of fats (Ferriol, 2004b, p. 147). The amounts provided under rationing have been reduced, while the cost of buying food and other essential consumer goods in the free markets has increased. At the end of 2002, the monthly rations per person included (in pounds): beans, 1.25; lard or oil,

0.5; rice, 6; meat, chicken or fish, 2.7 in total; sugar, 5; and roots and tubers, 15, as well as 8 eggs, which, except in the case of sugar and roots and tubers, only covers the needs of approximately one week. The ration of toilet and laundry soap was half a cake per month (Togores and García, 2003). The prices in the free markets were between 4 and 49 times the price of the same goods when received through rationing. The average monthly wage, at the exchange rate of 26 pesos per dollar paid in the government money changing offices (CADECAs), was equivalent to 16 dollars, with which it would be possible to buy one cake of soap, half a litre of oil and one pound of taro in the stores which only accept foreign currency (Mesa-Lago and Pérez-López, 2005).

According to Ferriol, the production and average per capita consumption of green vegetables, fruit and roots and tubers in 2002 was above the 1989 level, but that of meat, fish, eggs and milk was well below that level; furthermore, the quality of these products has gone down and the possibility of recovering the pre-crisis level is beyond the functions and possibilities of the present socio-economic model.[12] This author adds that in 1998-2002 the total volume of food consumption improved, although it did not always achieved the recommended average nutritional levels: the calorie intake exceeded them by 16%, but that of fats was 41% below them, and that of proteins 2% below (Ferriol, 2004b, pp. 140-145). According to international organizations, however, in 2001 Cuba was 7% below the regional average for calorie availability and 13% of its total population was undernourished in 1998-2000, the Cuban levels being exceeded by eight other countries of the region (PAHO, 2004; UNDP, 2004).

The shortage of food is officially explained by the limited and uneven recovery of agricultural and industrial production and the chronic shortage of foreign exchange, which restricts the capacity to import goods. These problems are attributed in turn to the economic crisis of the 1990s and the prior vulnerability due to excessive external dependence. However, this does not explain why, in the three decades before the crisis, and in spite of the abundant aid received from the socialist countries, Cuba was incapable of increasing and diversifying its exports and successfully promoting import substitution, and nor does it explain

the generalized decline in agricultural production. Ferriol considers that the transformation of the State farms into basic cooperative production units (UBPC in Spanish) was a positive step, but in reality these production units are part of the problem: the government, which directs their production plans, sold them the buildings and the equipment (a debt which they have to repay), but 40% of these production units registered losses in 2003 and received fiscal subsidies; moreover, these units have to sell almost all their output to the State at prices below those that they would receive if they could sell directly to consumers, and their sales to the agricultural markets are subject to price ceilings. Because of these problems and the lack of incentives, in 2002 the basic cooperative production units, which controlled 45% of the total area of cultivated land (plus the 10% corresponding to the agricultural production cooperatives (CPA in Spanish)), only supplied the free agricultural markets with 3% of the products sold there; in contrast, private peasants had only 21% of the cultivable land but supplied 67% of the products sold, while the State, which had 24% of the cultivable land, supplied the remaining 30% (ONE, 2004; García Molina, 2004).[13] This is in contrast to the successful example of China, where the land was given to families, groups of workers and village communities which are free to decide what to produce, who to sell it to, and at what price. If Cuba had followed this policy, it would probably be self-sufficient in food and would have an exportable surplus too.

5. Education

During the crisis, education suffered the effects of the lack of resources: there was a reduction in the school meals service, a deterioration in the infrastructure, a shortage of educational materials, and a decrease in school transport. The rate of enrolment in primary education remained virtually unchanged, but the secondary enrolment rate, as a percentage of the school-age population, fell from 90.2% in 1989 to 74.5% in 1994, although in 2002 it recovered to 89% (UNESCO, 1999 and 2004). Total university enrolment went down by 56% during the worst stage of the crisis; it subsequently began to rise again, but in 2002-2003

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[12] At 1981 prices, personal consumption fell by 40% between 1989 and 1993, and in 2000 it was still 22% below the 1989 level (Togores and García, 2003).

[13] In the State agricultural markets, the State supplies 60% of the products, the private sector 34%, and the cooperatives 6% (García Molina, 2004). This author does not provide information on the breakdown of the total supply between the two markets (free and state).

TABLE 6

**Cuba: University enrolment, by areas of study, in
1989/1990, 1995/1999 and 2002/2003**

Area of study	1989/90	1995/99 lowest level	2002/03[a]	Variation between 2002/03 and 1989/90 (%)
Humanities and social sciences	5 095	5 366	33 898	565
Education	15 529	35 068	6 782	343
Economics	18 789	4 893	20 307	8
Agriculture	11 606	4 680	5 039	−57
Natural sciences and mathematics	6 399	4 019	3 934	−38
Technical courses	29 819	13 020	20 134	−32
Medicine	37 305	23 457	27 702	−26
Total[b]	*242 366*	*102 598*	*192 864*	*−20*

Source: Comité Estatal de Estadísticas (1991); ONE (1998, 2001 and 2003).

[a] In 2002, enrolment in the humanities and social sciences, as well as in economics, was increased by between 10% and 14% from the 1996/1997 period to the 2001/2002 period, without any explanation, resulting in increases in total university enrolment.
[b] Excluding physical education and art.

it was still 20% below the 1989 level, although there were notable differences between the various careers: enrolment in agricultural sciences went down by 57%, in natural sciences and mathematics by 38%, in technical courses by 32%, and in medicine by 26%, whereas in humanities and social sciences it increased by 565%, and in education, by 343% (table 6). In the light of the severe shortage of resources, the enormous investment in some humanities careers or in education (although the number of students per teacher is the lowest in the region), contrasting with the deficit in careers that are crucial for development, not only represents inefficient resource allocation but will also create a serious problem in the future. Even so, Dhaynaut and Máttar (2004, pp. 306 and 307) maintain that "the levels of enrolment in technical and higher education are determined as a function of the requirements of economic development" and that "priority is given to technical and scientific specialities".

One of the reasons for the fall in university enrolment is the reversal of the wages pyramid. Before the crisis, doctors, engineers, university professors and other professionals were at the peak of the pyramid, but they have now been replaced in that position by owners of small restaurants (although the number of these has recently been reduced), owners of means of transport, tourism employees, small private peasants, etc. It is not reasonable to study for four to six years in the university, only to receive a very low salary on graduation, and this explains why many professionals

have left their State posts to engage in better-paid activities. Thanks to the salary increases in education, in 2002 the basic monthly salary of a teacher was between 280 and 330 pesos, possibly amounting to as much as 425 pesos with additional payments, but these salaries "are still not sufficient to be able to face the high cost of living today" (Pérez Izquierdo, 2004a, p. 111). The last-named amount is equal to 16 dollars per month at the exchange rate used in the money changing offices, which is not enough to buy food in the foreign-currency stores for the three weeks not covered by rationing (Mesa-Lago and Pérez-López, 2005).

An effort has recently been made to universalize higher education. In 2002-2003, the enrolment in humanities and social sciences was 530% higher than in 2000-2001. In 2003-2004, the authorities reported an impressive increase in enrolment in higher education as a whole, although the figures varied from source to source: 128,377 (Castro, 2003); 146,913 (Rodríguez, 2003), and 300,000 according to the Minister of Higher Education,[14] who said that the 17 universities had been "multiplied" with the creation of 732 university centres in the municipalities, while the number of professors had gone up by 83%. Half the new students are distance education students in socio-cultural studies, social work, teaching, and People's Universities for retired persons. A number of important questions

[14] Interview with Minister Vecino Alegret in *Granma*, Havana, 16 December 2003.

spring to mind in this connection, however: whether there is not a risk that the students involved in this massive expansion of higher education may not study hard; how it is possible to increase the number of higher educational institutions by a factor of over 43 and expand the number of professors and the level of enrolment by 83% and 56%, respectively, all in a single year; what type of training the 44,000 professors recently hired have had; what is the quality of the new study courses, and where the 300,000 potential graduates will find work.

According to Pérez Izquierdo, some Cuban studies consider that the programme for the universalization of higher education "will cause social tensions, because the dynamics of the demand by the economy for university graduates are only limited, and there could even be an increase in the tendencies to emigrate abroad". He also acknowledges that in spite of the advances made, there are still problems, especially with regard to "education as a strategic sector for promoting economic development". The new programmes "represent a challenge for the Cuban model, since their massive implementation calls for efficient utilization and a substantial rise in the (…) levels of training, and the large-scale results cannot yet be appraised" (ECLAC, 2004; Pérez Izquierdo, 2004a, pp. 96 and 116).

6. Health

Beyond any doubt, on the eve of the crisis the national health system of Cuba had reached the highest levels in Latin America, but Cuban medicine was marked by its excessively high costs, its very intensive use of capital, and its dependence on the socialist bloc (ECLAC, 2000a, pp. 274 and 275). The loss of the capacity to import medicines, spare parts, medical equipment and supplies from the Soviet Union, together with the acute shortage of foreign exchange and the deterioration in nutritional conditions, adversely affected the functioning of the health system, although care continued to be universally available and free of charge, which is a notable achievement. It is debatable whether the level of health expenditure was maintained during the crisis or not. On the basis of 1981 prices and the consumer price index, it has been calculated that real per capita expenditure on health shrank from 66.90 pesos in 1989 to 16.40 pesos in 1993, subsequently recovering to 53.00 pesos in 1999, although this was still 21% below the 1989 level (Sixto, 2003). Pérez Izquierdo, however, estimates that real per capita health expenditure continued to rise during the crisis and, at 1997 prices, increased by 40 pesos

between 1997 and 2002 (Pérez Izquierdo, 2004b, pp. 172 and 173). In any case, per capita health expenditure in Cuba in 2002 (229 dollars, based on purchasing power parity) came fourteenth in the region: only six countries —the least developed— had a lower level of expenditure (UNDP, 2004).[15]

During the crisis, almost all the health indicators seriously deteriorated, and although they have improved in the recovery stage, several of them have still not recovered their previous levels. The infant mortality rate in Cuba continued to decline during the crisis, and in 2002 it was 6.5 per thousand live births (the lowest in the hemisphere after Canada, and similar to that of the United States), but the indices of mortality among mothers giving birth and among the population over 65 showed the opposite trend (table 7). In 2001 Cuba changed the maternal mortality series, because previously the "total" figure included direct mortality, indirect mortality, and that attributable to "other causes", but the new series eliminates "other causes", which results in a significantly lower rate, and it only goes back to 1996, which prevents comparison with the 1989 level. In 2000, the rate was 55.7 per 100,000 live births in the old series, but only 40.4 in the new one, since this excluded 15.3 for "other causes". The new series shows an increase from 38.6 in 1997 to 41.7 in 2002, and the 2002 rate in the new series, which excludes "other causes", is higher than the "total" of 29.2 in 1989, which included these causes. On the basis of the new series, and omitting the figures for 1997-1998, Pérez Izquierdo claims that the "total" maternal mortality rate went down from 43.8 in 1999 to 41.7 in 2002 (Pérez Izquierdo, 2004b, p. 179). Mortality among the population aged 65 or more increased from 48.4 per thousand in 1989 to 55.7 in 1993, later going down to 49.7 in 2001, but this latter figure is still somewhat higher than the pre-crisis level.

With regard to morbidity, the 1989-2002 trend displays considerable differences between diseases. The eradication or reduction of the incidence of diphtheria, poliomyelitis, measles, tetanus and pertussis continued, but the incidence of other illnesses increased considerably during the worst stage of the crisis, although it subsequently went down; in 2002 the

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[15] In terms of total health expenditure as a percentage of GDP, Cuba came sixth in the region in 2002, virtually drawing with two other countries. The total Cuban health expenditure of 7.2% of GDP is broken down into 6.2% public and 1% private, however, which is debatable because private medicine is prohibited. If only public expenditure is taken, then Cuba would come tenth in the region (according to data from UNDP, 2004).

TABLE 7

**Cuba: Infant and maternal mortality rates, and mortality among
the population aged 65 or more, 1989-2002**

Year	Infant mortality (per thousand live births)	Maternal mortality (per thousand live births)		Mortality among polulatin aged 65 or more (per thousand persons in this age group)
		Old series[a]	New series[b]	
1989	11.1	29.2		48.4
1993	9.4	49.3		55.7
1994	9.9	65.2		54.5
1995	9.4	57.1		52.5
1996	7.9	44.9	36.4	54.9
1997	7.2	50.4	38.6	52.3
1998	7.1	47.7	39.1	50.2
1999	6.5	52.4	43.8	52.2
2000	7.2	55.7	40.4	49.7
2001	6.2		33.9	49.7
2002	6.5		41.7	

Source: Comité Estatal de Estadísticas (1991); ONE (1998, 2001 and 2003); (MINSAP, 1995 to 2003).

[a] Total maternal mortality, including direct and indirect mortality and that due to other causes.
[b] Excluding mortality from other causes, which averaged 10.6 per 100,000 in 1998-2000.

incidence of acute diarrhoea, chicken pox, syphilis and blenorrhea was below the 1989 level, while in the case of acute respiratory diseases, viral hepatitis and tuberculosis it was higher, as may be seen from table 8. In spite of these trends in the official statistics, Pérez Izquierdo (2004b, pp. 155 and 156) asserts that "the indicators … of morbidity were not substantially affected in the most acute years of the crisis".

As from the 1990s, the Ministry of Public Health substantially modified its objectives "by giving priority to the promotion of health and the prevention of diseases", which "has had important results in the reduction … of transmissible diseases"; it also "continues with its efforts to develop domestically produced vaccines that will make the country self-sufficient in this respect in the future" (Pérez Izquierdo, 2004b, pp. 155-156 and 167). Part B of table 8, however, shows that the prevention of transmissible diseases through immunization has significantly declined. In 2002, the immunized population was between 25% and 90% below the 1989 level in the case of the five basic vaccines, and it was also below that level in the worst period of the crisis. BCG vaccination went down by 56%, although the incidence of tuberculosis in 2002 was 60% higher than the 1989 level.[16] Cuba occupies the eighth place in the region

in terms of mortality due to transmissible diseases (PAHO, 2004).

In the 1990s, the almost total interruption of the provision of medical supplies, replacement equipment and chemicals from the socialist bloc, together with the drop in electricity generation, affected the pumps and drinking water supply and sanitation systems, reduced the hours they were in service, and considerably reduced the treatment of drinking water and its potability, giving rise to an increase in some infectious diseases. Atienza claims that by 2002 the 1990 levels had been surpassed through the construction of dams, water supply lines, water treatment plants and pumping stations, but the statistics she gives are from 1999-2002 and not from 1989, thus making it impossible to confirm the alleged advances over the long term. In actual fact, in 1999-2002 there was no increase in the number of water treatment plants, and there continued to be only one fluoridation station (Atienza, 2004b, table 45). Furthermore, the official figure for the volume of waste water evacuated through the sewer system was 672 hm^3 in 1998 (ONE, 2001) but only 569 hm^3 in 2002: a reduction of 15% over the period. The quality of drinking water supply has deteriorated for several reasons: the average duration of drinking water supply is 12 hours per day, which obliges part

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[16] The variations from year to year may be due to appreciable changes in the number of births per year and the ages at which the

vaccines are administered, however. This is a point which calls for further research.

TABLE 8

**Cuba: Morbidity rates for selected transmissible diseases and immunized
population, by type of vaccine, before the crisis, at its height, and in 2002**

A. Morbidity (raes per 100 000 inhabitants)

Disease	1989	1992-1996	2002	Variation (%)[a]
Acute respiratory diseases	36 804	45 021	40 034	9
Acute diarrhoea	8 842	10 380	7 892	−10
Chicken pox	365	1 138	149	−59
Blenorrhea	381	412	114	−70
Hepatitis	106	295	125	18
Syphilis	82	143	41	−50
Tuberculosis	5	14	8	60

B. Immunized population (thousands of persons)

Vaccine	1989	1993-1994	2002	Variation (%)[a]
Poliomyelitis	840	616	589	−30
Tuberculosis (BCG)	320	149	140	−56
Double	157	164	118	−25
Triple (DPT)[b]	354	310	129	−64
Typhoid	597	553	60	−90

Source: Comité Estatal de Estadísticas (1991); ONE (1998 and 2003).

[a] 2002 compared with 1989.
[b] Diphtheria, pertussis and tetanus.

of the population to store water in tanks and other recipients, thus reducing the benefits of water treatment (the population of Havana have to boil their drinking water in order to avoid giardia and other parasites); the water distribution system is insufficient, and part of it and of the pumping equipment is in bad condition, and water supply is unstable because of interruptions in the electricity supply (Atienza, 2004b, p. 281).

Although efforts have been made to maximize the available resources, there are various indicators which point to inefficiency. The number of real medical care beds went down from 5 to 4.5 per thousand inhabitants between 1989 and 2001, but their index of occupation dropped from 73.9% to 69.8%, to 56% in children's hospitals, and to 48% in maternity hospitals.[17] Moreover, the average stay in hospital increased from 9.9 days in 1989 to 10.4 in 1993, although it subsequently went down to 9.4 in 2001 (ONE, 1998 and 2003; MINSAP, 1995 to 2003). If the average stay had been reduced to seven days in 2001 (still high by international standards), the index of occupation would have gone down to 56.2%. The system of family

doctors has considerably aided in decentralizing medical attention and making it more personalized, but it is costly to operate (it represents half of total health expenditure) and its effectiveness has been reduced because of the lack of the most essential medicines. As infant mortality has gone down, the efforts to continue reducing it have become more difficult and costly, among other reasons, because of the cost of techniques for detecting congenital fetal problems and providing special nutrition for mothers. This is a positive development, but it requires heavy outlays of very scarce resources on a problem which has already been substantially solved, whereas there are much more serious and urgent needs, such as improving the drinking water supply infrastructure, nutrition, the low pensions paid, and housing problems. The scholarships offered to foreigners to study medicine and other disciplines, as well as the dispatch of thousands of medical professionals (including family doctors) to other countries as part of the external aid programme, are praiseworthy initiatives, but they represent a heavy fiscal burden. The existence of a separate (and superior) health system for the armed forces, internal security staff and the top political leadership is not only costly but also represents an irritating inequality for a population which has to put up with harsh restrictions (Mesa-Lago, 2003b).

[17] This is due to the decline in the birthrate and the ageing of the population, but the hospitals which are no longer needed should be closed down in order to save resources, or should be converted into old people's homes.

7.   Social security and assistance

The government unified 54 different social security pension programmes and markedly extended the coverage of the economically active population, although it has never published statistics on this latter action. The system covers all employed persons on a compulsory basis, but self-employed workers, unpaid family members and most private peasants can join the system voluntarily by paying contributions which are not paid by the vast majority of employees and are a serious obstacle to the incorporation of the groups in question. The regular retirement ages are among the lowest in Latin America: 60 for men and 55 for women, subject to 25 years' service; since the average life expectancy at retirement age in Cuba is the highest in the region (20 years for men and 26 for women), this enormously increases the cost of the system. The situation is made still worse by the fact that Cuba has the oldest population in the region after Uruguay and, according to CELADE-ECLAC Population Division, it will occupy the first place in this respect before 2025. The situation will become more acute from 2010 on, when more persons will retire than those entering the EAP, and it will get still worse in 2020-2030, when the baby boomers of the 1960s reach retirement age (ECLAC, 2000a).

Table 9 summarizes the financial aspects of the system, comparing 1989 and 2003. Over this period, social security pension expenditure increased from 5.3% to 6.5% of GDP and is financed by a payroll levy, increased from 10% to 12%, which is paid entirely by employers and goes directly into the State budget. A contribution payable by the workers was introduced in the 1994 tax law but was suspended until 1997, when a contribution of 5% of the salary began to be collected from workers employed in enterprises under the improvement plan (*plan de perfeccionamiento empresarial)*, who represented only 2% of the total number of employed persons in 2002. Self-employed workers, artists and other voluntary contributors pay 12% of their declared income. The percentage levied on wages is not enough to finance the system, and results in a growing deficit which is covered by the State. The fiscal subsidy increased from 1.3% to 2.3% of GDP between 1986 and 2003 and will keep on growing with the ageing process. The ratio of active workers per pensioner went down from 3.6 in 1989 to 2.8 in 2002, and it is projected to fall to 1.5 by 2025. In 2003, a contribution of 17.9% of the payroll was required in order to balance the system, but this percentage would have to increase over the long term to 39% or even as much as 86%, according to different scenarios (Mesa-Lago, 2003b). Ramos notes cautiously

TABLE 9

**Cuba: Financing, deficit, cost and level of social
security pensions, 1989 and 2003**

Indicators	1989	2003	Variation 2003/1989 (%)
Income (millions of pesos)	664[a]	1 405	111
Expenditure (millions of pesos)	897[a]	2 101	134
Deficit (millions of pesos)	233[a]	696	198
Deficit financed by the State (% of GDP)	1.3[a]	2.3	77
Total cost of pensions (% of GDP)	5.3	6.6	24
Present contribution (% of payroll)	10.0	12.0	20
Contribution needed in order to eliminate deficit (% of payroll)[b]	13.5[a]	17.9	32
Number of active workers per pensioner	3.6	2.8[c]	−22
Nominal average monthly pension (pesos)	56	108[c]	93
Real monthly pension (pesos per month)	56	33[d]	−41
Average monthly pension (dollars)[e]	8.00	4.15[c]	−48

Source: 1986-1989: Mesa-Lago (2003b); 2003: ONE (2003) and ECLAC (2004), Álvarez and Máttar (2004).

[a] 1986.
[b] In order to balance the pension system actuarially in the long term, a contribution of between 39% and 86% would be required, depending on the different scenarios.
[c] 2002.
[d] 1998.
[e] At the black market exchange rate in 1986 and at the rate given by Cajas de Cambio S.A. (CADECA) in 2002.

that "in spite of the fiscal implications it may have, the government's policy has been characterized by the assignment of higher priority to social objectives over economic ones, [but the sustained rise in costs] will demand fresh financial resources, so that the economic sustainability of the system could be affected" (Ramos, 2004, pp. 231 and 238). ECLAC had been more outspoken when it warned that the fiscal subsidies for social security "displace resources from investment [which has decreased] and the lower capital formation limits the prospects in terms of growth, employment and wages" (ECLAC, 2000a, pp. 270 and 271).

In spite of the enormous expenditure they have entailed, social security pensions have always been meagre, but before the crisis they were supplemented with the subsidized prices of consumer goods, transport, electricity and water, free or very low-rent housing, and free health attention of acceptable quality. Real average pensions declined by 41% between 1989 and 1998 (at 1981 prices), however, and the supplementary social protection network deteriorated. Ramos (2004, p. 228) says that the real average pension increased between 1992 and 2001 and went down in 2002, but he does not give any figures. Although it is not possible to compare real pensions in pesos in 1989 and 2002, in the latter year the average monthly pension was 108 pesos, equivalent to 4.15 dollars and 48% lower than the 1989 level (table 9).

Between 1997 and 2000, the number of cases of social assistance decreased by 1.2%, but in 2002 it rose by 42%. In that year there were 192,511 persons receiving social assistance: a figure equivalent to only 1.7% of the total population of 11.2 million (calculations based on Ramos, 2004, pp. 225-226 and 231-232). The population at risk and the poverty incidence referred to earlier amount to at least 20% of the total population, so that most poor people do not receive social assistance. Social assistance expenditure remained unchanged at 0.5-0.6% of GDP in 1989-2000, but rose to 1.2% in 2002 (Mesa-Lago, 2003b; ONE, 2003). Real social assistance expenditure per beneficiary went down by 60% between 1997 and 2002, however (calculation based on Anexo Estadístico, II-47 and II-49). The average social assistance pension in 2002 was 64 pesos per month (2.42 dollars).

Social assistance has a progressive impact on distribution, whereas social security pensions have a neutral effect, but there are two special systems separate from the general system —for the Armed Forces and the Ministry of the Interior— which have different access conditions and levels of benefits (Ferriol, 2004a, p. 84; Ramos, 2004, p. 222). The cost of these two systems is enormous and their impact is probably regressive. A male member of the armed forces who joins at the age of 17 and accumulates 25 years of service can retire at 43 (17 years earlier than in the general system) and receives a pension equivalent to 100% of his salary in his last year of service (compared with 50% of the average wages in the last five years in the general system) for an average of 37 years (17 years more than in the general system). In 1995 the cost of the armed forces pension system, financed entirely from the State budget, was equal to the deficit on the entire general system, and in order to balance it a contribution of 118% of the member's salary would be needed (Donate, 1995).

8. Housing

A serious obstacle that prevents an accurate count of the number of dwellings built is the lack of a homogeneous statistical series for the period since the revolution. In 1959-1963, no annual figures were published; in 1964-1980 an annual series on housing construction by the civil sector of the State began; in 1981-1987 dwellings built by cooperatives, the armed forces, and the population at large were added (making a distinction between dwellings that had been inspected and certified as suitable for occupation and those that had not); and from 1988 on uncertified dwellings and those of the armed forces were excluded from the series. In 1981-1987, because of the relaxation of the restrictions on housing construction and the greater availability of building materials, the largest number of dwellings since the revolution were constructed and the percentage built by the civil population averaged 60%. The 1988 Housing Act, however, imposed stricter conditions on the construction and exchange of dwellings, did away with the sale of building materials to the population at large, strengthened the role of the State and laid down penalties for non-compliance. The crisis caused a sharp fall in the production of building materials between 1990 and 2001, with reductions of 59% in the production of cement, 64% in that of blocks, 71% in sand and stones, and 73% in bricks (Atienza, 2004a, p. 248). These two factors reduced the percentage of dwellings built by the population at large to an average of only 34% of the total in 1990-2002, while housing construction under the three five-year plans between 1981 and 1990 fell short of the target figures by 45% (Mesa-Lago, 2000).

TABLE 10

Cuba: Housing construction, 1981-2003

	1981-89	1990-94	1995-03	2003
Annual average number of dwellings built[a]	61 198	28 638	41 604	25 000
Dwellings built per 1,000 inhabitants	6.1	2.8	4.5	2.2
Housing deficit (thousands of units)	800			1 000

Source: 1981-1989 and 1990-1994: Mesa-Lago (2000); 1995-2003: ONE (1998 to 2003); 2003: ECLAC (2004). The 2003 deficit is an estimate by Mesa-Lago and Pérez-López (2005).

[a] Calculation based on the total number of dwellings built in 1981-1989, including those which did not have an inspection certificate, which were not reported in the 1988-2003 period.

The average number of dwellings built per year shrank from 61,198 units in 1981-1989 to 26,638 in 1990-1994 (albeit with the above-mentioned problems), subsequently recovering to 41,604 in 1995-2003, but even so it was still 30% below the pre-crisis level, and moreover the number of dwellings built in 2003 fell to 25,000, which was below the average for the worst stage of the crisis. Over the periods and years in question, the number of dwellings built per 1,000 inhabitants decreased from 6.1 to 2.8, recovered to 4.5, but then fell to 2.2 (table 10). García Molina claims that as from 1994 "the number of dwellings built recovered significantly", whereas Atienza, more cautiously, says that the new policy giving priority to the maintenance, repair and rehabilitation of housing "prevented the collapse of the sector in the early 1990s and made it possible to continue the process" (García Molina, 2004, p. 13; Atienza, 2004a, p. 249).

According to Atienza, the housing stock grew from 1.90 to 3.13 million units between 1990 and 2002, with a reduction in the number of inhabitants per dwelling from 4.51 to 3.13, but this was not only due to the construction of new dwellings: it was also the result of the division of existing dwellings and their construction on the roofs of existing housing. Moreover, the 1991 census (the results of the 2002 census had not yet been published by the end of 2004) "showed that the housing stock was largely ageing" and that "the failure to do enough to maintain and rehabilitate the stock had caused its progressive deterioration, [so that] some 40% of dwellings were now in mediocre or bad condition" (a proportion that rose to over 50% in the eastern provinces).[18] In 2000-

2001, three hurricanes destroyed 35,724 dwellings and damaged a further 272,105, so that resources had to be concentrated on the reconstruction of those dwellings and there was a reduction in the maintenance and rehabilitation effort (Atienza, 2004a, pp. 258-260). Lastly, the Economic Development Strategy for 1980-2000 considered that it would be necessary to build an average of 60,000 dwellings per year in that period solely in order to replace those which had been destroyed (García Díaz, Deputy Minister of the Central Planning Board, who was responsible for the housing plan at that time); but as the annual average actually built was only 48,000 dwellings in that period, the deficit must have substantially increased.

Atienza asserts that the "real" housing deficit, taking into account the losses through deterioration or destruction, amounts to 530,000 units, but she does not give any figures or calculations in support of this statement[19] (Atienza, 2004a, p. 258). Assuming an average of three persons per dwelling, this deficit would affect 1.6 million persons or 14% of the total population. Based on a conservative estimate of the number of units destroyed, the deficit in 1985 was 880,000 dwellings, and as the rate of housing construction slackened in the 1990s, the deficit must have exceeded a million units in 2003 (Mesa-Lago and Pérez-López, 2005). With regard to this topic, a Cuban economist says: "Housing [is] the most serious social problem affecting the country … the accumulated needs are substantially greater [than the new dwellings built], among other reasons because of the serious deterioration in the existing dwellings" (Triana, 2000, p. 10). In the survey carried out in the capital in 2002,

[18] In Havana, 43% of the dwellings were in mediocre or bad condition in 1999, and this proportion rose to 75% in the old part of the city, while in the city as a whole, structural problems were reported in 59% of the dwellings (Pérez Villanueva, 2001).

[19] Among the challenges identified by Atienza is the need for "more specific studies which will make it possible to gain a more precise idea of the magnitude of the housing deficit" (Atienza, 2004a, p. 263).

16% of those interviewed said that deterioration of their dwellings was the most serious problem affecting them, after insufficient income and food supplies; 22%

described themselves as poor in terms of housing, and 19% said they were "almost poor" (Ferriol, 2003; Atienza, 2004a, p. 262).

IV

Is Cuba an integral development example for the region?

The introduction by Dhaynaut and Máttar to the book *Política social y reformas estructurales: Cuba a principios del siglo XXI* (Álvarez and Máttar, 2004) reaffirms a very true axiom of eclac: economic growth alone is not enough; it does not automatically give rise to greater equity, but nor is it possible to achieve social well-being without sustained growth of production, so that both these objectives must be linked together in "integral development". Said introduction also refers to the unsatisfactory economic and social results achieved by Latin America in the last decade, which make it necessary "to seek new political, social and economic balances which favour better social protection in a context of equity and development" (Dhaynaut and Máttar, 2004, pp. 11-13). For her part, Ferriol says that Cuba is "an interesting case" of "growth with justice, because of its simultaneous attention to both economic and social problems" through an integral development model which, over the last four decades, has advanced in terms of social welfare and equity in spite of the collapse of the socialist bloc, the subsequent crisis, and the external restrictions (Ferriol, 2004a, pp. 58-59). In the last chapter of the book referred to above, Dhaynaut and Máttar ratify that "The contributions … made by the case of Cuba are very valuable for furthering international reflection on the possibilities of achieving production development with equity (Dhaynaut and Máttar, 2004, p. 306).

García Molina considers that Cuba simultaneously achieved economic growth and social equity in 1959-1989 but, because of the crisis, its GDP fell by 33% between 1989 and 1993, although it increased by an average of 3.4% per year in 1998-2002; he argues that although the growth rate went down in the last three years, this was due to exogenous factors (the drop in world sugar and nickel prices and in international tourism, and the damage done by three

hurricanes);[20] he adds that in 2003 Cuba's growth rate speeded up, showing the dynamism of its economy, and he concludes by saying that that rate was higher than the average of 1.3% registered for Latin America as a whole, thus contrasting favourably with a regional setting of "flattening out" and a "lost six years" (García Molina, 2004, pp. 44-48). It should be noted that his analysis does not give integrated figures for the 1989-2003 period.

Abundant evidence has been provided in the present article that contradicts the claim that Cuba has simultaneously achieved economic growth and social development in the 1990-2003 period, as well as the presentation of the Cuban model as an example for the region of balance between economic and social goals and integral development. The main conclusions on the economic and social evolution of Cuba are given below, ending with an analysis of the supposed balance between these two elements of Cuban policy.

1. Summary of economic trends

The following conclusions refute the claim that Cuba is an economic development model for the region:

i)   The annual variation in the Cuban GDP averaged −1.4% over the 1991-2000 period: the lowest rate in Latin America and the Caribbean. Although the change in the base year at constant prices and the incomplete GDP series impede a proper calculation in this respect, I estimate that in 1991-2003 the average growth rate was 0.5%, but it is not possible to make comparisons with the rest of the region; in 2003 the 1989 level of per capita GDP

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[20] I have shown that although exogenous factors aggravated the situation, the slowdown was due mainly to an internal factor: the interruption of the economic reforms (a point which has also been made by various Cuban economists) (Mesa-Lago, 2003a).

had probably still not been recovered, so that Cuba had lost 14 years rather than the "lost six years" of the region as a whole.

ii) Although there are different series on gross investment, all indicate that there was a serious drop in 1989-2003 and a severe decapitalization process that will affect growth; the Cuban investment coefficient is low by regional standards.

iii) In spite of the recovery, in 2003 the main agricultural and manufacturing products were still between 20% and 89% below the 1989 level, although important exceptions in this respect are oil and nickel production, in spite of the reduction in the latter in 2002 and 2003.

iv) The value of exports in 2003 continued to be 70% below the 1989 level, while imports were 43% lower; exports continue to be concentrated in traditional products, while imports reflect a decline in food self-sufficiency, import substitution and industrialization. The terms of trade deteriorated by 56% between 1989 and 2003 and the trade deficit on goods in the latter year was US$ 3 billion and has been growing since 1995. The external debt increased by 77% between 1989 and 2003, while disbursed foreign direct investment averaged only US$ 200 million throughout the 1991-2002 period and has gone down since.

v) Tourism and remittances are the main sources of foreign exchange, but they are not able to offset the severe reductions in other sources.

2. Summary of social trends

It has also been shown in this article that virtually all the social indicators deteriorated during the worst stage of the crisis, and although some of them had recovered their 1989 levels in 2003 others were still below them, while still others had suffered a continual decline.

i) Although there are no official statistics of poverty incidence, Cuban estimates of the urban population at risk show a rise from 6% to 20% between 1988 and 2002; the poverty severity index for the total population was 0.39-0.42 in 1995 and the incidence of poverty was 61%-67% in the same year, while 31% of the population of the capital considered themselves to be poor in 2002.

ii) Nor are there any official statistics on income distribution, but Cuban and foreign estimates indicate that this distribution has become more unequal, with the Gini coefficient increasing from 0.22 in 1986 to 0.407 in 1999, and the ratio of the richest to the poorest income quintile rising from 3.8 to 13.5 between 1989 and 1999; inequality is increased by the segmented markets and the fact that part of the population receive remittances from abroad.

iii) The official open unemployment rate went down from 8% in 1989 to 2.3% in 2003, but these figures are dubious: the employment figures appear to include persons who are not really employed, as they are studying or receiving unemployment benefit, and they also conceal considerable underemployment: my rough estimates suggest an unemployment rate of 21% in 2000, compared with the official figure of 5.4%. The expansion of employment has mainly been in the services sector, but this is also the sector showing the biggest decrease in productivity (a decline of 3.7 points between 1991 and 2002), which is another indicator of under-utilization.

iv) Before the crisis, rationing satisfied the basic food needs of the population, but it now covers only about one week of consumption and for the rest of the month the population has to buy food in the free markets and the foreign currency stores at prices between 4 and 49 times higher than those of rationed goods; there are contradictory figures as to whether the nutritional levels of 1989 had been recovered in 2003 or not.

v) The enrolment rate in elementary education was maintained during the crisis, but the rate for secondary education fell, although it has now virtually recovered its 1989 level. University enrolment in 2003 was still 20% below the 1989 level, however; it went down by between 32% and 57% in careers that are vital for development (agronomy, natural sciences and mathematics, technical studies) but soared up by 343% in education (although the number of students per teacher was already the lowest in the region) and by 565% in the humanities and social sciences. The attempt to universalize higher education in 2002-2003 raises serious doubts about its efficiency and results.

vi) In 1989 the levels of health in Cuba were the highest in the region, but the crisis adversely affected all of them except infant mortality, which continued to decline and by 2003 was the second lowest in the entire continent. The maternal mortality rate rose from 29 to 42 per 100,000 live births in 1989-2002, and the mortality among the population aged 65 or more rose up to 1996 but subsequently started to go down again, although in 2001 it had still not recovered its 1989 level. Morbidity indicators show an uneven evolution;

immunization against transmissible diseases has gone down, there has been a deterioration in the quality of health and drinking water supply, and there are some signs of inefficiency, such as a reduction in the hospital bed occupation, while the average period spent in hospital continues to be high.

vii) The Cuban population is the second oldest in the region, but retirement ages are among the lowest, while Cuba comes second in life expectancy: this means a longer period of retirement, at a cost to the country equivalent to 6.5% of GDP in 2003 that continues to rise; the 12% pension contribution is paid by the enterprises (only 2% of employed workers pay contributions) and is insufficient to cover expenditure: the deficit is financed by the State and rose from 1.3% to 2.3% of GDP between 1986 and 2003. In order to balance the pension system in the long term, it would be necessary to increase the current contribution to between 39% and 86% of the payroll. The real pension paid decreased by half over the period studied and social assistance only covers 1.7% of the population, although at least 20% are considered to be poor or at risk. The pension scheme for the armed forces and Ministry of the Interior, however, has much more advantageous conditions and benefits than the general system, to such an extent that balancing it would require a contribution of 118% of the payroll.

viii) Housing is the most serious social problem in Cuba; although there is no systematic statistical series in this respect, housing construction per thousand inhabitants averaged 6.1 in 1981-1989, fell to 2.8 in the worst stage of the crisis, but subsequently recovered to 4.5 in 1995-2002 (although falling back to 2.2 in the last year), which is still far below the average for the 1980s. There are contradictory figures on the housing deficit, but it probably exceeded one million units in 2003.

3. The imbalance between social and economic objectives

This article has also shown the often excessive priority given in Cuba to social over economic goals, and the adverse results this policy has had, a problem referred to in Álvarez and Máttar (2004), although from divergent points of view. Ferriol (2004a, pp. 59 and 88) says that one of "the central objectives [of Cuban policy] has been the improvement of social welfare and equity, sometimes even at the expense of postponing economic goals, [but] in order to reduce the problems of poverty, inequality and vulnerability it is necessary

to achieve advances in economic conditions, because growth is also a necessary condition for social development". García Molina (2004, p. 19) states that at the dawn of the twenty-first century, "Cuba confronts the challenge of achieving the economic sustainability of the social results obtained in the last few decades" and suggests, without going into detail, that "this situation has given rise to insufficient growth of the product". Dhaynaut and Máttar, in contrast, argue that although "there has not always been a balance between social and economic goals" there has nevertheless been "a strong capacity to adapt policies to limit their adverse effects" and conclude that the Cuban strategy "is based on constant appraisal … in order to achieve results simultaneously in the fields of … equity, development and welfare" (Dhaynaut and Máttar, 2004, pp. 305-307).

In a previous study, I showed that the excessive emphasis of Cuban policy on social objectives to the detriment of economic considerations —especially in the 1966-1970 and 1986-1990 periods— led to imbalances and adverse effects (Mesa-Lago, 2000). The present article comes to the same conclusions for the 1991-2003 period, due to:

i) the priority given to the creation of jobs, at the expense of a drop in labour productivity;

ii) the plan for the universalization of higher education, with emphasis on the humanities, social sciences and education (although Cuba has long had the lowest number of students per teacher in the region), while the careers which are of fundamental importance for development have suffered considerable drops in enrolment; and without taking into account the need to give productive employment to the resulting graduates;

iii) the costly effort to reduce infant mortality still further —even though Cuba already attained the lowest rate in the region and the second lowest in the continent years ago— while serious shortcomings persist in terms of nutrition, housing, drinking water supply and sanitation infrastructure, etc.;

iv) the resistance to the closure of hospitals which are no longer needed (especially in the areas of gynecology and pediatrics) or their conversion into old people's homes, in spite of the fall in the index of occupation of hospital beds;

v) the maintenance of retirement ages of 55 for women and 60 for men (the lowest in the region, after Haiti), at the cost of enormous and growing

outlays on social security pensions and the reduction of the resources available for investment and growth; and

vi) the persistence of price subsidies and the provision of social services totally free of charge, regardless of income, which results in subsidies for high-income groups, rather than the establishment of a universal social assistance system focused on the poor population.[21]

This is my appraisal of the current situation in Cuba. The economic and social policies needed to improve that situation would be a suitable topic for another article.

(Original: Spanish)

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[21] Ferriol (2004b, p. 148) rightly notes that price subsidies through rationing are given to all members of the population, regardless of their income, which implies inefficient social policy that increases income inequality.

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The 2004 edition of the *Social Panorama of Latin America* analyses the major demographic changes that have occurred in the region over the past few decades, examines the socioeconomic situation of Latin American youth, looks at institutional and programmatic guidelines for youth policies and describes how household structures and family roles have changed. As in past years, recent trends in poverty and income distribution in the Latin American countries are also reviewed.

The first chapter presents projections of poverty and indigence rates for 2003 and 2004. The conclusion drawn from these projections is that the region has failed to gain any ground since 1997 in its effort to combat poverty and even suffered a slight deterioration in this respect in 2003. The stronger growth projections for 2004, however, give grounds for believing that many countries will still be in a position to achieve the goal of halving extreme poverty by 2015.

Meanwhile, Latin America continues to be the region with the worst income distribution indicators in the world. This situation has been exacerbated by the fact that some countries have actually witnessed an increase in income concentration. This heightens the urgency of developing distributive policies to increase the income-generating capacity of the low-income strata, both through stronger social safety nets and through a more inclusive production model.

The second chapter, on the major demographic changes which have taken place in Latin America and the Caribbean, draws heavily upon the work done by the Latin American and Caribbean Demographic Centre (CELADE) - ECLAC Population Division, and especially the studies carried out in connection with the agreements reached at the International Conference on Population and Development (Cairo, 1994). This chapter analyses the demographic transition, population ageing, fertility and mortality rates, international migration and development, internal migration, the spatial distribution of the population, and the implications of all these phenomena for public policies, social equity and human rights.

The third chapter of this year's edition of the *Social Panorama of Latin America* focuses on the social situation of young people. This analysis, which is based on a joint study conducted by ECLAC and the Ibero-American Youth Organization (OIJ), covers a wide range of aspects relating to Latin American youth, including their demographic patterns, occupational status, the organizational structure of the households in which they live, and their access to health care and education. Various dimensions of young people's participation in society and their cultural consumption patterns are also reviewed. It is noted that the Latin American youth of today are more severely affected than other groups by a series of troubling paradoxes, such as the combination of greater access to education

with fewer employment opportunities, of freer access to information with less access to power, and of greater expectations of autonomy with fewer chances for achieving it. In addition, the young people of today possess higher levels of productive skills yet are largely excluded from the production process.

The fourth chapter goes more deeply into the changes that have been taking place in household structures and how they relate to levels of well-being in Latin America. Given the limited coverage of social safety nets in the countries of the region, especially with respect to unemployment, illness, old age and migration, the family continues to play an important role in providing support and protection and is thus a strategic resource in terms of the maintenance of well-being. This chapter also refers to the growing importance placed on the family in the new approaches to social policy-making, especially in the case of poverty-reduction measures.

The fifth and last chapter, on the social agenda, analyses the main results of an ECLAC survey on national youth programmes in Latin America, carried out among government agencies responsible for public policies in this field. The objective was to gather information, from the point of view of these government agencies, on institutional and programmatic guidelines for such policies and the way national authorities perceive the specific problems and situation of youth in the region. The governments were found to vary quite markedly in terms of their capacity to respond to the problems faced by young people. In addition, the programmatic measures taken in the various countries betray the existence of differing —and sometimes overlapping— paradigms, together with insufficient coordination with the institutional mechanisms most suitable for formulating and implementing specific policies for young people.

Foreign investment in Latin America and the Caribbean 2004, LC/G.2269-P, United Nations publication, Sales No. E.05.II.G.32, ECLAC, Santiago, Chile, March 2005, 161 pages.

Foreign direct investment (FDI) inflows into Latin America and the Caribbean grew in 2004 for the first time since 1999, topping US$ 56.4 billion and far exceeding the US$ 39 billion registered in 2003 (an increase of 44%). This is welcome news for the region, as it may portend the beginning of a new and sustained investment boom. However, it does not mean that the Latin American and Caribbean countries have solved their problems with regard to the limited benefits they receive from the presence of transnational corporations (TNCs) within their borders. Furthermore, in general terms the foreign investment received is not of the quality desired. If the region's countries are to derive more benefits from the presence of TNCs, they will have to improve the national policies and institutions they have established to meet international commitments regarding investment, they must provide incentives to attract FDI, and they must evaluate the results of the policies they have adopted in this field.

This year's report focuses mainly on the market-seeking investment strategies of TNCs in the region. Chapter II deals with the experience of Brazil in this respect, since that country is one of the main recipients of FDI, especially of this type, but has begun to show an interest in attracting other kinds of investment, especially the efficiency-seeking variety that generates exports. Chapter III looks at the experience of the electricity sector in the Southern Cone. During the investment boom of the 1990s, this sector was characterized by market-seeking investment, but that type of FDI failed to do enough to expand the existing generation capacity, and this was a factor in the crisis suffered by this branch of activity. In the concluding section of this chapter it is suggested that a

subregional approach to this sector's development might help to attract FDI from new sources, such as oil companies, through the integration of gas and electricity activities.

Statistical Yearbook for Latin America and the Caribbean 2004, LC/G.2264-P/B, United Nations publication, Sales No. E/S.05.II.G.1, ECLAC, Santiago, Chile, April 2005, 484 pages.

The 2004 edition of the *Statistical Yearbook for Latin America and the Caribbean* contains a selection of the main statistical series available on economic and social trends in the countries of the region. It represents an effort by the ECLAC Statistics and Economic Projections Division to harmonize the figures and make them internationally comparable.

Beginning with the 2002 edition, the Yearbook is also being made available electronically on CD-ROM. To facilitate the analysis of the information, the CD-ROM version includes statistical tables (in Excel format) covering the entire series from 1980 on.

This year's edition does not differ from the 2003 edition in terms of its structure. The tables given in the chapter on the balance of payments continue to be based on the analytical approach recommended in the fifth edition of the *Balance of Payments Manual* published by the International Monetary Fund in 1993.

Part One comprises derived social and economic indicators (growth rates, ratios or coefficients) which give an overview of each area of interest and provide the background material needed to make the information suitable for use in specialized analyses. This group of indicators includes those used in the periodic regional appraisals of Latin American and Caribbean development conducted by the ECLAC secretariat.

Part Two provides historical series in absolute figures which can be used for a large variety of purposes. The majority of the statistical tables provide figures on a single topic, organized in such a way as to facilitate comparisons between countries as well as between individual countries and regional totals or averages. The tables on the balance of payments and national accounts are the only exceptions in this respect.

Although there are currently 33 Latin American and Caribbean member countries of the Commission, the tables giving regional totals generally correspond to the sum of the data for 25 countries. In this connection, it should be noted that the statistics of the Caribbean countries are less complete, which is why the regional coverage varies according to the subject area addressed. Efforts continue to be made to overcome this situation and it is hoped that in the medium term complete information will become available, at least on the macroeconomic summary statistical systems such as national accounts, the balance of payments and foreign trade.

In Part One of the Yearbook, most of the indicators correspond to the years 1990 and 1995, and to the period 1995-2003. In cases where the data have not been updated, the most recent figures available for each country are given. Some of the indicators that are based on census data are given only for the years when censuses were conducted. The country and regional series in Part Two cover 1990 and 1995 and the period 2000-2003.

Preliminary estimates for the year of issue of the Yearbook are published in the Annex. These estimates were produced during the preparation of the *Preliminary Overview of the Economies of Latin America and the Caribbean 2004* in order to provide timely information on the macroeconomic trends observed in the countries of the region. It is important to note, in this connection, that since these estimates are based on the compilation and analysis of data drawn from several national sources, in certain cases the historical figures given for recent years may differ slightly from the official data presented in the tables of the Yearbook.

Institutional books

The Millennium Development Goals: a Latin American and Caribbean perspective, L/G.2331, United Nations publication, Sales No. E.05.II.G.107, ECLAC, Santiago, Chile, June 2005, 321 pages.

In September 2000, 147 heads of State and Government, together with 42 ministers and heads of delegation, gathered at the General Assembly of the United Nations to explore ways of pooling their combined will and efforts to revitalize international cooperation on behalf of the less developed countries and, in particular, to mount a frontal assault on extreme poverty.

On that occasion they identified goals for their efforts to combat poverty and hunger, reverse environmental degradation, improve education and health, and promote gender equality, among other objectives. It also became clear that, because the lack of development is a problem that concerns the entire world, the formation of a partnership to enrich and reinvigorate international cooperation while at the same time honing it and increasing its effectiveness, should be one of the most important of the eight goals. These deliberations thus gave rise to what came to be known as the Millennium Development Goals.

The goals are underpinned by the comprehensive approach to development resulting from the agreements reached at world summits held by the United Nations in the 1990s and form part of the Millennium Declaration, which is even broader in scope and proposes that action be taken to build consensus in such crucial areas as peace, security and disarmament, human rights, democracy and good governance, and the strengthening of the United Nations.

The goals were expressed as clearly as possible, and specific targets were set for the progress to be made by 2015 in relation to the major economic and social issues involved in meeting the objectives thus set. The countries also agreed to review the progress made towards the goals on a regular basis in order to ensure that efforts to attain them would not fade as time went by.

We have now reached one of the milestones in that follow-up process, as the General Assembly will undertake such a review in September 2005. To facilitate its work, on 21 March of that year the Secretary-General of the United Nations submitted a report entitled "In larger freedom: towards development, security and human rights for all".

In that report, after recalling the problems which have hindered efforts to build a common future for all the world's peoples, the Secretary-General said that: "We need to see the Millennium Development Goals as part of an even larger development agenda. While the goals have been the subject of an enormous amount of follow-up both inside and outside the United Nations, they clearly do not in themselves represent a complete development agenda. They do not directly encompass some of the broader issues covered by the conferences of the 1990s, nor do they address the particular needs of middle-income developing countries or the questions of growing inequality ...".

The countries will also have before them the report submitted to the Secretary-General by the Millennium Project. In addition to these two documents, the representatives of Latin American and

Caribbean countries will have at their disposal an in-depth survey of progress and specific concerns in the region. This will enable them to take part in the deliberations of the forthcoming General Assembly with more comprehensive background information, thereby facilitating their task of ensuring that the Latin American and Caribbean countries' views are accorded due consideration. It is that survey which is presented is this report.

The above is not the only purpose of this report, but it is surely its most immediate aim, and all the international organizations working in the region have pooled their efforts in order to prepare it. The ECLAC Secretariat has had the honourable task of coordinating those efforts. This survey thus seeks to fulfil the generally recognized desirability of achieving a systematic, integrated perspective, prepared by all the relevant organizations.

This document also highlights the differences between countries in terms of achieving the goals and, wherever possible, the differences between trends in the various segments of the population have also been examined, in order to help understand which areas call for redoubled efforts in order to ensure that progress reaches all sectors. This is supplemented by an integrated analysis of macroeconomic (including fiscal) factors as they relate to the goal of eradicating poverty.

Publicaciones de la CEPAL / *ECLAC publications*

Revista de la CEPAL / *CEPAL Review*

La Revista se inició en 1976 como parte del Programa de Publicaciones de la Comisión Económica para América Latina y el Caribe, con el propósito de contribuir al examen de los problemas del desarrollo socioeconómico de la región. Las opiniones expresadas en los artículos firmados, incluidas las colaboraciones de los funcionarios de la Secretaría, son las de los autores y, por lo tanto, no reflejan necesariamente los puntos de vista de la Organización.

La *Revista de la CEPAL* se publica en español e inglés tres veces por año.

Los precios de suscripción anual vigentes para 2005 son de US$ 30 para la versión en español y de US$ 35 para la versión en inglés. El precio por ejemplar suelto es de US$ 15 para ambas versiones. Los precios de suscripción por dos años (2005-2006) son de US$ 50 para la versión español y de US$ 60 para la versión inglés.

CEPAL Review first appeared in 1976 as part of the Publications CEPAL Review first appeared in 1976 as part of the Publications Programme of the Economic Commission for Latin America and the Caribbean, its aim being to make a contribution to the study of the economic and social development problems of the region. The views expressed in signed articles, including those by Secretariat staff members, are those of the authors and therefore do not necessarily reflect the point of view of the Organization.

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

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