



# The debt crisis: lessons of the 1980s for the 1990s

Graciela L. Kaminsky<sup>a,\*</sup>, Alfredo Pereira<sup>b</sup>

<sup>a</sup> Board of Governors of the Federal Reserve System, Washington, DC 20551, USA

<sup>b</sup> Department of Economics, The College of William and Mary, Williamsburg, VA 23187, USA

Received 1 August 1992; revised 1 April 1995

---

## Abstract

One of the salient characteristics of the 1980s is the growth collapse of the Latin American debtor countries. The debt-overhang literature claims that the debt crisis is the main reason for the growth collapse. However, previous empirical work has failed to support this hypothesis. We re-examined this hypothesis further using simulation and econometric methods. We found that once we account for the effects of social inequality on government policy and consumption, the burden of servicing the debt becomes an important factor in explaining the collapse in investment and output growth in Latin America. We draw some conclusions for the 1990s.

---

## 1. Introduction

Not long ago, Latin American countries seemed to be condemned to a life of despair. During the 1980s, after the onset of the debt crisis, growth rates, which during the 1970s oscillated around 6 percent, collapsed to an average of 1.8 percent. From the perspective of the 1980s, even future growth prospects were clouded by a sharp drop in the share of capital formation in output (from about 20 percent in the 1970s to about 16 percent in the years following 1982) (World Economic Outlook, October 1993; Calvo et al., 1992). The sharp drop in growth was also accompanied by macroeconomic dislocation, a substantial increase in

---

\* Corresponding author.

inflation, and widespread poverty. No wonder the 1980s were called the “lost decade.”

While creditors blamed the crisis on the policy mistakes of the debtor governments, debtors blamed the crisis on the macroeconomic and trade policies of the major industrial countries. Wherever the truth lies, there is no doubt that, during the 1980s, developing countries were brutally and repeatedly shocked from the outside. Extremely tight monetary conditions in the center economies provoked a protracted slowdown in the industrial world, which quickly translated into a steep decline of export prices and terms of trade in the periphery. In the early 1980s, the contractionary monetary policy together with the expansionary fiscal policy in some industrialized countries also resulted in a sharp rise in real interest rates and the drying up of world capital markets. All of a sudden, rollover operations for foreign debt became very difficult. Naturally, talks aimed at rescheduling and restructuring those debts followed and, in some cases, debtor countries even suspended normal payments on their external debt. In spite of these talks between creditors and debtors and, in some cases, retaliation by some debtor countries, the reality of the 1980s was that new market-based lending by the center countries to the developing countries virtually disappeared after 1982. Moreover, the transfer of net resources to debtor countries was almost everywhere negative. That is, debtor countries were forced to start repaying their foreign debt. In particular, the highly-indebted countries had to run trade surpluses of about 5 percent of output in order to make the payments (International Financial Statistics, various issues).

Some have argued that the forced outward resource transfer was a crippling burden to the domestic economies of the debtor countries. Sachs (1989a), for example, has argued that the forced outward transfers to creditors imposed a disincentive to investment and growth in the debtor economies because part of the returns to investment were taken away from the domestic economy in the form of payments to foreign creditors. This hypothesis, also known as the debt-overhang hypothesis, became popular among academics and politicians alike, and the supporters of this proposition became also supporters of the idea that both creditors and debtors would benefit from debt relief.

While there is no doubt that Latin American countries were shocked by a plethora of adverse external developments, it is also true that Asian countries were also shocked by the same external factors. In fact, outward transfers to creditors by Asian countries also increased to about 5 percent of output after the onset of the debt crisis in 1982. But, while Latin American countries seemed to perish under the new conditions, Asian countries were able to grow out of the debt crisis, bringing into question the debt-overhang hypothesis.

While recovery seemed to be an impossible dream in the 1980s, it is a powerful reality in the 1990s. Foreign capital inflows have resumed at rates not seen before. They have even dwarfed the capital flows of the 1970s. During the 1970s (1975–1981), capital flowed from the center to Latin America at an annual rate of 26 billion dollars. During the 1990s (1990–1992), capital inflows averaged 39

billion dollars a year (Calvo et al., 1992, 1993, 1994). Growth has resumed, although it is still below the rates observed in the 1970s. Without a doubt, an important part of this phenomenon can be explained by the fundamental economic and political reforms that have recently taken place in these countries, including the restructuring of their external debt. Reforms alone, however, cannot explain the new surge in lending to developing countries, especially if we consider that capital has flowed even to countries that did not undertake any reforms. As has been examined extensively in Calvo et al. (1992), while in the 1980s financial shocks in the major industrialized countries dried up the funds in the periphery, the decrease in real returns in the center seems to be a major factor explaining the flows of capital in the 1990s.

The apparent success story of the 1990s seems to make the question of what was the driving force behind the collapse of the 1980s obsolete. Nevertheless, the developments in the earlier months of 1994 have brought back the concern that the inflows could be abruptly reversed. In fact, after the tightening of monetary policy in the United States in the first half of 1994, capital flows to Latin America decreased substantially. Further increases in interest rates in the industrialized countries may bring to an end the capital bonanza of the 1990–1993 period, with world capital markets in the late 1990s reverting to those observed in the 1980s. This is why we consider the time is right for a reexamination of the experience of the 1980s to draw some lessons for the 1990s.<sup>1</sup>

This paper addresses two questions. First, we ask to what extent the collapse of the developing economies in the 1980s was the inevitable consequence of the shock to financial markets in the center countries and of the subsequent swift reversal in capital flows. Second, we try to understand why some countries, such as Argentina or Mexico, succumbed to a serious crisis, while others, such as Indonesia or Korea, did not.

We analyze these questions using two different methods: simulation and econometric techniques. First, we simulate an endogenous-growth model to examine the optimal dynamic response of a debtor country to the debt crisis. The model is calibrated to resemble the economies of Argentina and Mexico under two world capital market conditions: (a) perfect access to world capital markets and (b)

---

<sup>1</sup> The final version of this paper was written in August 1994, before the Mexican crisis erupted in December 1994. Since then, not only have inflows of capital from developed countries to less developed countries dried up, but also less developed countries have experienced a substantial reversal in capital flows. For example, during the first quarter of 1995 large capital outflows from Argentina led to a one-third reduction (approximately US\$5 billion) in international reserves of the Argentine Central Bank. The Mexican crisis has also affected the growth prospects of some Latin American Countries, with Argentina expecting a recession after four years of substantial expansion in economic activity (approximately 7 percent a year during 1991–1994). This recent crisis, which has already affected most of the so-called emerging markets, makes more urgent the evaluation of the causes behind the growth collapse in some debtor countries in the wake of the 1982 debt crisis. This footnote was written in April 1995.

negative flow of resources to the debtor countries. We find that the outward resource transfers of the 1980s could not have damaged severely the economic performance of debtor countries (see also Borensztein, 1990; Arrau, 1990). The optimal response to the reversal in capital flows is a deep reduction in consumption, leaving investment and growth basically unchanged. These results contradict the experience of Latin American countries in which both investment and growth collapsed and consumption was rigid downward.

We next examine the possible factors explaining the downward rigidity of consumption. Here, we borrow from the political economy literature and test whether the rigidity in consumption is the result of income inequality, which fuels social discontent and makes almost impossible for governments to resist demands for spending. Our results, using panel data for 33 debtor countries, suggest that income inequality and consumption spending are, in fact, positively related.

Finally, we consider whether this downward rigidity in consumption can explain such a protracted decline in growth. To examine the dynamics of growth in such a constrained scenario, we simulate the endogenous growth model adapted to the cases of Argentina and Mexico with lower-bound restrictions on consumption. In contrast to the results of the simulation in the intertemporal-optimizing scenario, these simulations suggest that, in fact, the debt crisis may be the main reason for the growth collapse in the 1980s. Interestingly, we also find that the welfare loss from deviating from the optimal solution is negligible. The larger level of consumption in the debtor countries in the aftermath of the debt crisis, relative to the optimal solution, is financed, in part, by the creditor countries. This burden-sharing mechanism is the result of the way the debt crisis was managed in the 1980s.

The paper is organized as follows: Section 2 reviews some explanations provided in the literature about the relationship between the debt crisis and the growth collapse in the 1980s. Section 3 simulates the optimal response to the debt crisis. Section 4 presents the empirical evidence on the relationship between the rigidity in consumption and income inequality. Section 5 simulates the response to the debt crisis under consumption rigidities. Section 6 presents some reflections for the 1990s.

## **2. The debt-overhang hypothesis: review of the literature**

The dramatic slowdown in economic activity in Latin America in the 1980s has puzzled economists for years. Diaz Alejandro (1984), for example, analyzes the unsuccessful adjustment of the Latin American countries to the debt crisis beginning in 1982. He contrasts the post-1982 performance to that following the debt crisis of the 1930s. While the external shocks of the 1930s were even more severe than those of the early 1980s, the debtor economies in the 1930s performed no worse than during the early 1980s. He points out that the 1980s crisis had not

had the positive side effects of the 1930s crisis, such as, self-reliance in the financing of capital formation, new public and private institutions, and a new crop of local entrepreneurs.

The global statistics do, of course, obscure a wide diversity of experiences among developing countries. Some of the slowdown in growth must be attributed to the decline in the terms-of-trade of these countries. Terms-of-trade shocks, such as the oil price decrease in 1985, had an important negative impact on Mexico. At the same time, the decline in oil prices clearly benefited oil-importing countries, like Brazil. Policy mistakes in the debtor countries also can explain, in part, the continuing decline in growth rates. The continuing slow growth, however, has also affected countries like Argentina and Chile which followed dramatically different internal policies. These contradicting factors have led economists to doubt explanations that focus on idiosyncratic shocks.

One common feature in the economic performance of debtor countries in the 1980s is that the fall in investment closely parallels the increase in resource transfers from debtor countries to the creditors. This negative, almost one-for-one relationship between private investment and outward resource transfer has led economists to concentrate on the link between the debt burden and the economic collapse, and to conclude that the debt crisis is the main contributing factor to the precipitous decline in growth.

Sachs (1989a) (see also Froot, 1989; Krugman, 1988) is the first to attempt to give an explanation for the debt crisis puzzle in the form of the debt-overhang hypothesis. He stresses that in the 1930s, almost all of the Latin American countries handled the debt crisis with a unilateral moratorium on debt repayments. In the 1980s, though, almost all of the debtor countries have continued to service their debts. This continued debt servicing has helped to avert an international banking crisis but has not generated an economic recovery in the debtor economies. Sachs claims that the foreign debt imposes a disincentive to investment and growth in the debtor economies because part of the returns to investment are taken away from the domestic economy in the form of payments to foreign creditors.

Unfortunately, the empirical evidence on the quantitative effects of the outward transfer on economic growth and on the relevance of the debt-overhang hypothesis is scant. Only recently, Borensztein (1990) and Arrau (1990) have attempted to estimate the impact of the debt crisis on investment and growth by simulating conventional optimal growth models along the lines suggested by the supporters of the debt-overhang hypothesis.

Borensztein (1990) simulates an optimal growth model parameterized to resemble a “representative” debtor country. Contrary to the presumptions of the theoretical literature, he finds that debt relief (a reduction of the outward transfer to the creditor banks) does not have any important quantitative effect on growth. For example, Borensztein (1990) finds that if the “representative” country is forced to transfer 5 percent of its output every period and cannot borrow in international capital markets, investment will be 22.5 percent of output. If the

transfer is zero, investment will only increase to 24.3 percent of output, while consumption will increase from 68.5 to 71.1 percent of output.

Arrau (1990) simulates an overlapping generations model calibrated to Mexico. He simulates the internal adjustment path Mexico followed when it reversed the trade deficit from 2 percent of output, observed in the 1970s, to a surplus of 6 percent, observed in the 1980s. Arrau (1990) finds that the investment share in output decreases from 25.6 to 21.4 percent, while the consumption share decreases from 73.4 to 70.4 percent. Growth, on the other hand, decreases from 6.1 to 5.3 percent immediately after the debt crisis. After eight years, the country growth rate recovers to 5.6 percent.

The results of Borensztein (1990) and Arrau (1990) suggest, surprisingly, that the outward resource transfer, although a burden, is not a crippling burden. Contrary to the predictions of the debt-overhang hypothesis, their results suggest that the debt crisis cannot explain the collapse of investment or the precipitous decline of economic growth. In the next section, we simulate similar intertemporal-optimizing growth models as a benchmark case, while in Section 5 we simulate the effects of the debt crisis when the optimal response is not politically feasible.

### 3. The optimal response to the debt crisis

In this section, we specify and simulate an endogenous-growth model to examine the optimal dynamic responses of consumption, growth, and investment to the debt crisis. This model is calibrated to resemble the economies of Argentina and Mexico.

#### 3.1. The model

The optimal path for the economy is obtained from the maximization of a social welfare indicator,  $W$ :

$$W = \sum_{t=0}^{\infty} \rho^t L_t U(c_t^p, c_t^g) \quad (1)$$

where  $c_t^p$  is consumption of private goods per person,  $c_t^g$  is consumption of public goods per person,  $L_t$  is population in period  $t$  and  $0 < \rho < 1$  is the social discount factor. Population is assumed to grow at a constant rate  $n$ . In (1), we follow Barro (1990) in assuming that government finances some services, such as education and health, which enter into household utility. In what follows,  $U(\cdot)$  is assumed to be iso-elastic:

$$U(c_t^p, c_t^g) = \frac{1}{(1-\sigma)} \left[ (c_t^p)^\alpha (c_t^g)^{(1-\alpha)} \right]^{(1-\sigma)} \quad (2)$$

where  $0 < \alpha < 1$  is the share of consumption of private goods in total consumption and  $\sigma$  is the intertemporal elasticity of substitution.

We assume that the domestic economy produces one good. In the tradition of the endogenous growth literature, we assume that output is produced using both private and public inputs:

$$Y_t = \beta_0 [K_t^p]^\beta L_t^{1-\beta} [K_t^g]^\nu \quad (3)$$

where  $Y_t$  is total output,  $K_t^p$  and  $K_t^g$  are capital owned by the private and the government sector, respectively, and  $L_t$  is the labor supply, which is given exogenously and is equal to population. The production function is Cobb–Douglas, with constant returns to scale on private capital and labor, and displays increasing returns when public capital is considered (i.e.,  $\nu > 0$ ).<sup>2</sup>

The equations of motion for private and public capital are as follows:

$$K_{t+1}^p = I_t^p - \psi^p(I_t^p, K_t^p) + (1 - \delta^p) K_t^p \quad (4)$$

$$K_{t+1}^g = I_t^g - \psi^g(I_t^g, K_t^g) + (1 - \delta^g) K_t^g \quad (5)$$

where  $I_t^p$  and  $I_t^g$  are private and public investment,  $\delta^p$  and  $\delta^g$  are the rates of depreciation applicable to private and public capital, respectively,  $\psi^p(I_t^p, K_t^p)$  is the adjustment cost on private investment and  $\psi^g(I_t^g, K_t^g)$  is the adjustment cost on public investment. Physical capital is not internationally mobile. It is assumed that physical stocks of both private and public capital cannot adjust instantaneously and costlessly toward their optimal levels. This feature is captured by investment adjustment cost functions representing foregone capital accumulation. The adjustment cost functions are assumed to be positive, monotonically increasing, and strictly convex in investment. In particular, these functions are assumed to be quadratic in investment per unit of installed capital and can be written as:

$$\psi^p(I_t^p, K_t^p) = \frac{1}{2} \mu^p (I_t^p)^2 / K_t^p \quad (6)$$

$$\psi^g(I_t^g, K_t^g) = \frac{1}{2} \mu^g (I_t^g)^2 / K_t^g \quad (7)$$

where  $\mu^p$  and  $\mu^g$  are the investment-specific adjustment cost parameters associated with private and public capital accumulation, respectively.

<sup>2</sup> Although there is growing evidence on the positive effect of government services on output and productivity (see, for example, Aschauer, 1989; Barro, 1989), the empirical evidence on increasing returns is less conclusive. For example, Aschauer (1989), using data for the US during the period 1949–1985, cannot reject the hypothesis of constant returns to scale. This evidence does not necessarily imply a rejection of the hypothesis of increasing returns to scale for less developed debtor countries. Some indirect support for increasing returns is provided by Ram (1986). This author uses data for 115 countries (developed and less developed) and finds that the positive effect of government on growth is typically stronger at lower income levels. In any case, the results of the simulation in this section and in Section 5 continue to hold even if we rule out increasing returns.

Without loss of generality, we assume that government spending is financed by raising taxes:

$$L_t c_t^g + I_t^g = \tau Y_t \quad (8)$$

where  $\tau$  is the average tax rate on income.

To obtain the optimal solution, we must specify the intertemporal budget restriction for the economy. Since we want to examine the effect of the debt crisis on growth, consumption, and investment in the debtor country, we simulate the model under two different assumptions: (a) The debtor country has perfect access to foreign borrowing and lending, and (b) the debtor country is forced to run a trade surplus to service the debt.

If the country has complete access to foreign borrowing and lending, the budget constraint is:

$$D_{t+1} = (1 + r_t) D_t + L_t c_t + I_t - Y_t \quad (9)$$

where  $D_t$  is foreign debt,  $r_t$  is the real rate of interest on foreign loans,  $c_t$  is total consumption per capita ( $c_t = c_t^p + c_t^g$ ) and  $I_t$  is total investment ( $I_t = I_t^p + I_t^g$ ). The intertemporal budget constraint in (9) reflects the budget restriction of debtor countries before the debt crisis.<sup>3</sup>

In the aftermath of the 1982 debt crisis, the management of the debt crisis implied that, contrary to the historical experience, there was no negotiated debt relief and debtor countries ceased to have access to the world capital markets. Moreover, the usual renegotiations, after 1982, implied that debtor countries had to service the debt fully. Debtor countries continued to service the debt, perhaps in fear of retaliation by commercial banks, especially in the form of a cut off in trade credits. The bargaining between creditors and debtors resulted in debtor countries having to run trade surpluses to service their outstanding debts. In this case, the relevant budget constraint for the economy can be written as:

$$(1 - \lambda) Y_t = L_t c_t + I_t \quad (10)$$

where  $\lambda$  reflects the outward transfer of resources as a fraction of domestic output,  $Y_t$ .

### 3.2. Numerical implementation to Argentina and Mexico

The application of the model in the previous section to Argentina and Mexico requires a complete description of these economies in a base year, as well as a set

<sup>3</sup> Even before the debt crisis erupted, debtor countries might not have obtained new loans because they were not able or willing to service the debt. In this case, debtor countries were facing “credit rationing”. See, for example, Cohen and Sachs (1986) for an analysis of the optimization problem under the risk of repudiation.

Table 1  
Data and parameters used in simulations

	Argentina	Mexico
<i>Data in the base year (1980) (in billions of 1980 US dollars)</i>		
Private capital stock	196.420	569.279
Public capital stock	120.282	348.610
Foreign debt	27.157	57.450
Labor force (million workers)	12.200	26.400
Gross domestic product	52.188	162.651
Private consumption	37.039	111.009
Public consumption	5.556	14.899
Private investment	12.515	45.290
Public investment	1.852	8.162
Current account deficit	4.747	11.093
<i>Structural parameters</i>		
Discount factor	0.950	0.950
Population growth rate	0.015	0.030
Share of private consumption	0.870	0.882
Intert. elasticity of substitution	1.000	1.000
$L/Y$	0.210	0.240
Public capital externality	0.100	0.100
Depreciation rate of private capital	0.050	0.050
Depreciation rate of public capital	0.010	0.010
Adjustment costs of private investment	0.100	0.100
Adjustment costs of public investment	0.100	0.100
Tax rate	0.135	0.150
Interest rate on foreign loans	0.060	0.060

For sources, see text.

of structural parameters on preferences, production technology, and investment installation costs (see Table 1 for details).

We have chosen 1980 as our base year for the data. In Table 1, the values for output and for the different components of aggregate demand, as well as for foreign debt and labor force, correspond to the observed values in 1980, as published in the *World Development Report* 1988 (World Bank). The private capital stock is obtained by assuming a capital-output ratio of 3.7, which is in the range often used in the literature (see Blanchard, 1983; Arrau, 1990; Borensztein, 1990). The public capital stock is obtained by assuming a private-public capital ratio of 1.65, which is in the range of the figures available for more developed countries.

Table 1 also presents the structural parameters for Argentina and Mexico. The discount factor is such that the subjective discount rate is slightly lower than the interest rate, which allows endogenous growth in the steady state. The growth rate of population, the share of labor in total output, and the effective tax rate are also obtained from the *World Development Report* 1988 (World Bank). The intertem-

poral elasticity of substitution is (arbitrarily) set to zero. The depreciation and the adjustment cost parameters are similar to values used in the literature (see again Blanchard, 1983; Arrau, 1990; Borensztein, 1990). In particular, adjustment costs are assumed to be 10 percent of investment. The externality parameter is (arbitrarily) set to 0.10.

In all simulation scenarios considered below, the representative agent chooses optimal trajectories into the future with a time horizon of sixty years. Extensive sensitivity analysis has been performed with respect to the key parameters in the model. In terms of the descriptive power of the simulation results, the key parameters are the subjective discount rate, the public capital externality factor, and the adjustment cost parameters. Broadly speaking, the subjective discount rate mostly affects the desired level of foreign indebtedness, the public externality mainly affects the level of transitional growth, and the adjustment cost parameter mostly affects the levels of the different types of investment. The values for these parameters were chosen to replicate more closely the expenditure and growth patterns in Argentina and Mexico for the period 1975–1981, the pre-crisis status quo. Naturally, deviations from these central parameter values change the trajectories of the respective economies. The results discussed below, however, are remarkably robust to parameter specification. This is also true with respect to the specification of the initial values for private and public capital stock and with the assumption of increasing returns to scale.

In the “pre-crisis” scenario, we assume the country has perfect access to capital markets at a 6 percent interest rate, the ongoing rate for the years preceding the collapse of foreign lending in 1982.<sup>4</sup>

The results of this simulation are reported in Fig. 1. For Argentina before the debt crisis, the annual output growth rate is 1.5 percent, the share of total (private and public) investment in output is around 25 percent, and the share of total consumption (private and public) is around 77 percent. In turn, for Mexico in the pre-crisis scenario, the simulated growth rate is 6.5 percent, total investment share averages 29 percent, and total consumption share averages 77 percent. These results closely replicate the consumption, investment, and growth patterns of the two countries in the late 1970s and early 1980s.

After 1982, debtor countries continued to service their debt. In order to do so, Argentina had to reverse an average trade deficit of 3 percent of output in the

---

<sup>4</sup> Although the growth rates obtained from the “pre-crisis” simulation give us an indication of the potential growth for Argentina and Mexico, such growth may not be feasible because of liquidity constraints in international financial markets. Indeed, when the possibility of debt repudiation is allowed, debtor countries may be liquidity constrained relative to situations of full precommitment. We verify whether Argentina and Mexico were liquidity constrained before 1982. The simulations performed suggest that, in the pre-crisis years, it was not optimal for Argentina and Mexico to default, and thus, both countries continued to have unlimited access to world capital markets.

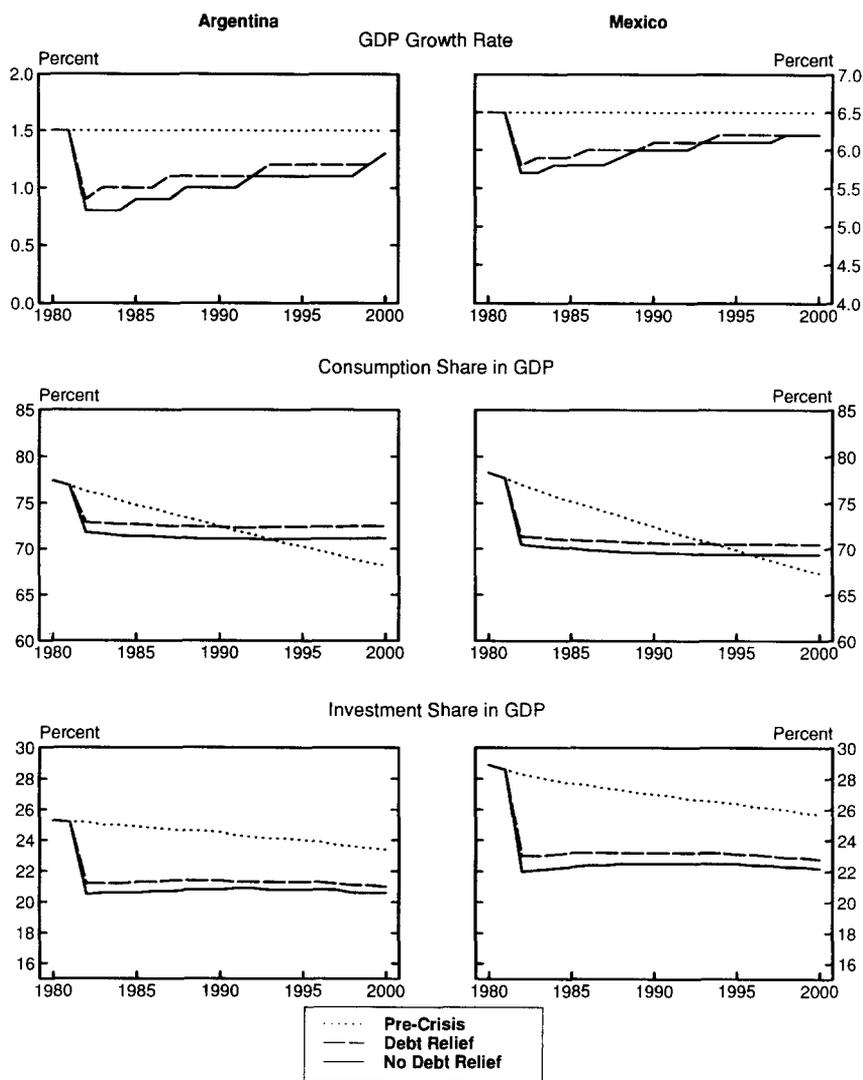


Fig. 1. Optimal response to the debt crisis.

years before the crisis to an average 5 percent trade surplus following 1982. In turn, Mexico had to reverse a trade deficit of 2.9 percent of output before the crisis to a trade surplus of 4.7 percent. Since the supporters of the debt-overhang hypothesis claim that debt relief would stimulate investment and growth, we consider different post-crisis scenarios. One scenario captures the “no-debt-relief” case. It is assumed, based on the outward transfers that took place in the post-1982

period, that both countries had to run trade surpluses of 5 percent of output. We also simulate a “debt-relief” case. Debt relief takes the form of a reduction in the outward transfer to creditors. We assume that debt relief implies running a 3 percent (of output) trade surplus. These simulation results are also reported in Fig. 1.

Interestingly, the simulation results for the “no-debt-relief” scenario do not replicate the experiences of Argentina and Mexico in the 1980s. Simulations suggest that, for Argentina, the debt crisis only leads to a decline of output growth from 1.5 percent to about 0.8 percent, followed by a progressive recovery. This is in sharp contrast to the actual output decline (the average output growth rate during the 1982–1989 period was  $-0.4$  percent per year). Moreover, investment does not collapse as it did in Argentina after 1982. Total investment share is only reduced from 25 percent of output to 21 percent, in contrast to an actual average decline of about 9 percentage points. In turn, for Mexico, growth immediately drops from 6.5 percent to 5.6 percent, while total investment share declines by only 3 percentage points. Both output growth and investment steadily recover after this initial shock. Again, the model results are far from the observed behavior of complete stagnation of output during the 1980s and a fall in the investment share of about 6 percentage points. In this model, the burden of debt servicing mostly affects consumption. The share of consumption in Argentina immediately falls from 77 percent to 72 percent and remains around that level thereafter. This represents a fall in per capita consumption of more than 7 percentage points. In turn, for Mexico, the consumption share falls from 78 percent to 70 percent, with consumption per capita decreasing by 12 percentage points. The actual consumption shares in Argentina and Mexico increase in the post-1982 period by about 4 percentage points and 3 percentage points, respectively.

These simulation results replicate, qualitatively, the results obtained by Arrau (1990) and Borensztein (1990). The “optimal” response to the debt crisis implies only a moderate and short-lived slowdown in investment and growth in the debtor countries. Consumption takes the burden of the adjustment. This is consistent with what happened in the 1930s and in the post-1982 experience of the East Asia debtor countries but fails to explain the depth and the persistence of the economic collapse in Latin America in the 1980s.

The results in the above simulations clearly suggest that debt relief is not the key to the resumption of growth and investment. In fact, the “debt-relief” scenario, also shown in Fig. 1, indicates that output growth and the investment share in Argentina and Mexico would only increase marginally.<sup>5</sup>

---

<sup>5</sup> A reduction in the outward transfer from 5 percent to 3 percent of output corresponds to a debt relief (as a percentage of the value of the debt in 1981) of 39 percent for Argentina and 48 percent for Mexico.

#### 4. Income inequality, political instability and consumption rigidity

The neoclassical growth model, simulated in Section 3, indicates that the optimal response of debtor countries to the debt crisis is a sharp reduction in the consumption share to make possible the servicing of the debt. On the contrary, the investment share in output should remain essentially constant.

The behavior of consumption and investment in Argentina and Mexico during this episode could not be more different from this optimal pattern. Argentina's fiscal deficit, for example, soared to 15 percent of GDP during the 1980–1984 period, and it reached 24 percent of GDP in 1985. In turn, government expenditure crowded out private investment, which collapsed from an average of 22 percent of GDP in the 1970s to about 13 percent after the debt crisis. Argentina embarked on several stabilization attempts, like the Austral Plan in June 1985, but they were all short lived. Similarly, Mexico, rather than restraining public spending, continued to implement fiscal measures that boosted the deficit. After the debt crisis, the government announced that the state would absorb 42 percent of the capital losses due to changes in the exchange rate. Also, an emergency scheme involving fiscal relief and outright subsidies was drawn up to support “productive firms”, and finally tax exemptions of about 15 percent of the payroll were granted to firms that could prove they had maintained employment levels.<sup>6</sup> Expansionary fiscal behavior was rather pervasive in Latin America in the aftermath of the debt crisis, stimulating private consumption. For example, after the debt crisis in 1982, the private consumption share in output increased by 3 percentage points, and total consumption share in output (private plus government) increased by 5 percentage points (see Table 2). Naturally, investment felt the brunt of the adjustment.

In contrast, investment did not collapse in East Asian debtor countries. In these countries, as reported in Table 2, it was the consumption share that fell proportionally to the increase in the external transfer. Contrary to the Latin American experience, the sharp decrease in spending was, in part, caused by draconian fiscal measures together with devaluations of the domestic currencies and tight monetary policies.

There is another major difference between the Latin American and East Asian experiences. While the countries in Latin America are, in general, dislocated by fierce political conflicts prompted by extreme income inequality, the income distribution of East Asian countries is less skewed and political instability is less intense. As has been noted by Sachs (1989b), among others, political and social instability may be at the root of the inability of Latin American countries to implement austerity measures when the debt crisis erupted. While governments in Latin America were too weak to resist the demands of highly mobilized social

---

<sup>6</sup> See Dornbusch and De Pablo (1990) and Buffie (1990) for an exhaustive description of fiscal policy in Argentina and Mexico.

Table 2  
Consumption patterns in debtor countries

Region	Sample	Private consumption share in GDP		Total consumption share in GDP	
		Mean	Standard error of the mean	Mean	Standard error of the mean
Latin America	1968–1988	0.718	0.0038	0.852	0.0038
	1968–1981	0.709	0.0047	0.834	0.0043
	1982–1988	0.738	0.0061	0.888	0.0067
East Asia	1968–1988	0.646	0.0061	0.778	0.0064
	1968–1981	0.653	0.0070	0.785	0.0073
	1982–1988	0.632	0.0115	0.766	0.0123

Source, World Bank Data Bank.

groups, East Asia's flexibility to adjust to bad shocks seems to be tied to the social stability, which is rooted in the greater income equality.

Some evidence to support this hypothesis is presented in Table 3. This table reports different indices which measure social unrest. These indices are: the number of constitutional changes, the number of government crises, the number of coups, the number of riots, and the number of strikes. All of the variables are expressed as averages of annual values over the sample period 1960–1988. A more detailed definition of the variables used in this section, including sources, is provided in Appendix A. Table 3 also reports a general index of social-political instability, which is the sum of the indices listed above. The general index highlights the fact that the greatest degree of violence is associated with countries in Latin America. For example, Argentina is at the top of the list with a general instability index of 5.24. Interestingly, Argentina embarked on several stabilization programs during the 1980s, all of which collapsed within a year, reflecting the political deadlock in the country. These indices, however, may not accurately reflect the political instability that leads to continuing political stalemate. For example, as was pointed out by Sachs (1989b), in some countries political instability is reflected in a rapid alteration of governments, but, in others, it may be reflected in a single government. Similarly, the number of strikes may not reflect the degree of instability of a government. We would need to know which unions the strikes affects and the number of workers involved in the strike in order to gauge the amount of instability. Similarly, riots include disturbances in prisons, which do not preclude social and political stability. Moreover, the data available is only an average over the sample and it may obscure the evolution of social instability.

This is why we decided to examine directly the effects of economic inequality on the ability of governments to implement austerity programs when it is optimal to do so. Data on income distribution is not available for a large number of countries on a regular basis. Thus, we try to capture the extent of economic inequality that would create political deadlocks by using the following variables:

Table 3  
Measures of social and political instability

Country	Constitutional changes	Crises	Coups	Riots	Strikes	Index of instability
Argentina	0.12	1.12	0.92	1.54	1.54	5.24
Bolivia	0.22	0.96	1.15	0.88	0.96	4.17
Korea	0.22	0.38	0.40	2.12	0.00	3.12
Chile	0.04	0.42	0.19	1.58	0.42	2.65
Peru	0.09	0.46	0.28	0.65	0.62	2.10
Dominican Rep.	0.09	0.19	0.36	1.12	0.19	1.95
Ecuador	0.22	0.23	0.57	0.50	0.27	1.79
Brazil	0.13	0.42	0.12	0.85	0.23	1.75
Guatemala	0.13	0.46	0.47	0.50	0.15	1.71
Philippines	0.09	0.08	0.46	1.00	0.00	1.63
Colombia	0.04	0.46	0.04	0.81	0.27	1.62
Uruguay	0.09	0.46	0.00	0.69	0.27	1.51
Mexico	0.00	0.04	0.00	1.35	0.08	1.47
Thailand	0.30	0.42	0.48	0.19	0.08	1.47
Sri Lanka	0.09	0.15	0.08	1.04	0.08	1.44
El Salvador	0.13	0.08	0.59	0.38	0.19	1.37
Indonesia	0.13	–	0.27	0.73	0.00	1.13
Venezuela	0.04	–	0.31	0.73	0.00	1.08
Panama	0.13	0.15	0.16	0.46	0.12	1.02
Nicaragua	0.09	0.12	0.23	0.35	0.15	0.94
Malaysia	0.04	0.15	0.04	0.54	0.00	0.77
Honduras	0.17	–	0.32	0.11	0.00	0.61
Jamaica	0.04	–	0.00	0.42	0.05	0.51
Haiti	0.09	–	0.15	0.27	0.00	0.51
Guyana	0.24	0.11	0.00	0.05	0.05	0.45
Trinidad and Tobago	0.10	–	0.05	0.10	0.05	0.31
Paraguay	0.00	0.12	0.08	0.08	0.00	0.28
Papua New Guinea	0.12	0.00	0.00	0.00	0.00	0.12
Singapore	0.06	0.00	0.00	0.05	0.00	0.11
Fiji	0.08	0.00	0.00	0.00	0.00	0.08
Barbados	0.06	0.00	0.00	0.00	0.00	0.06
Costa Rica	0.00	0.00	0.00	0.04	0.00	0.04
Hong Kong	0.00	–	–	–	–	0.00

Note: Variables are expressed as the average of annual values over the 1960–1988 period. The index of instability is the sum of the particular indexes. Sources, see Appendix A.

*prim*, the proportion of the students enrolled in primary school to the estimated number of individuals in the age bracket 6–11 years, *secon*, the proportion of students enrolled in secondary school to the estimated number of individuals in the age bracket 12–17 years, *mort*, the rate of infant mortality, and *life*, life expectancy at birth. The dependent variable in the regression is the consumption share in output, *cs*. We expect the consumption share to be positively correlated with the rate of infant mortality, since this last variable reflects less access to

Table 4  
Panel data regressions

Dependent variable	<i>Growth</i>	<i>Prim</i>	<i>Secon</i>	<i>Mort</i>	<i>Life</i>	$\bar{R}^2$
Private consumption share in GDP	−0.49 (−2.68)	−0.0005 (1.10)	0.00009 (0.67)	0.003 (4.93)	0.009 (3.15)	0.22
Total Consumption Share in GDP	−0.80 (−4.20)	−0.001 (−2.25)	0.00 (0.12)	0.002 (2.90)	0.007 (2.13)	0.20

Note: Each equation is a panel regression with observations for 33 countries, listed in Table 3, using five-year averages for the period 1968–1988. *t*-statistics are given in parentheses. *Growth* is the growth rate in the preceding decade, *Prim* is enrollment in primary school, *Secon* is enrollment in secondary school, *Mort* is the rate of infant mortality, *Life* is life expectancy at birth. Sources, see Appendix A.

health care by the poor and, therefore, is another sign of economic inequality. On the contrary, the consumption share is expected to be negatively correlated with the rest of the explanatory variables since better education and longer life expectancy reflect greater economic equality. Also included in the regressions is the growth rate of the country in the preceding decade, *growth*, to examine whether better initial conditions could help to build social consensus around policies that promote development in the long run. We estimated the following panel regression for 33 countries, listed in Table 3, using five-year annual averages for the period 1968–1988:

$$\begin{aligned}
 cs_{i,t} = & \alpha_0 + \alpha_1 growth_{i,t} + \alpha_2 prim_{i,t} + \alpha_3 secon_{i,t} + \alpha_4 mort_{i,t} + \alpha_5 life_{i,t} \\
 & + \epsilon_{i,t}
 \end{aligned}
 \tag{11}$$

The results of this estimation for private and total (private plus government) consumption shares, reported in Table 4, support the hypothesis that inequality could preclude the adoption of stabilization programs when it is optimal to do so. For example, as infant mortality increases, so does the consumption share. Conversely, the variables reflecting the level of literacy in the country and the growth rate in the preceding decade contribute to a reduction in the consumption share. In all cases, the variables are statistically significant. Surprisingly, life expectancy has a negative effect on the consumption share.

Our results are supported by other research in this area. For example, the downward rigidity of consumption in Latin America in recent decades, induced by populist solutions to social conflicts, has been well documented in the economics literature (see, for example, Sachs, 1989b). In particular, for Argentina, Dornbusch and De Pablo (1990) argue that, during the 1970s, government spending increased substantially with a redistributive aim towards eliminating social violence. Also, pressed by the economic elite, governments neglected to pursue fiscal reforms that would have reduced the budgetary imbalances. Before 1982, the deficit was financed by foreign borrowing. After the debt crisis exploded, foreign borrowing was substituted by the collapse in investment. Also, faced with political instability,

governments have resorted to more direct income redistribution policies, such as allowing substantial wage increases. For example, in the crucial years of the debt crisis between 1982 and 1984, real wages in Argentina increased by approximately 50 percent and private consumption increased accordingly.

Another link between inequality, social instability, and growth has been provided by, for example, Alesina and Perotti (1993). These authors argue that income inequality increases social discontent and fuels social unrest. It fuels social unrest by increasing the probability of coups, revolutions, and mass violence or, more generally, by increasing uncertainty over policy and threatening property rights. This has a negative effect on investment and, as a consequence, reduces growth. Using a different methodology and a larger sample of countries, their findings support our results.

The importance of factors such as political instability and social unrest in determining fiscal and monetary policy has been examined recently by Cuckierman et al. (1989) and by Roubini and Sachs (1989). Cuckierman et al. (1989) conclude that political instability leads to a reduction in the revenues from conventional taxes and leaves the government with the inflation tax as the only, or the most important, resource to finance spending. On the other hand, Roubini and Sachs (1989) examined evidence from European countries and concluded that the slow rate at which the post-73 fiscal deficits were reduced was caused by the difficulties of political management in coalition governments.

Recently, some authors have examined the relationship between political stability, debt crisis and growth. For example, Sachs (1989b) examined the effects of income distribution and, thus, the potential for social unrest on the adjustment efforts of major debtor countries. The paper concludes that growth did not collapse after the debt crisis erupted in those countries with less income inequality. This result is corroborated in Berg and Sachs (1987), who examined the positive link between income inequality and debt crisis. In addition, De Gregorio (1991) studies the determinants of growth in the 1980s in twelve Latin American countries. De Gregorio (1991) finds that macroeconomic stability plays a crucial role in growth and that growth is negatively correlated with political instability.

## **5. The politically-feasible response to the debt crisis**

The evidence both from the literature and from Section 4 points to the fact that, in some countries, the optimal response to the debt crisis may not be politically feasible. The question is whether this downward rigidity in consumption can explain such a protracted decline in growth as the one observed in Latin American countries.

To answer this question, we simulate the “post-crisis” scenarios in Section 3 with the additional constraint that consumption per capita cannot drop below certain levels dictated by exogenous political concerns. In particular, we assume

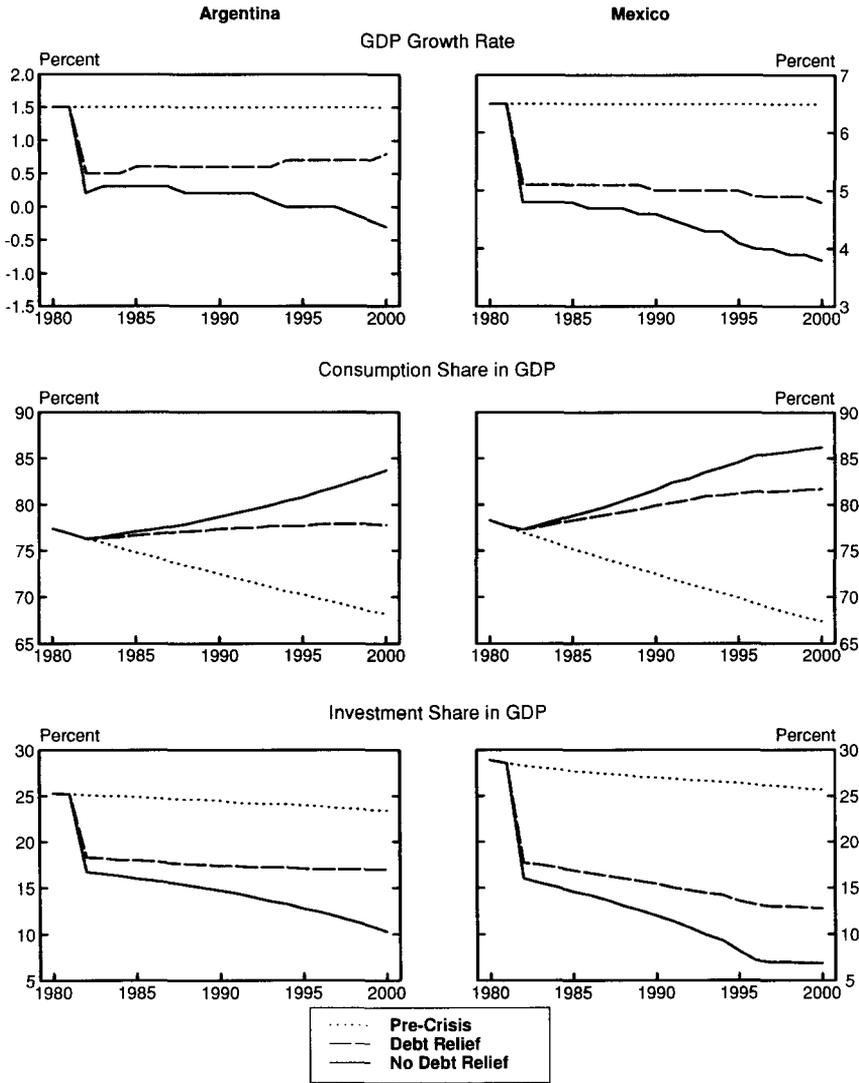


Fig. 2. Politically-feasible response to the debt crisis.

that total consumption per capita is constrained to be no lower than the levels implied by the “pre-crisis” trajectories, which reflect the consumption patterns of the late 1970s. Notice that such requirements on the consumption trajectories are not overly stringent by historical standards. In fact, the “pre-crisis” simulation values for consumption in Argentina and Mexico, which are similar to the historical values for the late 1970s, are well below the observed values after the crisis erupted.

The paths of the two economies in the politically-feasible “post-crisis” scenarios are reported in Fig. 2. This figure also reports the optimal “pre-crisis” trajectories for purposes of comparison. Interestingly, the intertemporal equilibrium paths in the politically-feasible trajectories differ markedly from the equilibrium paths under the assumption of strict maximization. For example, the simulations for Argentina for the post-crisis, no-debt-relief scenario indicate that total investment as a share of GDP in Argentina immediately falls from 25.2 percent to 16.7 percent when the debt crisis bursts in 1982 and does not recover to pre-crisis levels in the medium run. This path replicates the actual path of investment in Argentina at the onset of the debt crisis, the investment share decreases by about 9 percentage points in the 1982–1989 period, relative to the values observed in the 1970s. The consumption constraint turns out to be binding in the medium-long run (30 years into the future) in the post-crisis, no-debt-relief scenario. Growth collapses in 1982 and continuously declines thereafter. While the growth rate before the crisis averages 1.5 percent per annum, it abruptly falls to 0.3 percent in the aftermath of the crisis. Growth only recovers after the consumption constraint is relaxed. We find similar results with Mexico. In the no-debt relief scenario, growth falls to 4.7 percent immediately after the debt crisis erupts and gradually declines thereafter, while the investment share plunges to 15 percent and declines smoothly thereafter to reach 11 percent in 1989. On the other hand, the consumption share steadily increases to 82 percent in 1989. These simulation results, unlike the results of the optimizing model, closely mimic the actual data for Argentina and Mexico in the 1980s. The debt burden has, indeed, a crippling effect on the economy if the political constraints that lead to high levels of consumption are considered.

While the output collapse in Latin America seems to suggest a sizable cost to debtor countries for following these suboptimal spending policies, welfare losses are actually relatively small. We estimate these losses as follows:

$$L^d = \frac{\sum_{t=0}^T \rho^t [(U_t^* - U_t^+) / MU_t^*]}{\sum_{t=0}^T [1/(1+r)]^t Y_t^*} \quad (12)$$

where  $U_t^+$  is the utility in the politically-feasible trajectory,  $U_t^*$  and  $MU_t^*$  are the utility and marginal utility levels associated with the intertemporal-optimizing trajectory,  $r$  is the pre-crisis real rate of interest on foreign loans, and  $Y_t^*$  is domestic output in the intertemporal-optimizing trajectory. The indicator  $L^d$  gives the average dollar loss as a fraction of the present discounted value of domestic output in the intertemporal-optimizing trajectory. Since an increase in current consumption will have to be offset by future reductions in consumption,  $L^d$  represents the cost of the intertemporal miss-allocations.

Table 5  
Costs of the politically-feasible responses to the debt crisis

Scenario	Debtors <sup>a</sup>		Creditors <sup>b</sup>	
	Argentina	Mexico	Argentina	Mexico
Debt-relief	0.16	0.13	2.3	5.7
No-debt-relief	0.55	0.28	6.7	13.4

<sup>a</sup> Dollar loss as a percentage of the present discounted value of output.

<sup>b</sup> Dollar loss as a percentage of the foreign debt in 1981.

The losses, estimated in Eq. (12), are reported in the first two columns of Table 5. The utility losses in the case of Argentina in the no-debt relief scenario are relatively small, just over half a percentage point of output. The losses in the case of Mexico are even smaller. Although our results naturally depend on the coefficient of relative risk aversion, these estimates are very robust to different parameterizations of the utility function.<sup>7</sup>

This result seems odd since the output growth collapse in the politically-feasible alternative should restrict the spending possibilities of the debtor countries considerably. Consumption, however, does not decrease in the same proportion as output does because creditors share part of the losses. The intuition is simple. If debtor countries follow the intertemporal-optimizing strategy, output will be higher. The larger level of output does not necessarily increase the consumption possibilities proportionally. In fact, part of this larger level of output,  $\lambda$ , will end up in the creditors' pockets because of the way the debt crisis was managed in the 1980s, with debtor countries servicing the debt in essentially fixed proportions of domestic output. Thus, when output growth collapses in the suboptimal alternatives, both debtors and creditors share the losses. In other words, the suboptimal alternative has a built-in mechanism of debt-burden sharing.<sup>8</sup> We estimate the creditors' cost of the politically-feasible trajectories to be:

$$L^c = \frac{\sum_{t=0}^T [1/(1+r)]^t \lambda (Y_t^* - Y_t^+)}{D_0} \quad (13)$$

where  $Y_t^*$  is output of the debtor country in the intertemporal-optimizing trajectory,  $Y_t^+$  is output of the debtor country in the politically-feasible trajectory and

<sup>7</sup> Suboptimal decisions that cost a trivial amount of utility are called near rational (see, for example, Cochrane, 1989).

<sup>8</sup> Another explanation of the small decrease in utility costs of suboptimal consumption alternatives has been provided by Cochrane (1989) who notes that first-order mistakes in decisions have second-order consequences for utility. Using data for the USA, he finds that utility losses from slow reactions of consumption to real interest rate changes are trivial.

$D_0$  is the debtor's country total foreign debt in 1981, before the debt crisis. The indicator  $L^c$  gives the creditors' average dollar loss as a fraction of the debtor-country's foreign debt in 1981.

The creditors costs are also reported in Table 5, columns 3 and 4. For example, if Argentina transfers 5 percent of output every year for 30 years it will pay back its foreign debt in full if it follows the intertemporal-optimizing alternative. In contrast, it will only pay 93.3 percent of the foreign debt if it follows the politically-feasible plan, implying a corresponding implicit burden-shifting of 6.7 percent of its foreign debt. For Mexico, similar calculations indicate an implicit burden-shifting of 13.4 percent of its foreign debt.

Finally, debt relief makes a difference when there are lower bounds to consumption. Suppose, as we did in Section 3, that debt-relief consists of reducing the outward transfer from 5 percent to 3 percent of output.<sup>9</sup> The paths of the consumption share, investment share, and output growth in the debt-relief case are shown in Fig. 2. In the case of Argentina, debt relief makes possible an increase in the investment share of 2.5 to 6.3 percentage points and an increase in the long-run growth rate of 1.4 percentage points. In the case of Mexico, the investment share increases by 3.5 percentage points and the growth rate by 1.3 percentage points. It should be stressed that the effects of debt relief in this scenario assume the same lower bound for consumption per capita as in the no-debt relief scenario. It can be thought of as though creditors give debt relief conditional on debtor countries not changing (increasing) the lower bound of consumption.

## 6. Concluding reflections

For most Latin American countries, the 1980s were "terrible times". Collapse of growth, increased poverty, and widening income inequality were pervasive in Latin America during that decade. In contrast, the 1990s, so far, have been "excellent times." Most of these countries have renegotiated their foreign debt, Brazil being the last country to reach an agreement. Capital has flowed to these countries in what seems to be the capital bonanza of the late 1970s. Prospects for growth have improved not just because of the lending renewal but because of the reforms implemented in a large number of countries.

However, the future does entail some risks. Contractionary monetary policy in some of the center countries could herald the drying up of capital markets. In fact, the tightening of monetary policy in the United States during the first half of 1994 sparked capital outflows from developing countries and a general fall in stock

---

<sup>9</sup> The reduction in the outward transfer from 5 percent to 3 percent of output corresponds to a debt relief (as a percentage of the value of the debt in 1981) of about 35 percent for Argentina and 41 percent for Mexico.

market prices, sometimes on the order of 25 percent. It is true that a drying up of capital markets in 1982 did not lead to the collapse of East Asian countries and that they adjusted successfully to the external shock. The question is whether Latin American countries could continue to grow even with a reversal of the actual capital flows. The experience in the last three years suggests that the answer to the above question is uncertain. On the positive side, most Latin American countries have implemented major fiscal reforms, curtailed subsidies, privatized state enterprises and generally improved the environment for private sector activities. Outward-oriented trade policies, e.g., lowering of trade barriers, removal of disincentives to export and the implementation of currency convertibility, and financial market reforms have further promoted the efficient use of resources. These changes, if permanent, will make the business atmosphere more attractive. On the negative side, while capital inflows have complemented domestic savings in financing investment in East Asian countries, capital inflows to Latin America have essentially financed a consumption boom. While in East Asian countries the investment share increased from 24 percent of GDP in the 1984–88 period to 28.1 percent in the 1990–1992 period, in Latin American countries the investment share in GDP decreased from 16.9 percent in 1984–1989 to 16.8 percent in 1990–1992. This suggests that some of these countries may encounter difficulties if a reversal of capital flows occurs. Indeed, there are already signs in the market that suggest that foreign investors are worried about the future prospects of Latin American countries. For example, while direct foreign investment in East Asian countries has averaged 3 percent of GDP, it only amounts to 1.1 percent of GDP in Latin American countries. This suggests that the largest part of capital inflows to Latin America is primarily short-term and subject to quick reversal at the first sign of trouble.

To conclude, one lesson of the 1980s seems particularly relevant for the 1990s. In a world of erratic changes in terms of trade and interest rates and of high capital mobility, policies that promote domestic savings are important in avoiding a growth collapse when foreign lending is cut off. After the debt crisis of 1982, the decrease in capital inflows to Latin America affected only investment, not consumption. As a result, output growth decreased sharply. It is important for these countries to implement policies that promote more flexible responses of savings to external shocks. The evidence in this paper and in related literature suggests that policies that promote greater income equality could help to accomplish this goal.

### **Acknowledgements**

We thank the anonymous referee for many helpful comments and suggestions. The views expressed in this paper are those of the authors and should not be interpreted as reflecting those of the Federal Reserve System or other members of its staff.

## Appendix A

Constitutional changes	Number of constitutional changes (1960 to 1985 or subperiod). Source: Banks (1979).
Coups	Number of coups per year (1960 to 1985 or subperiod). Source: Banks (1979).
Crises	Number of government crises per year (1960 to 1985 or subperiod). Source: Banks (1979).
Growth rate	GDP growth rate. Source: World Bank Data Bank.
Infant mortality	Number of infants who die before reaching one year of age, per thousand live births in a given year. Source: World Bank Data Bank.
Life expectancy at birth	Years of life expectancy at birth. Source: World Bank Data Bank.
Primary education	Enrollment ratio for primary education. Constructed as ratio of total number of students enrolled in primary education to estimated number of individuals in the age bracket 6–11 years. Source: World Bank Data Bank.
Secondary education	Enrollment ratio for secondary education. Constructed as ratio of total number of students enrolled in secondary education to estimated number of individuals in the age bracket 12–17 years. Source: World Bank Data Bank.
Riots	Number of riots per year (1960–1985 or subperiod). Source: Banks (1979).
Strikes	Number of strikes per year (1960–1985 or subperiod). Source: Banks (1979).
Private consumption share	Private consumption share in GDP. Source: World Bank Data Bank.
Public consumption share	Public consumption in GDP. Source: World Bank Data Bank.

## References

- Alesina, A. and R. Perotti, 1993, Income Distribution, Political Instability, and Investment, NBER Working Paper No. 4486, October.
- Arrau, P., 1990, How Does the Debt Crisis Affect Investment and Growth? A Neoclassical Growth Model Applied to Mexico, International Economics Department, The World Bank, WPS 378, Washington, D.C.
- Aschauer, D., 1989, Is Public Expenditure Productive?, *Journal of Monetary Economics*, 23, 177–200.
- Banks, A.S., 1979, Cross-National Time Series Data Archive, Center for Social Analysis, State University of New York at Binghamton, September, updated.

- Barro, R., 1990, Government Spending in a Simple Model of Endogenous Growth, *Journal of Political Economy*, 98, S103–S125.
- Barro, R., 1989, A Cross Country Study of Growth, Saving, and Government, manuscript, NBER Working Paper No. 2855, Cambridge, MA.
- Berg, A. and J. Sachs, 1987, The Debt Crisis: Structural Explanations of Country Performances, NBER Working Paper No. 2607.
- Blanchard, O., 1983, Debt and the Current Account Deficit in Brazil in Armella, Dornbusch, and Obstfeld, eds., *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, University of Chicago Press, 187–198.
- Borensztein, E., 1990, Debt Overhang, Credit Rationing, and Investment, *Journal of Development Economics*, 32, 315–335.
- Buffie, E., 1990, Economic Policy and Foreign Debt in Mexico, in J. Sachs, ed., *Developing Country Debt and Economic Performance*, NBER, Chicago: University of Chicago Press.
- Calvo, G., L. Leiderman and C. Reinhart, 1992, Capital Inflows to Latin America: The 1970s and the 1990s, International Monetary Fund Working Paper No. 85, October.
- Calvo, G., L. Leiderman and C. Reinhart, 1993, Capital Inflows and the Real Exchange Rate Appreciation in Latin American: The Role of External Factors, *International Monetary Fund Staff Papers*, March, 40, 108–150.
- Calvo, G., L. Leiderman and C. Reinhart, 1994, The Capital Inflows Problem: Concepts and Issues, *Contemporary Economic Policy*, July.
- Cochrane, J., 1989, The Sensitivity of Tests of the Intertemporal Allocation of Consumption to Near-Rational Alternatives, *American Economic Review*, 79, 319–337.
- Cohen, D. and Sachs, J., 1986, Growth and External Debt Under the Risk of Debt Repudiation, *European Economic Review*, 30, 529–560.
- Cuckierman, A., Edwards, S and Tabellini, G., 1989, Seigniorage and Political Instability, NBER Working Paper No. 3199.
- De Gregorio, J., 1991, Economic growth in Latin America, International Monetary Fund Working Paper 1991/71.
- Diaz Alejandro, C., 1984, Latin American Debt: I Don't Think We Are in Kansas Anymore, *Brookings Papers on Economic Think Activity* 2, 335–389.
- Dornbusch, R. and De Pablo, J., 1990, Debt and Macroeconomic Instability in Argentina, in J. Sachs, ed., *Developing Country Debt and Economic Performance*, NBER, Chicago: University of Chicago Press.
- Froot, K., 1989, Buy backs, Exit Bonds, and the Optimality of Debt and Liquidity Relief, *International Economic Review*, 30, 49–70.
- International Financial Statistics*, International Monetary Fund, Washington, DC, various issues.
- Krugman, P., 1988, Financing Vs. Forgiving a Debt Overhang: Some Analytical Notes, *Journal of Development Economics*, 29, 253–268.
- Ram, R., 1986, Government Size and Economic Growth: A New Framework and Some Evidence from Cross-Section and Time Series Data, *American Economic Review*, 76, 191–203.
- Roubini, N. and Sachs, J., 1989, Political and Economic Determinants of Budget Deficits in the Industrial Democracies, NBER Working Paper No. 2682.
- Sachs, J., 1989a, The Debt Overhang of the Developing Countries, in: G. Calvo, R. Findlay, P. Kouri and J.B. de Macedo, eds., *Debt, Stabilization, and Development*, Basil Blackwell, Cambridge, MA, 1989.
- Sachs, J., 1989b, Social Conflict and Populist Policies in Latin America, NBER Working Paper NO. 2897, 1989.
- World Bank, *World Development Report*, Oxford University Press, various issues.
- World Economic Outlook*, International Monetary Fund, Washington, DC, various issues.