13 Government Policy, Saving and Growth in Latin America

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1 INTRODUCTION

The relationship between government policy, saving and growth is a complex one. Higher growth has a direct impact on saving and investment rates through the effects on the level of current and future income and on total wealth. At the same time, a favourable policy environment – that is, one characterized by low, predictable inflation, a sustainable balance-of-payments situation, minimal distortion and clearly-established, well-enforced property rights, provides a better investment climate. This will result in a higher investment rate, and through factor accumulation and a higher rate of growth of total factor productivity, a higher rate of growth overall. However, even an economy with access to foreign financing will find it difficult to finance, on a sustainable basis, a gap between the investment and saving rate much above 5 per cent of GDP. Therefore, even if a favourable policy environment results in a sharp increase in investment demand, for that investment to materialize the domestic saving rate must also increase. Thus, where the investment rate exceeds the saving rate, a policy that results in a higher saving rate will encourage a higher investment rate to materialize, and this will lead to higher growth.

This chapter is divided into five sections. Section 2 reviews the literature on the determinants of the investment and growth rates both within and outside Latin America. Section 3 examines the link between the saving and investment rates, and the particular role of saving in economic growth. Section 4 reviews the empirical evidence on saving rates, and presents new empirical evidence on the determinants of saving rates in Latin America, while Section 5 examines the recent record on saving and investment rates in Chile.

2 THE ROLE OF PUBLIC POLICY ON GROWTH AND INVESTMENT

In recent years, both theoretical and empirical work on the main determinants of long-term economic growth have been re-examined. This was motivated by a search for an explanation of the differences in growth across countries, as well as dissatisfaction with the main implications of the standard, neoclassical, Solow–Swan growth model, where the steady-state rate of growth was equal to the sum of the rate of growth of population and technical progress. In this model, the latter two terms were exogenous variables, and as such were independent of economic policy and the rate of factor accumulation. In the Solow–Swan model, economic policy and factor accumulation, through their effect on the *level of output*, affect the rate of growth of output in the transition from one steady state to another. The new growth theory is an endogenous growth in the sense that the steady-state rate of growth is endogenous.[1]

The endogenous growth work, initiated by Roemer (1986) and Lucas (1988), has provided an analytical underpinning for a mechanism through which the 'quality' of economic policy and the level of investment in human and physical capital could affect not only the level of output but also in the long-term, steady-state rate of growth. The belief that the 'quality' of economic policy and the level of the investment rate were major determinants of long-term economic growth has long been expressed in the writings of development economists, notably Schumpeter (1934). Since the early 1970s, a group of development economists have emphasized the role that economic policy and the formation of physical capital play on the overall growth process. Thus, Díaz-Alejandro (1976) concentrated on how poor economic policy explained the weak long-term growth record of Argentina, through low efficiency and a low demand for investment. Similar arguments have been used by Krueger (1978) and Little (1982). For these authors there is little new in 'the new growth theories'.

Recent endogenous growth literature has highlighted the channels through which economic policy affects growth. Promoting human capital accumulation (for example by providing adequate nutritional levels, basic educational skills and expanding research and development) can foster growth (Rebelo, 1992). Becker, Murphy, and Tamura (1990) showed how economies may get stuck in a poverty trap: a situation where low income and low human capital levels create incentives for high population growth and low investment in human capital, which

perpetuate the state of poverty. Policies to stimulate investment in human capital could end this stagnant situation. Endogenous growth models also stress the importance of trade policy, fiscal policy and financial policy as determinants of long-term growth (Easterly and Rebelo, 1993; and King and Levine, 1993). Much of the empirical work on development economics since the early 1980s has confirmed these associations (Feder, 1983) and Balassa (1995). Furthermore, the type of reduced-form equation estimated in current work on endogenous growth is not so different from those estimated by development economists in the 1980s.[2]

Recent empirical work emphasizes the role of uncertainty related to economic policies on long-term growth. In particular, two variables of macroeconomic uncertainty have been considered: inflation and real exchange-rate uncertainty. Both arise from the high volatility observed in these two variables, and the fact that this volatility had a large un-predictable component. Inflation and real exchange-rate uncertainty affect growth directly through their effect on total factor productivity, and indirectly through their effect on the time-path of investment. Fischer (1991 and 1993) introduced macroeconomic uncertainty into the growth process through the effects on factor accumulation and the rate of change of total factor productivity. Corbo and Rojas (1993) introduced uncertainty as related to terms-of-trade shocks and inflation into the growth equation. Easterly and Rebelo (1993) introduced terms-of-trade uncertainty, Hausmann and Gavin (1995) explored the role of different sources of uncertainty on growth, and Corbo and Rojas (1995) discussed the role of real exchange rate uncertainty on investment and growth.[3]

New growth theory has recently been used to study the difference in growth performance across Latin American countries. Corbo and Rojas (1993) found that, for a cross-section of countries, the most important single factor determining growth was the investment rate, which accounted for 37 per cent of the variation in the per capita growth rate. Of course, at a deeper level investment is endogenous, and this too needs to be explained. Adding more new growth theory variables – such as the initial level of GDP per capita, the ratio of government expenditure to GDP, the initial endowment of human capital, the inflation rate, and the ratio of the trade deficit of GDP – raises the R^2 to 62 per cent. The inflation rate, the trade deficit ratio, and the initial level of human capital were the most significant of these additional variables. But economic policies and institutions also affect growth through their effect on the investment rate, which is also an endogenous variable. Corbo and Rojas found that the investment rate was a function

of the rate of growth, the level of human capital, saving rates, and variables measuring political and macroeconomic stability. In particular, they found that political instability had a strong negative effect on investment rates, while macroeconomic instability had a direct negative effect on growth. The negative effect of political instability on investment is consistent with the view that investment is greatly affected by uncertainty. This result confirms recent theoretical work by Serven and Solimano (1992) and Solimano and Pindyck (1993) on the role of uncertainty and the effects of policy on investment.

Corbo and Rojas (1995) allocate a more central role to macroeconomic uncertainty. They considered two sources of uncertainty: the unpredictable volatility of inflation, and the unpredictable volatility of the real exchange rate. In their empirical work they found that real-exchange-rate uncertainty had the strongest negative association with growth. In particular, the standard deviation of the real exchange rate had a negative association with growth in models where they controlled for uncertainty in the inflation rate. This negative effect worked through two channels: the effect of uncertainty on the rate of increase of total factor productivity, and the indirect effect of uncertainty on the investment rate.

These findings on the determinants of long-term growth obtained from cross-sectional analysis have also been used to explain the growth process of a country through time. In the initial stages of development, growth is frequently the result of improved use of natural resources and the incorporation of better agricultural techniques. Later, investment in human and physical capital, the provision of an adequate physical infrastructure and the introduction of new technology, become relatively more important in creating enduring growth. An enabling policy environment and the development of private initiative is central to this transition.

Gelb (1989) was the first to collect empirical evidence showing how severe financial distortion – such as sharply negative real interest rates and very small formal financial systems – adversely affected growth. Recently, King and Levine (1993) showed how financial deepening and the expansion of a financial system geared to the private sector, by improving the probability of successful innovation and the quality of the financial system, accelerates growth. They highlighted three financial development indicators: financial depth; the relative importance of private banks as opposed to central banks; and the ratio of private credit to GDP, all positively and significantly related to a set of growth indicators. They concluded on page 25 that 'the predictable

component of financial development tends to be very strongly associated with growth and the sources of growth'.

Clearly, government policy plays a central role in promoting investment and growth. In particular, policies conducive to achieving and sustaining macroeconomic stability, policies that reduce distortions and raise total factor productivity, and policies that contribute to raising the level of human capital, directly and indirectly, result in a higher rate of sustainable growth.

3   THE RELATIONSHIP BETWEEN SAVING AND INVESTMENT RATES

In principle, the whole increase in the investment rate could be financed by borrowing on international capital markets. However, even in industrial countries, national savings provides most of the financing for domestic investment. The work initiated by Feldstein and Horioka (1980) has clearly shown that there is a very high correlation between savings rates and investment rates. The correlation being higher the less open is the capital account of the balance of payment (Feldstein and Bacchetta, 1991, and Frankel, 1991). Three factors probably account for this high correlation. First, saving and investment rates respond to real interest rates, and even in a perfectly integrated capital market – with nominal interest rate parity – real interest rate parity would not follow, because of anticipated movements in the real exchange rate. Second, investors' risk aversion would create a gap between domestic and foreign interest rates even in a world of fixed real exchange rates (Feldstein and Bacchetta, 1991; Frankel, 1991). Third, government policy could be geared towards achieving a foreign-saving-to-GDP target to avoid any deterioration in country solvency, or the painful short-term adjustment that follows a sudden reversal in external financing. Summers (1988) has suggested that governments have a reaction function, where for a given gap between the private saving rate and the private investment rate, the size of the public-sector deficit is adjusted to achieve a target foreign saving rate.[4] Most IMF and World Bank supported adjustment programmes include a foreign saving rate target, with domestic policy adjusting to achieve this target.

One further argument based on the macroeconomics of the transfer problem suggests setting an upper limit on the foreign saving rate. Heavy reliance on capital inflows in the early stages of an adjustment programme could lead to premature real-exchange-rate appreciation, at

cross purposes with the sustainable export-led growth objective. Thus it is difficult to disagree with Krugman's (1993) conclusion that it is rare for as much as 5 per cent of GNP to be borrowed on a sustainable basis.

For low-income countries relying on aid-financed foreign saving, wishing to increase their investment rate, there is an additional argument for increasing the national saving rate. Since aid prospects appear to be worsening, these countries will have to increase domestic saving, as foreign savings will probably decrease through time. Thus the only way to finance a sustainable increase in the demand for investment is through a sustainable increase in the national saving rate. The next section explores the determinants of saving rates.

4   THE MAIN DETERMINANTS OF LATIN AMERICAN SAVING RATES: THE ROLE OF PUBLIC POLICY

The weight of empirical evidence suggests that private saving rates are correlated with per capita income, GDP growth, the percentage change in terms of trade and the dependency rate, while the relation between the saving rate and real interest rate is rarely statistically significant (Giovannini, 1985; Corbo and Schmidt-Hebbel, 1991; Dornbusch and Reynoso, 1989; Masson, Bayoumi and Samiei, 1995). However negative and unpredictable, real interest rates probably discourage saving – certainly they reduce the amount and efficiency of financial intermediation and encourage capital flight.

Public saving is mainly determined by the capacity of the government to raise taxes, and its capacity to control expenditure. An increase in the public saving rate will contribute to a higher national saving rate provided that it is not offset by a decrease in the private saving rate through Ricardo equivalence effects. Empirical evidence, presented by Corbo and Schmidt-Hebbel (1991), shows that changes in public saving are only partially (up to 50 per cent) offset by a change in the opposite direction in private saving. Corbo and Schmidt-Hebbel found that, in general, increases in public saving generated through reduced government expenditure had a greater effect than an increase in taxation. This evidence on saving highlights the central importance of fiscal balance as an instrument for achieving a higher national saving rate.

The level of per capita income should have a positive effect on saving rates, through the share of the population that is liquidity constrained, and the dependency rate should have a negative effect on saving in economies where bequests are not a dominant feature. Furthermore,

the relation between saving and per capita income could be non-linear, with the increasing national saving rate decreasing over time (Masson, Bayoumi and Samiei, 1995).

Institutional developments in the financial system are also likely to affect the saving rate, and will certainly affect financial savings. Financial developments in the form of a wider monetization and financial deepening could result in higher saving through lower transaction costs for potential savers, but will probably result in a more efficient use of savings through the pooling of resources, the creation of a richer portfolio of financial instruments, a better screening of projects, and by partially overcoming the problems of adverse selection in credit markets. Pension reform, replacing a pay-as-you-earn (PAYE) system by a compulsory private fully-funded individual capitalization scheme, is also likely to increase the personal saving rate. If the retirement pensions of the old system were suspended or financed either from an increase in taxes or a reduction in public expenditure, rather than through increased public debt, the total saving rate would also increase.

Recent empirical work on saving has consistently shown a positive and significant association between the level of the domestic saving rate and the rate of income growth. There is therefore a virtuous circle, whereby a higher saving rate promotes a higher investment rate; a higher investment rate in a low-distorted policy environment results in a higher growth rate, and the higher growth rate results in a higher saving rate, and so on (Collins, 1993; Caroll and Weil, 1994). The challenge is how to begin this process.

We now consider the main determinants of saving rates in Latin America. Because of a lack of data, we had to use aggregate national saving rates. We estimated a saving equation using a cross-section of nineteen Latin American countries for the period 1970–94. The unit of observation was the annual saving rate of each country, and we dealt with the two-dimensional nature of the data provided by ECLAC by using panel data estimation procedures.

Following Corbo and Schmidt-Hebbel (1991) and Masson *et al.* (1995) we estimated the following saving equation:[5]

$$S_{it} = \alpha_0 + \alpha_1\, y_{it} + \alpha_2\, y_{it}^2 + \alpha_3\, g(GDP_{it}) + \alpha_4\, DEPR_{it} + \alpha_5\, r_{it} + \alpha_6\, TTEF_{it} + \alpha_7 FS_{it}$$

Where:
S is the domestic saving rate;
y is per capita income, in 1980 US$;
$g\,(GDP)$ is the rate of growth of GDP;

Table 13.1   National saving rate: panel estimates

Explanatory variables	Fixed effects	Random effects
GDP Growth rate	0.261	0.296
	(7.362)	(7.719)
Per capita income	0.146	0.060
	(7.469)	(3.316)
Per capita income squared	–0.0076	0.0007
	(–2.165)	(0.179)
Dependency ratio	0.00015	0.046
	(3.117)	(0.702)
Terms of trade effect	0.003	0.005
	(8.051)	(8.608)
Current account surplus/GDP	0.653	0.702
	(18.479)	(16.130)
Constant	–	0.080
		(3.965)
Adjusted R^2	0.726	0.683
S.E.R.	0.033	0.037
Number of observations	411	410

Note: *t*-ratios in brackets.

Source: Author's calculations.

DEPR is the dependency ratio measured as the ratio between the population under 15 and over 65 years and the population between 15 and 65 years of age;
r is the real interest rate;
TTEF is the terms of trade effect computed using standard national account procedures, in 1980 US$000s; and
FS is the current account surplus as a share of GDP.

The estimates, obtained with a fixed effects model, are presented in the first column of Table 13.1. This is the most appropriate model, as one would expect the omission of institutional characteristics to affect the level of saving rate in a time-independent way. The differences in point estimates were quite small when the results of fixed and random effects were compared. The latter results are shown in the second column of Table 13.1. In both cases, the *R* squares were quite high when compared with the results of other cross-sectional studies, for example, by Masson, Bayoumi and Samiei. The results show that the coefficient of GDP growth is highly significant, as are also the coefficients of the income per capita variables. A 1 percentage point increase in

the rate of GDP growth is associated with close to a quarter of a per-
centage point increase in the national saving rate, while the per capita
saving rate increases with the level of per capita income but at a de-
creasing rate. This is consistent with the fact that in countries with a
low level of per-capita income, the potential for saving is small.

The estimated coefficient of the terms-of-trade effect implies that an
improvement in the terms of trade is associated with an increase in the
domestic saving rate. As we are controlling for the level of per capita
income, a variable that includes the terms-of-trade effect, this is an
additional effect consistent with the hypothesis that terms-of-trade changes
have a large unpredictable component, and this transitory component
does not affect consumption as much as a change in income. The esti-
mated coefficient of the current account surplus as a share of GDP
indicates that a 1 per cent increase in the foreign saving rate is asso-
ciated with a 0.653 percentage point decrease in the domestic saving
rate. This result is consistent with the hypothesis that a higher level of
foreign saving results in an increase in the consumption of GDP ratio.
Finally, the sign of the dependency ratio variable, although significant,
is contrary to *a priori* expectations, this variance probably reflects cross-
country effects, possibly some time-dependent component, as well as
measurement errors arising from the unavoidable use of census data
collected at ten-year intervals.

The main policy implications is that in a low-income, low-saving
country, government policy could play a central role in initiating an
increase in the domestic saving rate through an increase in the govern-
ment saving rate. This initial increase could help to finance the higher
growth rates which, in turn, will result in higher saving rates, and so
promote a virtuous circle. However, for a given increase in the govern-
ment saving rate, the effect on the domestic saving rate will be higher
when it is achieved through a reduction in current government ex-
penditure rather than an increase in taxation (Corbo and Schmidt-Hebbel,
1991).

5   SAVING AND GROWTH IN CHILE[6]

5.1   Recent Economic Performance

Chile is one of the Latin American countries where a radical change
in policy and institutional reform paved the way for higher growth.
However, the process did not proceed smoothly. In 1974, one year

after the military coup, the Chilean economy grew modestly, but was followed, in 1975, by a deep recession. Recovery and expansion from that recession continued until 1981. Then in 1982–3 there was another deep recession, followed by a recovery in 1984, from which the economy moved on to a sustainable-growth path. During that process the investment and saving rates more than doubled, reaching over 27 per cent of GDP in 1995. The 1975 recession had three major causes. First, a sharp drop in the terms of trade as copper prices fell 45 per cent in real terms and the price of oil rose by a factor of three. Second, the restrictive fiscal and monetary policy introduced to stop inflation and reduce the current account deficit, which could not be funded through external borrowing. Third, the highly protected manufacturing sector, adversely affected by the gradual dismantling of trade barriers.

In 1976 inflation was still running at nearly 200 per cent; unemployment at 12.7 per cent; and the international reserve position was weak – at US$107.9 million it was equivalent to less than one month's imports. Reducing inflation through fiscal contraction was the top priority. This use of an orthodox programme to reduce inflation proved costly in terms of output losses and higher unemployment (Corbo and Fischer; 1994). The cost of stabilization would have been lower if only fiscal adjustment had been accompanied by a coordinated deceleration in the rate of wage increases and the exchange rate. Eventually, growth was resumed: in 1976, GDP increased by 3.5 per cent; 9.9 per cent in 1977 and 8.2 per cent in 1978, as shown in Table 13.2.

By early 1978, the economic authorities were growing impatient with the slow reduction in inflation. First, a crawling-peg exchange-rate system was instituted, followed in June 1979 by a fixed exchange rate system, despite domestic inflation of 30 per cent a year. Conflict arose between achieving a stable equilibrium real exchange rate, in order to promote the new export-led development model, and the use of the exchange rate as an anchor for prices in an economy with widespread wage indexation. The overvaluation of the currency, facilitated and sustained by easy access to external financing by the private sector, had deep macroeconomic repercussions, and was one of the main causes of the ensuing boom and recession. The introduction of a pre-announced crawling-peg policy substantially decreased the cost of foreign borrowing, which fell to 10.2 per cent per year in the first quarter of 1978, and then became negative until the last quarter of 1980. The reduction in the cost of foreign borrowing unleashed large capital inflows and caused a drop in domestic real interest rates.[7] Inappropriate regulation and supervision of the banking system facilitated the in-

crease in capital inflows and resulted in a sharp increase in bank lending and private expenditure. The widening gap between the growth rate of expenditure and that of GDP was reflected in a growing trade deficit. The trade balance deficit as a percentage of GDP, as shown in Table 13.2, rose from 3.3 in 1978 to 10.3 per cent in 1981. The sharp increase in the demand for non-tradable goods resulted in a market clearing appreciation of the real exchange rate of 25 per cent between 1978 and 1981.

Early in 1982, the large trade deficit and adverse external shocks – a worsening in the terms of trade, and a sharp increase in international interest rates[8] – began to generate doubts about the sustainability of the fixed exchange rate. As a result, capital inflows slowed down, leading to a period of capital flight. With the loss of external funding, the key policy issue in early 1982 was how to engineer a sharp reduction in the trade deficit without causing an undue increase in unemployment. The authorities decided to allow the money supply to decrease, with a consequent loss of foreign reserves. However, with real-wage rigidity, a sharp recession followed. Indeed, Chile was already in crisis before the international debt crisis of August 1982, and as capital inflows had virtually disappeared, the reduction in the trade balance deficit had to be accelerated.

In 1984, after two years of dealing with the visible consequences of the recession on the labour market and financial system, a medium-term adjustment programme was introduced. This programme's main objectives were to reduce the fiscal deficit and implement a major devaluation. The traded goods sectors, which had achieved sizeable real efficiency gains, responded well to the real devaluation, and this allowed the economy to enter a period of high sustained growth. When the new democratic government basically reaffirmed the market-oriented export-led model of development, a direct foreign investment boom ensued, which reinforced the high economic growth.

For such a highly indebted country, Chile's economic performance since 1985 has been remarkable. Between 1986 and 1989, the average annual GDP growth rate was 7.4 per cent, while average inflation fell to 18.3 per cent and unemployment was reduced from 10.8 to 6.3 per cent. By 1990, however, the economy was undoubtedly overheating, and contractionary policy was introduced. Growth fell briefly and inflation was contained, but by 1991, the economy was back on a sustainable growth path. Between 1991 and 1996 annual average growth continued at 7.4 per cent, while inflation was kept down to 11 per cent on average. In 1996 growth as measured by GDP was 7.2 per cent,

Table 13.2 Annual macroeconomic indicators, 1960–94

Year	GDP growth (%) (1)	Domestic expenditure real growth (%) (2)	Trade deficit (% of GDP)[a] (3)	Current account deficit (% of GDP)[a] (4)	Public sector deficit[b] (% of GDP) (5)	Price of copper (US$/pound) (6)	Inflation (% change in CPI (Dec–Nov) (7)	Unemployment (% of Labour force) (8)	Real exchange rate[c] 1977=100 (9)	Real interest rate (10)
1960	na	na	2.9	3.8	4.6	30.8	5.5	7.1	78.6	na
1961	4.8	6.1	4.3	5.5	4.5	28.7	9.6	8.0	72.6	na
1962	4.7	2.5	1.4	3.0	5.8	29.3	27.7	7.9	69.7	na
1963	6.3	5.8	2.5	4.3	4.9	29.3	45.4	7.5	79.4	na
1964	2.2	2.9	0.9	2.7	3.9	44.1	38.4	7.0	71.3	na
1965	0.8	0.4	-0.8	1.3	4.1	58.7	25.8	6.4	74.9	na
1966	11.2	16.5	-1.1	1.4	2.5	69.5	17.0	6.1	78.4	na
1967	3.2	0.6	-1.4	1.6	1.3	51.1	21.9	4.7	82.5	na
1968	3.6	4.8	-0.8	2.0	1.5	56.1	27.9	4.9	88.9	na
1969	3.7	5.8	-2.3	0.6	0.4	66.6	29.3	5.5	93.5	na
1970	2.1	1.8	-0.7	1.2	2.7	64.2	36.1	5.7	93.4	na
1971	9.0	9.7	1.0	2.1	10.7	49.3	28.2	3.9	85.6	na
1972	-1.2	1.0	3.5	3.9	13.0	48.6	255.4	3.3	64.7	na
1973	-5.6	-6.2	1.9	2.7	24.7	80.8	608.7	5.0	74.4	na
1974	1.0	-2.4	-0.7	0.4	3.4	93.3	369.2	9.5	122.7	na
1975	-13.3	-20.8	2.0	5.2	0.9	55.9	343.3	14.8	147.1	na
1976	3.2	0.2	-4.3	-1.7	-0.6	63.6	198.0	12.7	124.1	na
1977	8.3	14.2	1.8	3.7	-0.1	59.3	84.2	11.8	100.0	16.3
1978	7.8	9.7	3.3	5.2	-1.5	61.9	37.2	14.2	111.4	18.9
1979	7.1	10.5	2.8	5.4	-3.2	89.8	38.9	13.6	112.2	15.6
1980	7.7	9.3	4.2	7.1	-4.4	99.2	31.2	10.4	97.2	10.1
1981	6.7	11.6	10.3	14.5	-0.9	78.9	9.5	11.3	84.5	14.7
1982	-13.4	-24.1	1.9	9.2	3.3 (8.8)	67.1	20.7	19.6	94.2	15.6
1983	-3.5	-4.6	-2.7	5.4	3.1 (7.5)	72.2	23.1	14.6	113.1	11.2

Table 13.2 continued

1984	6.1	8.5	1.1	10.7	2.7 (9.1)	62.4	23.0	13.9	118.2	9.2
1985	3.5	-2.5	-2.4	9.4	0.6 (9.8)	64.3	26.4	12.0	145.2	9.1
1986	5.6	4.9	-3.1	7.3	00. (5.0)	62.3	17.4	10.8	159.7	9.1
1987	6.6	9.8	-2.9	5.0	0.6 (1.5)	81.1	21.5	9.3	166.6	7.6
1988	7.3	7.7	-7.0	0.5	-2.6	117.9	12.7	8.3	177.6	7.4
1989	9.9	12.4	-4.5	1.8	-0.2	129.1	21.4	6.3	173.5	8.9
1990	3.3	1.4	-3.4	2.0	-1.3	120.9	27.3	6.0	180.1	12.7
1991	7.3	6.5	-4.0	0.4	-1.6	106.1	18.7	6.1	169.9	8.3
1992	11.0	14.5	-1.5	2.0	-2.5	103.6	12.7	5.7	155.8	8.3
1993	6.3	8.9	2.3	4.8	2.1	86.7	12.2	5.9	154.6	9.3
1994	4.2	3.3	-1.4	1.4	-2.0	104.9	8.9	6.9	150.4	9.3
1995	8.5	12.9	-1.9	-0.2	-2.5	133.2	8.2	6.0	142.1	8.5
1996	7.2	7.9	1.7	4.4	-2.8	103.9	6.6	5.7	138.5	8.8

Notes:
[a] Computed with national accounts information at current prices.
[b] The figures in parentheses include an estimate of the quasi-fiscal subsidies channelled through the Central Bank interest rate on 90–365-day loans.
[c] indicates a real depreciation of the domestic currency.
Column (5) corresponds to the non-financial public sector, 1960–73.
Column (10) Indexed interest rates on 1–3-year loans; 1977–80 corresponds to the indexed interest rate on 90–365-day loans.

Sources: Columns (1), (2), (3), (4), (6), (8) and (10) 1960–88 *Indicadores Económicos y Sociales*, Central Bank of Chile; 1984–94 Monthly Bulletin; Column 5 *Indicadores Económicos y Sociales*, Central Bank of Chile, from 1974; T. Flores, *Sector Público No Financiero*, mimeo PIMA, Instituto de Economía, Universidad Católica de Chile. Column (7) corrected CPI, CIEPLAN; Column (9) Central Bank of Chile Real Exchange Rate corrected by CIEPLAN CPI.

while inflation was reduced to 6.6 per cent and unemployment 5.7 per cent as shown in Table 13.2.

5.2 Saving, Investment and Growth

As the Chilean economy moved closer to full employment, and the large gains from structural reform were exhausted, sustaining a growth rate of, say, 7 per cent a year meant continued efficiency gains and increasing the accumulation of human and physical capital. And this is exactly what has been happening. Employment growth of 3.9 per cent a year together with increases in labour productivity of 2.7 per cent a year contributed to the GDP growth figure between 1987 and 1990. But as the economy approached full employment, labour productivity accelerated to 4.9 per cent a year, which with employment growth of 2.4 per cent enabled the economy to grow at 7.2 per cent a year between 1991 and 1996.

The only way to achieve similar productivity increases in the future will be through the reallocation of labour into more productive activities, through human and physical capital deepening, and the incorporation of new technology. The accumulation of both types of capital will contribute to growth, directly through factor accumulation and indirectly through the effect on the rate of growth of TFP. The efficiency-enhancing externality associated with capital investment in machinery and equipment is a key growth factor stressed by DeLong and Summers (1991). The increase in investment in physical capital could be financed either through domestic or foreign saving. However, as it is difficult, even imprudent, to rely too much on foreign saving, the independent Central Bank of Chile set as an objective that the current account deficit should not exceed 4 per cent of GDP.

The investment and saving rates for Chile are presented in Table 13.3. It will be seen that in 1974, the year after the military coup, investment increased to 21.2 per cent of GDP. This was followed by a sharp drop that lasted until the early 1980s. This fall was associated with the recession of 1975 and the natural uncertainty associated with Chile's reform programme (Solimano, 1992). The 1980s fall in investment was associated first with the deteriorating business climate, and second with the reduction in the foreign saving rate, and third the falling domestic saving rate. As Chile improved its access to international capital markets, and direct foreign investment was liberalized, the investment rate started to increase, reaching 25.5 per cent of GDP in 1989. However, while the investment rate rose, the domestic saving

Table 13.3 National and foreign saving rates and investment rate
(per cent of GDP)

Year	National saving	Foreign saving	Investment rate
1970	15.2	1.2	16.4
1971	12.4	2.1	14.5
1972	8.3	3.9	12.2
1973	5.2	2.7	7.9
1974	20.7	0.4	21.2
1975	7.9	5.2	13.1
1976	14.5	–1.7	12.8
1977	10.7	3.7	14.4
1978	12.6	5.2	17.8
1979	12.4	5.4	17.8
1980	13.9	7.1	21.0
1981	8.2	14.5	22.7
1982	2.1	9.2	11.3
1983	4.4	5.4	9.8
1984	2.9	10.7	13.6
1985	5.4	8.3	13.7
1986	7.7	6.9	14.6
1987	12.6	4.3	16.9
1988	16.3	0.7	17.0
1989	23.7	1.8	25.5
1990	24.2	2.0	26.3
1991	24.1	0.4	24.5
1992	24.8	2.0	26.8
1993	23.9	4.8	28.8
1994	25.4	1.4	26.8
1995	27.6	–0.2	27.4
1996	23.3	4.4	27.7

Source: National Accounts, Central Bank of Chile.

rate lagged. In 1982, external shocks and a sharp recession brought saving down to only 2.1 per cent of GDP, followed in 1983 by a collapse in the investment rate to a low of 9.8 per cent of GDP. As the economy recovered, both the domestic saving and investment rates began to increase, with investment reaching a peak of 28.8 per cent of GDP in 1993, and saving of 27.6 per cent of GDP in 1995. This coincided with a sharp increase in output.[9]

Table 13.4 breaks the domestic saving rate down into private and public saving – with the latter including general government and public enterprises. It will be seen that the reduction in the national saving rate for 1974–80 was largely the result of a reduction in the private

Table 13.4   Private and public saving
(per cent of GDP)

Year	Public	Private	Total
1970	na	na	15.2
1971	na	na	12.4
1972	na	na	8.3
1973	na	na	5.2
1974	9.0	11.7	20.7
1975	9.9	–2.0	7.9
1976	8.7	5.8	14.5
1977	6.7	4.0	10.7
1978	7.7	4.9	12.6
1979	7.3	5.1	12.4
1980	9.2	4.6	13.9
1981	6.3	1.9	8.2
1982	–0.8	2.9	2.1
1983	0.1	4.3	4.4
1984	0.6	2.3	2.9
1985	3.8	4.0	7.8
1986	4.7	6.8	11.5
1987	4.9	12.3	17.3
1988	9.9	12.4	22.3
1989	7.9	15.8	23.7
1990	7.0	17.2	24.2
1991	6.0	18.1	24.1
1992	7.1	17.6	24.8
1993	6.3	17.6	23.9
1994	6.1	19.3	25.4
1995	7.6	20.0	27.6
1996	8.4	14.9	23.3

Note: na: not available

Source: *Indicadores Económicos y Sociales*, Central Bank of Chile.

saving rate, which fell from 11.7 per cent of GDP in 1974 to 4.6 per cent of GDP in 1980. In 1981, social security reform resulted in a reduction of up to 4 per cent of GDP in the public sector saving rate, as tax contributions from active workers under the old system were shifted to the new system. To meet the fiscal costs of this reform, public finances were amended in advance to create a public-sector surplus. This fiscal correction, to finance the transition from a pay-as-you-earn (PAYE) to an individual capitalization system, was the main factor behind the eventual jump in the domestic saving rate.

The sharp recession of 1982–3 had an anticipated negative effect on

public saving, and the government was forced to increase subsidies to the unemployed to withstand the political pressure. Surprisingly, private saving figures showed a large increase in private saving in 1983, but collapsed in 1984, at the start of the economic recovery.[10] Both private and public saving recovered in 1986, a result consistent with the result of our pooled regression, which showed the rate of growth of income and the level of per capita income to be important determinants of the saving rate. Furthermore, this improvement in the investment climate raised the rate of return on saving at a time when foreign saving fell dramatically. This fall in foreign saving probably had a positive effect on saving rates as tight credit constraint reduced consumption levels.

To combat the crisis, the government introduced a series of measures to promote saving, including a change in corporate taxation from realized to distributed profits, and the introduction of a debt reduction programme to increase the rate of return on saving. In 1980, important institutional reforms were introduced to encourage fiscal responsibility. The Constitution institutionalized fiscal responsibility by requiring any budget deficit to be directly funded through domestic or foreign borrowing. The central bank was explicitly excluded from direct or indirect financing. The Constitution also largely granted expenditure authority to the executive branch. Congress could only propose amendments that did not increase either the deficit or the level of spending, although it had the authority to change the composition of spending and to supervise the execution of the budget. However, as the President retains a 'line-item veto', Congress's ability to shift funds from one use to another remains limited.

If the budget as presented by the executive branch was not approved by Congress within sixty days of presentation, it automatically became law. Any budget deficit had to have Congress's borrowing authorization at the time of approval. Once the budget had been approved, it could only be modified at the request of the executive branch and with Congressional approval. Furthermore, state and local government and public enterprises were denied borrowing authority. This type of institutional reform has recently been credited by academic economists and political scientists as facilitating the creation of a stable macroeconomic environment. To quote Alesina, Hausmann, Hommes and Stein (1995, pp. 1–2)

> The nature of the budget procedures strongly influences fiscal outcomes. More specifically, what we define as more hierarchical/transparent and less collegial procedures lead to lower primary deficits and more

fiscal discipline. Hierarchical procedures are those that, for instance, limit the role of the legislature in expanding the size of the budget balance, attribute a strong role to a single individual (typically the Treasury Minister) in the budget negotiations, limit the prerogatives of the spending ministers, impose macroeconomic constraints on the admissible size of deficits.

A parallel, important and effective measure, described by Marfán and Bosworth (1994), was the introduction in 1984 of the Copper Stabilization Fund which, as well as attempting to stabilizing government revenues from copper, aimed to reduce the average level and variability of revenues considered in the annual budget.

The role of this pension reform on saving rates has been analysed extensively. Analytically, one would expect the net effect on saving rates to be felt hardest by those who were liquidity constrained and for whom a substantial part of the compulsory saving would be additional. However, for those not liquidity constrained, enforced saving through a compulsory private pension system probably substituted for other forms of voluntary saving. The direct gross effect on the saving rate can be estimated from the annual net contributions to the pension fund plus the returns from the accumulated funds. In Chile, this gross addition has been of the order of 3 per cent of GDP in recent years.

How the sudden cash deficit in public finances is handled when a country moves from a PAYE system to a privately-funded system makes a significant difference. If the loss in government revenue is compensated by a reduction in government spending, then through less than full Ricardian equivalence, the total saving rate will increase; but there will be a second, equally important effect, and that is the positive contribution to the development of a deeper, more competitive capital market and associated effect on the rate of return on investment.

6   CONCLUSIONS

Recent studies have established a positive association between good policies and growth. Factor accumulation still matters, but its contribution to growth is heavily influenced by the policy environment both at macro and micro levels. If the policy environment is right, then a higher level of investment in human and physical capital will make an important contribution to long-term growth. However, any sustainable increase in investment rates must be associated with a sustainable increase in domestic saving rates.

The new empirical work on Latin American countries confirms some of the relationships found in earlier studies of saving rates. In particular, the level of per capita income and the rate of growth are closely associated with saving rates. Income gains from the terms of trade have an incremental positive effect on the saving rate beyond the normal effect from the level of per capita income. The findings of this study also confirm a negative association between domestic and foreign saving rates.

In Chile, at first the increase in the domestic saving rate resulted from increased government saving, and later from the virtuous circle created by the higher growth rate together with an environment conducive to saving following the progressive institutional reforms. A safe and sound financial system and pension reform probably raised the national saving rate and certainly contributed to the development of a robust capital market. Finally, the new budgetary process incorporated into the 1980 Constitution, and setting up of the Copper Stabilization Fund in 1984, brought greater discipline to the realm of public finance and contributed both to the higher public saving rate and, to a lesser extent, to the higher domestic saving rate.

ANNEX

Social Security Reform in Chile

In 1974, the government modified the PAYE social security system extensively. The reform was oriented towards simplifying, unifying and making the system more equitable:

1. The rate of employees' and employers' contributions were substantially reduced.
2. The system of family allowances and unemployment compensation were simplified.
3. The criteria for adjustment of pensions, retirement age and years of contributions were all unified.
4. A minimum pension was created for the non-contributing poor.

By 1979 all these reforms had been implemented, and special treatment for some groups was eliminated. These reforms permitted a reduction in the rates of contribution, from 33 per cent to 20 per cent of wages.

Reform of the pension system took a quantum leap in November 1980, with the introduction of an individual capitalization system to

which workers could transfer on a voluntary basis. The new pensions system is based on three basic principles: (i) Solidarity with the poor through a (low) guaranteed minimum pension for every Chilean citizen, irrespective of contributions to the system; (ii) Individual capitalization: the benefits obtained by contributors are directly related to the amount of their contributions during their working life; and (iii) Private and competitive administration of the pension funds in order to promote efficiency in fund management.

In this capitalization scheme, the contributions are deposited into an individual, non-transferable account, with a minimum rentability and security guaranteed by the state (administrators have a minimum amount of capital and a minimum rentability) to generate a pension fund. Pension funds grow with the increase in contributions and the return on the flow of investment during the contributing period of its members (net of administrative commissions), but decrease as pension payments and other permitted charges are met. State supervision is executed by an autonomous entity that supervises and controls the pension administrators. The approval, modification and rejection of the classification of different financial instruments in which the administrators can invest is done by a Risk Classification Commission.

In the new system, contributions (based on taxable income) are substantially lower than under the old system and the contributor has the right to transfer funds from one administrator to another in a search for better service and rentability. The amount of the pension can be adjusted by increasing or decreasing voluntary contributions. The amount of the contribution is tax-deductible at the time it is made, but the income from pensions is taxable.

The process of transferring from the old to the new system was organized through the creation of a Bono de Reconocimiento (Recognition Bond) which was equivalent to the total value of monthly contributions made by the contributor to the former system throughout his working life. This bond is indexed to the consumer price index and yields 4 per cent real interest rate up to the time of retirement. On retirement, the government pays out against the bond, which is added to the affiliates' pension fund.

Notes

1. To be fair, it should be recognized that most of the extensions of the Solow–Swan framework had already been suggested in the footnotes to Solow (1956).
2. One difference is that development economists did not control for initial conditions in terms of human capital and income per capita levels in their regressions.
3. Caballero and Corbo (1989) find that, in general, the response of investment to change in profitability depends on the economic cycle, with a higher response in an expansionary cycle. This work implies that uncertainty has an asymmetric effect, with a greater negative effect in the time-path of investment in an expansionary cycle than in a contractionary one.
4. Indeed, to achieve a 'permanent' current account deficit to GDP, a ratio lower than 3 per cent is an explicit objective of macroeconomic policy for the Central Bank of Chile.
5. Because of a lack of appropriate data we could not control for the fiscal stance.
6. Some observers relate the increase in capital inflows mainly to the lifting of capital controls.
7. Relative to the average for the period 1977–9, the size of the external shock is estimated as a positive shock of 1.2 per cent of GDP in 1980; a loss of 0.5 per cent of GDP in 1981; and a loss of 3.8 per cent of GDP in 1982 (see Corbo and Fischer (1995) table II.1).
8. One has to be careful in interpreting Chilean saving and investment rates because of the change in methodology and a break in the series in 1989.
9. This result could be caused by a jump in precautionary saving as a response to the sudden uncertainty regarding employment prospects which resulted from the recession and a large jump in the employment rate which reached nearly 30 per cent in the second half of 1982. The change in methodology in 1984, also affected data: 1984 onwards corresponds to the new national accounts.

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