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Universidad Nacional de La Plata

Quintas Jornadas de Economía Monetaria e Internacional

La Plata, 11 y 12 de mayo de 2000

Corporate Saving and Financing Decisions in Latin America

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Summary

This paper studies private saving decisions in Latin America in the 1990s, with special focus on corporate saving. We investigate the puzzling omission of corporate saving in private saving studies, and afterwards we calculate, in several cases for the first time, gross saving and sources of funds of the corporate sector in seven Latin American countries over the period 1990-1996. Also, we conduct a preliminary econometric exploration on the macroeconomic determinants of private and corporate saving, and private investment. Particularly, the effect of capital-market imperfections and the relationship between corporate and personal savings are analyzed.

Keywords: Latin America, corporate saving, financing decisions, capital-market imperfections, corporate veil, private investment.

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Introduction

In spite of the crucial role that private saving and financial factors play in every development process, most academic and professional research continues to be based on national aggregates whose informational content is rather limited. For instance, there is scarce available data on corporate and household saving for many developing countries, and the financial position of the corporate sector is also unknown in most cases.

The goal of this investigation is to fill this gap for some Latin American countries. In this sense, the paper makes some original applied contributions to the fields of saving and corporate finance. In the first place, the relevance of corporate saving for the analysis of private saving is emphasized, providing new -in several cases, previously nonexistent- measures of private corporate saving and sources of funds for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Also, the effect of capital-market imperfections, and the relationship between corporate and personal savings are explored through econometric tools.

The organization is as follows: In Section 1, we argue that the omission of corporate saving in studies of private saving, in both Latin American and other countries, may be unjustified and misleading. In Section 2, we proceed to measure gross corporate saving in seven countries of the region using a flow-of-funds technique. In Section 3, we conduct an econometric analysis to estimate the relevance of capital market imperfections on private saving and investment and the link between corporate and household saving. The evidence supports the presumption that capital-market imperfections affect private saving and investment decisions and that the household and corporate components of private saving are not perfect substitutes of each other. Some conclusions and policy implications close.

Section 1: Why is Corporate Saving Overlooked? Implications for Theory and Policy

The voluminous literature devoted to the study of saving rates is a clear testimony of its importance for academic and policy purposes. However, it is widely recognized that the debate about the forces behind the dynamics of saving across countries and time is far from settled (see Edwards (1995)). Research effort has focused almost exclusively on the household behavior, highlighting the role of permanent income and life cycle considerations. One striking point is that corporate saving (defined as retained earnings plus depreciation) is usually ignored.

Three reasons may be offered to justify this omission, two of them of a theoretical nature and the remaining of a practical one. In principle, as far as households are the owners of corporations, the analysis should concentrate on the private sector as a whole. In other words, households are assumed to pierce the corporate veil. A second pretext relies on the perfect competition paradigm that long-run corporate profits are zero and consequently saving at corporate level is negligible. Lastly, the practical reason is simply that national saving is calculated as a residual and data availability does not allow to properly discriminate between the personal and corporate components.

In a perfect capital market (free from transaction costs, information problems, and taxes), where all agents are able to borrow and lend without limit at the (unique) going interest rate, consumers undo any change in corporate saving. Under this setting, provided the temporal rate of preference equals the interest rate, consumption is flat over time and is set according to the permanent income, compounded by labor income and dividends:

$$\overline{C} = \frac{r}{1+r}\left[\sum_{t=0}^{\infty}(1+r)^{-i}(w_t - T_{p,i}) + \sum_{t=0}^{\infty}(1+r)^{-i} DIV_i\right]$$
$$= \frac{r}{1+r}\left[\sum_{t=0}^{\infty}(1+r)^{-i}(w_t - T_{P,i}) + \sum_{t=0}^{\infty}(1+r)^{-i}(PROF_i - T_{C,i})\right]$$

where $\overline{C}$ is permanent consumption, r is the interest rate, w is labor income, T_P and T_C are the personal and corporate taxes, respectively (assumed for simplicity to be lump-sum), *DIV* are the dividends, and *PROF* are the corporate profits (earnings after taxes and interest plus depreciation).

It is not difficult to observe that in such an environment, any change in dividends will not change the value of the firm and the corresponding flow of dividends, since the reduced retained earnings can be replaced by other sources of funds (debt or stock issues) at the same cost. This is a corollary of the Modigliani-Miller Theorem. Besides, a revenue-neutral change in the tax structure, such that $dT_C = -dT_P$, would not alter current consumption and saving. In other words, as far as the permanent income is not modified, private saving will not change before changes in the dividend policy.

However, a number of factors may cause the dividend policy to alter private saving decisions. To make the exposition clear, let us classify these factors into corporate and personal ones:

1.Corporate factors

1.a. *For firms suffering financial constraints, an increase in current dividends may reduce investment and hence permanent dividends.* At least since the work of Fazzari et al. (1988), it has been well documented that some firms find it difficult to substitute retained earnings with the more expensive (or even unavailable) external funds, a phenomenon explained by information barriers or transaction costs. In such a case, valuable investment opportunities might be dismissed, and the intertemporal value of the firm will go down.[1] Consequently, current consumption will diminish, and the saving rate s ($s = 1 – C / Y$) goes up.

1.b. *For firms with high profits and scarce investment opportunities, an increase in dividends may increase permanent income*. Managers in possesion of abundant cash may pursue activities

[1] In any case, even if all valuable projects are undertaken, financial expenses would be higher and dividends lower.

that increase their personal welfare at the expense of the shareholders. This agency problem created by these free cash flows implies that shareholders may get a higher return than the firm, elevating permanent income and consequently current consumption.

2. Personal factors

2.a. *Liquidity-constrained or myopic individuals may respond to a change in dividend policy with a strong change in current consumption*. As shown by Campbell and Mankiw (1990) and Shea (1996), among others, there is evidence that the consumption of some individuals is related to current rather than permanent income, as a result of liquidity constraints and/or myopia.[2] Under these circumstances, an increase in current dividends will reduce current private saving, although permanent dividends remain unchanged.[3]

2.b. *Reallocations from dividends to labor income may affect total private saving as long as labor income earnears have a lower saving rate than asset holders do.* A revenue-neutral change in taxes or an increase in wages at the expense of lower dividends, preserving the same permanent income, will increase private consumption. The crucial assumption is that equity holders are richer (as it is usually observed) and have a higher marginal propensity to save compared to recipients of labor income.[4]

2.c. *The propensity to consume out of dividends may be higher than that out of capital gains*. Since capital gains have an important temporary component (see Campbell, Lo, and MacKinlay (1997)) and the changes in dividends are in general persistent, consumers tend to show a higher propensity to consume out of cash dividends. Also, capital gains may be an imperfect substitute for dividends whenever secondary stock markets are not liquid enough and/or capital gains are

[2] It is possible to argue that stockholders, as opposed to those depending solely on labor income, are not likely to suffer liquidity constraints, and as a result they would not change current consumption whether current dividends change. However, this should be empirically proved. Besides, myopia might induce the same behavior even in the absence of liquidity constraints.

[3] In the case of small businesses without public offering, labor income and dividends coincide. But it might happen that liquidity constraints are more severe for consumers than for firms. In such a case, higher dividends would have a positive effect on current consumption.

not considered a good collateral, thus elevating the borrowing interest rate. Accordingly, given a certain value of the firm, an increase in current dividends is likely to provoke a reduction in the saving rate.[5]

2.d. *If consumers exhibit risk aversion, the dividend policy matters for the saving rate*. For the same earnings potential, higher present dividends will give rise to a higher value of the firm because the posponed dividend are penalized with a high discount rate. As the expected permanent income rise, present consumption becomes higher.

In sum, a number of arguments can be presented to dismiss the presumed irrelevance of corporate saving and, as for the Ricardian equivalence between debt and taxes, the hypothesis may fail on empirical grounds when some real-world features are integrated into the analysis (see Poterba (1987)). Households may be unable to fully offset changes in corporate if the marginal propensity to consume out of labor income differs from the propensity to consume out of capital gains and if capital market imperfections exist.

Although a detailed account of these phenomena are beyond the scope of this work, suffice it to say that in view that stock returns have a substantial temporary component (see Campbell, Lo, and MacKinlay (1997)), optimizing consumers may be reluctant to change their consumption based on their share holdings. Under these circumstances, a one-dollar increase in dividends may translate in more consumption than the same dollar reinvested into the firm, thus altering total private saving. Besides, there is extensive evidence, initiated by Fazzari et al. (1988) and recently surveyed by Hubbard (1998), that external finance is more expensive than internal funds for many firms, creating as a result a link between cash flow and investment; in this sense, dividend distributions may prevent firms from undertaking valuable projects, eventually affecting private saving via a reduction in the rate of economic growth. Capital-market imperfections may

[4] In the previous formula, it must be postulated that the rate of time preference (the discount rate) is higher for the second group.

[5] On the other hand, since capital gains are usually taxed at a lower rate than dividends, higher dividends may imply a higher permanent income, partially reverting the previous result.

also modify households' consumption decisions before a change in dividends. First, an increase in dividends may help relax binding liquidity constraints. Second, capital gains may be an imperfect substitute for dividends whenever secondary stock markets are not liquid enough and/or capital gains are not considered a good collateral, thus elevating the borrowing interest rate. In all these cases, a fall in corporate saving may be less than fully offset by an increase in household saving.

Finally, quantitatively speaking, corporate saving appears to be quite significant. For the OECD countries, corporate saving represents 54.8% of private saving, ranging from a minimum of 22% for Italy and a maximum of 79.3% for Denmark (see Table 1). This impression will be reinforced once the magnitudes corresponding to some Latin American countries be presented later on.

Table 1

Components of Gross National Saving in Some OECD Countries, 1990-1994
In percentage of GDP, unless otherwise stated

Country	Public	Personal	Corporate	Total	Private	Corporate over Total In percent	Corporate over Private In percent
Australia	-0.5	7.9	9.0	16.4	16.9	54.9	53.3
Austria	1.6	8.4	15.4	25.4	23.8	60.6	64.7
Belgium	-4.4	14.8	10.7	21.1	25.5	50.7	42.0
Canada	-3.5	9.8	8.5	14.8	18.3	57.4	46.4
Denmark	-0.6	3.7	14.2	17.3	17.9	82.1	79.3
Finland	0.3	8.0	7.7	16.0	15.7	48.1	49.0
France	-0.3	9.5	10.7	19.9	20.2	53.8	53.0
Germany	1.1	8.2	13.0	22.3	21.2	58.3	61.3
Italy	-6.2	19.2	5.4	18.4	24.6	29.3	22.0
Japan	7.7	13.2	12.4	33.3	25.6	37.2	48.4
Netherlands	-0.6	11.6	13.4	24.4	25.0	54.9	53.6
Norway	4.4	4.3	15.1	23.8	19.4	63.4	77.8
Spain	-0.3	7.8	12.4	19.9	20.2	62.3	61.4
Sweden	-1.9	6.1	10.3	14.5	16.4	71.0	62.8
Switzerland	0.6	13.7	15.9	30.2	29.6	52.6	53.7
United Kingdom	-1.7	7.1	8.0	13.4	15.1	59.7	53.0
United States	-2.9	9.0	9.1	15.2	18.1	59.9	50.3
Average	-0.4	9.5	11.2	20.4	20.8	56.3	54.8

Source: Norman and Owens (1997).

Undisputedly, the utilitarian reason, namely, the lack of reliable information, dominates all of the other motives for disregarding corporate saving. At least, this is the case for most developing countries, and Latin America is no exception. Good statistics certainly are luxury goods. An apparent difficulty for academic and professional economists is that the information either does not exist or is not publicly available. Until very recently there were virtually no studies on the subject for any Latin American country. Agosin et al. (1997), Calderon Madrid (1996), Cardenas and Escobar (1996), and Gonza les de Olarte et al. (1996) carried out studies for Chile, Mexico, Colombia, and Peru, respectively. In 1997, the World Bank started to assemble a database on saving rates (see Schmidt-Hebbel and Serven (1997)), which includes corporate

saving for a set of 45 countries until 1992. Bebczuk (1996) performed a calculation of corporate saving in Argentina for 1991-1994, using a framework similar to that developed below.

Before proceeding, some comments about the economic relevance of corporate saving measures are in order. The observation that corporate saving represents in many cases the prevailing source of private saving is undoubtedly key to understand the so-called Feldstein-Horioka's puzzle about the high correlation between national saving and investment rates in both cross-country and time-series studies. Obstfeld (1995) acknowledges that this mechanism may be important but also argues that no documentation has been yet produced.

The impact of borrowing constraints and financial openness on the private saving rate may be greatly enriched should the behavior of households be isolated from that of firms. For example, Japelli and Pagano (1994) claim that the relaxation of borrowing constraints discourages household saving, but their empirical application takes total private saving as the dependent variable, turning their results less meaningful. Along similar lines, the inflow of foreign saving may crowd-out domestic private saving, as advanced by Cohen (1993) and Reisen (1997), among others. But, even if proven to be true, the policy design should contemplate the reaction of each particular sector before taking any corrective measure, since the macroeconomic effect of any policy will be diametrically different depending on whether it reshapes the incentives to invest or those to consume.

Tax policy is also bound to be reexamined under a new light. Letting alone the controversial response of saving to the after-tax rate of return, a reduction of personal taxes -often advocated to foster household saving- compensated by an increase in corporate taxes may be self-defeating: provided the marginal propensity to consume out of disposable income exceeds that from wealth, the net effect may well be a decline in private saving. On top of this, if capital market imperfections prevail, investment may be adversely affected.

Finally, even under full offsetting, the weight of corporate saving compared to other sources of funds is a subtle indicator of efficiency of the financial system. In a well-functioning

financial environment, value-maximizing firms would not care about their liability structure. Conversely, a high reliance on retained earnings uncovers frictions in the intermediation of funds, such as transaction costs and information asymmetries.[6] The evolution over time of corporate saving as a proportion of total sources is likely to offer some guidance about the persistence of these distortions.

[6] Tax considerations may also affect corporate saving decisions (see Copeland and Weston (1988)).

Section 2: Measuring Corporate Saving in Latin America, 1990-1996

The original contribution of this section is twofold. First, we will introduce a flow-of-funds technique to calculate gross private corporate saving that will be applied to Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela for the period 1990-1996. Second, as a byproduct of the preceding computation, aggregate data on sources of funds for these countries will be made available.

In what follows aggregate corporate saving is calculated as:

Corporate Saving = Change in Total Assets - Change in Equity - Change in Debt

The change in total corporate assets is approximated by the gross private investment (including the change in inventories) plus the variation in current assets. The change in equity and the change in debt correspond to the (net) issues of shares and market debt plus new bank loans, both in the domestic and international financial markets.

This identity provides a helpful shortcut to calculate corporate saving in that it relies on a few statistical figures that can be known with a reasonably brief lag and at no cost. Anyway, it must be noted that the data come from a variety of sources, and in some cases this first-time collection was anything but easy. Sources are listed at the bottom of each table. For this procedure to be implemented, some methodological conventions were adopted when the data availability precluded a more precise estimation. All assumptions are made explicit at the end in an Appendix. Nevertheless, these assumptions are relatively innocuous, and we trust that errors are of second-order. If any, underestimation of corporate saving should be expected.

Corporate saving can be calculated either directly from the financial statements of nonfinancial firms or as a residual after measuring household saving. In either case, a bulk of information and assumptions are required. A thorough analysis of possible biases and

inadequacies in the calculation of private saving and investment is provided by Schmidt-Hebbel and Serven (1997). In contrast, the measure introduced in this work, although demanding certain assumptions, avoids dealing with these difficulties. At the same time, given that national studies may be based on different methods, our approach offers more transparent intercountry comparisons. Being pragmatic, it should be reminded that, no matter what procedure is more precise, most Latin American countries currently lack the needed corporate or household information to undertake those other methods. Furthermore, both settings should be pursued in order to double-check accuracy.

Tables 2 through 8 report gross corporate saving in both nominal US dollars and as a percentage of GDP.

Table 2

Corporate Saving in Argentina, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	18838.2	0.0	4.8	83.0	2295.0	16455.4	11.9	18.5	64.6
1991	26087.0	0.0	182.5	521.0	1040.8	24342.7	13.5	15.7	85.9
1992	37094.7	444.0	107.5	1952.0	3848.0	30743.2	13.6	14.1	96.4
1993	45942.1	4125.4	9439.7	5497.0	4872.8	22007.2	8.5	13.5	63.2
1994	54994.2	3850.6	2058.7	5738.0	2778.2	40568.7	14.4	16.2	89.0
1995	49445.0	2045.0	236.3	4087.0	-653.5	43730.2	15.6	17.3	90.4
1996	51284.1	3700.0	0.0	3259.6	3721.8	40602.7	13.7	17.6	77.8
Average							13.0	16.1	80.9

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Novedades de la CNV, Comision Nacional de Valores de la Republica Argentina, various issues.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

Table 3

Corporate Saving in Brazil, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	60876.5	663.5	780.7	1133.2	-5920.9	64220.0	17.4	15.1	115.2
1991	56326.0	1165.9	684.5	912.2	2906.4	50657.0	13.1	13.8	95.1
1992	52964.5	5342.9	977.4	404.0	10689.8	35550.4	9.5	15.6	61.0
1993	61332.6	7736.0	884.6	3843.6	14492.8	34375.6	8.0	16.5	48.5
1994	85266.0	3784.8	2590.9	11805.6	17757.0	49327.8	8.8	14.1	62.4
1995	109187.5	7186.0	1820.0	7574.0	16151.8	76455.8	10.6	19.9	53.4
1996	113987.2	3280.4	8971.5	8288.6	-5052.9	98499.7	13.1	16.7	78.7
Average							11.5	16.0	72.2

Sources: Gross Investment (fixed and inventory): Statistical Yearbook 1996, CEPAL.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Comisao de Valores Mobiliarios (CVM), and Brazil Company Handbook 1994/95.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, Balance Economico Preliminar 1997, CEPAL, and Statistical Yearbook 1996, CEPAL.
For more detailed explanations, see Appendix.

Table 4

Corporate Saving in Chile, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	7314.5	1338.9	208.8	914.0	398.6	4454.2	14.7	20.9	70.2
1991	7532.3	457.3	242.7	1297.0	894.1	4641.2	13.5	20.7	65.1
1992	10246.7	883.4	511.7	954.0	1092.3	6805.3	15.9	20.1	79.1
1993	11682.2	1560.3	944.4	1329.0	769.2	7079.3	15.5	19.2	81.0
1994	12327.7	1840.7	917.2	2356.0	537.8	6676.0	12.8	20.7	61.8
1995	16497.1	2424.6	625.0	2578.0	2509.0	8360.5	12.4	22.2	55.9
1996	19057.7	409.1	1629.9	2659.0	1642.3	12717.4	17.7	20.2	87.4
Average							14.6	20.6	71.1

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Superintendencia de Valores y Seguros de Chile.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

Table 5

Corporate Saving in Colombia, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	4952.6	-149.4	51.9	35.6	-566.4	5581.0	15.7	15.8	99.6
1991	5363.9	-8.4	70.4	60.5	845.8	4395.6	10.3	18.1	57.0
1992	6622.3	8.3	117.4	183.3	1113.1	5200.4	10.6	15.4	68.7
1993	7596.4	-43.2	66.7	444.8	1223.5	5904.5	10.6	9.6	110.8
1994	11327.0	-67.7	559.7	376.0	2784.4	7674.7	10.9	9.0	122.1
1995	12062.7	1494.4	198.9	851.8	1549.8	7967.9	9.9	10.4	95.4
1996	6680.2	477.0	114.7	460.9	804.6	4823.0	5.6	3.3	168.1
Average							10.5	11.7	90.4

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Superintendencia de Valores de Colombia.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

Table 6

Corporate Saving in Mexico, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	52774.0	1864.0	293.7	2317.8	8366.7	39931.9	16.1	22.2	72.6
1991	62501.9	1785.0	3091.9	3872.1	8928.4	44824.5	15.3	16.7	91.9
1992	74542.3	3055.0	1812.2	4955.7	5688.6	59030.9	17.7	13.4	131.9
1993	79239.4	4863.5	2698.8	6782.0	5832.8	59062.4	14.6	13.1	111.4
1994	82897.7	1950.2	4011.9	2017.3	5121.9	69796.4	16.7	13.1	127.5
1995	52380.4	1098.7	1899.1	1087.3	-12654.9	60950.2	21.2	18.0	117.8
1996	63390.3	-166.4	2009.5	1179.4	2511.3	57856.5	17.5	18.7	93.6
Average							17.0	16.4	103.4

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Bolsa de Valores de Mexico.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

Table 7

Corporate Saving in Peru, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	4411.3	-54.0	0.0	0.0	1260.2	3205.1	9.6	13.5	70.7
1991	6101.2	-112.0	0.0	0.0	-121.2	6334.4	14.8	11.7	127.3
1992	6494.7	10.0	0.0	162.0	313.0	6009.7	14.5	12.1	119.8
1993	7013.1	336.0	29.1	73.6	282.6	6291.8	15.2	12.6	120.8
1994	9419.2	609.0	133.0	243.3	664.2	7769.7	15.5	11.4	136.2
1995	12254.6	97.0	0.0	356.9	825.8	10974.9	18.6	14.8	125.9
1996	12231.8	40.0	4.7	756.2	1162.1	10268.8	16.8	11.9	141.2
Average							15.0	12.6	119.4

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Comision Nacional Supervisora de Valores y Empresas del Peru.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

Table 8

Corporate Saving in Venezuela, 1990-1996
In US$ Millions, otherwise indicated

Year	Gross Investment	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Gross Corporate Saving	Gross Corporate Saving % of GDP	Gross Private Saving % of GDP	Corporate as a ratio of Private Saving %
	(1)	(2)	(3)	(4)	(5)	(6)=(1)-(2)--(3)-(4)-(5)	(7)	(8)	(9)
1990	4191.6	-273.0	0.0	0.0	1015.4	2794.0	5.7	25.6	22.5
1991	8450.6	0.0	17.2	655.2	1552.4	6324.2	11.8	19.1	61.8
1992	12604.0	148.0	70.6	556.8	15.4	11562.9	19.1	18.5	103.7
1993	9839.6	-476.0	9.0	807.1	-605.4	10655.8	17.7	15.6	114.0
1994	5933.3	-886.0	88.3	256.2	-721.8	7140.5	12.3	21.4	57.5
1995	10920.1	-422.6	15.3	312.2	704.0	10256.1	13.7	22.4	61.1
1996	10996.0	-294.4	22.8	367.3	-2802.4	13395.8	18.3	24.5	74.5
Average							14.1	21.0	67.1

Sources: Gross Investment (fixed and inventory): International Financial Statistics (IFS) and Interamerican Development Bank (IDB), Country Statistics.
International Debt Issues: IDB, Country Statistics.
Equity Issues: International Capital Markets, International Monetary Fund, November 1997.
Domestic Debt Issues: Santander Investment, Caracas.
Domestic Bank Loans: IFS.
Gross Private Saving: Author's calculations based on data from Progreso Economico y Social en America Latina 1996, IDB, and Balance Economico Preliminar 1997, CEPAL.
For more detailed explanations, see Appendix.

The most evident conclusion from the preceding tables is that corporate saving constitutes an overwhelming proportion of private saving in Latin America in the nineties: 80.9% in Argentina, 72.2% in Brazil, 71.1% in Chile, 90.4% in Colombia, 103.4% in Mexico, 119.4% in Peru, and 67.1% in Venezuela. Not only is household saving low, but is negative on average in two out of seven of the countries.[7]

[7] The same qualitative conclusion is reached by the country studies surveyed above, but the numerical results are rather different. The same applies to the private saving rate. Comparability is undermined by differences in the raw series employed, methodology, and deflation procedures.

At first glance, corporate saving as a percentage of GDP, unlike total private saving, appears to be very volatile across time, especially so in Argentina, Brazil, and Colombia. Also noticeable is the fact that in all countries but Colombia (where a continuous downward trend is observed), corporate saving was higher in 1995-1996 than in 1991-1994, suggesting that the Mexican crisis of December 1994 had a sizable repercussion. Some insights can be derived by displaying the information in terms of sources of funds, as Tables 9 through 15 do.

Table 9

Sources of Funds of Private Corporate Firms in Argentina, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	0.0	0.0	0.4	12.2	87.4	100.0
1991	0.0	0.7	2.0	4.0	93.3	100.0
1992	1.2	0.3	5.3	10.4	82.9	100.0
1993	9.0	20.5	12.0	10.6	47.9	100.0
1994	7.0	3.7	10.4	5.1	73.8	100.0
1995	4.1	0.5	8.3	-1.3	88.4	100.0
1996	7.2	0.0	6.4	7.3	79.2	100.0
Average 1990-1996	4.1	3.7	6.4	6.9	79.0	100.0
Average 1991-1994	4.3	6.3	7.4	7.5	74.5	100.0
Average 1995-1996	5.7	0.2	7.3	3.0	83.8	100.0

Source: Table 2.

Table 10

Sources of Funds of Private Corporate Firms in Brazil, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	1.1	1.3	1.9	-9.7	105.5	100.0
1991	2.1	1.2	1.6	5.2	89.9	100.0
1992	10.1	1.8	0.8	20.2	67.1	100.0
1993	12.6	1.4	6.3	23.6	56.0	100.0
1994	4.4	3.0	13.8	20.8	57.9	100.0
1995	6.6	1.7	6.9	14.8	70.0	100.0
1996	2.9	7.9	7.3	-4.4	86.4	100.0
Average 1990-1996	5.7	2.6	5.5	10.1	76.1	100.0
Average 1991-1994	7.3	1.9	5.6	17.4	67.7	100.0
Average 1995-1996	4.7	4.8	7.1	5.2	78.2	100.0

Source: Table 3.

Table 11

Sources of Funds of Private Corporate Firms in Chile, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	18.3	2.9	12.5	5.4	60.9	100.0
1991	6.1	3.2	17.2	11.9	61.6	100.0
1992	8.6	5.0	9.3	10.7	66.4	100.0
1993	13.4	8.1	11.4	6.6	60.6	100.0
1994	14.9	7.4	19.1	4.4	54.2	100.0
1995	14.7	3.8	15.6	15.2	50.7	100.0
1996	2.1	8.6	14.0	8.6	66.7	100.0
Average 1990-1996	11.2	5.6	14.2	9.0	60.2	100.0
Average 1991-1994	10.7	5.9	14.3	8.4	60.7	100.0
Average 1995-1996	8.4	6.2	14.8	11.9	58.7	100.0

Source: Table 4.

Table 12

Sources of Funds of Private Corporate Firms in Colombia, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	-3.0	1.0	0.7	-11.4	112.7	100.0
1991	-0.2	1.3	1.1	15.8	81.9	100.0
1992	0.1	1.8	2.8	16.8	78.5	100.0
1993	-0.6	0.9	5.9	16.1	77.7	100.0
1994	-0.6	4.9	3.3	24.6	67.8	100.0
1995	12.4	1.6	7.1	12.8	66.1	100.0
1996	7.1	1.7	6.9	12.0	72.2	100.0
Average 1990-1996	2.2	1.9	4.0	12.4	79.6	100.0
Average 1991-1994	-0.3	2.2	3.3	18.3	76.5	100.0
Average 1995-1996	9.8	1.7	7.0	12.4	69.1	100.0

Source: Table 5.

Table 13

Sources of Funds of Private Corporate Firms in Mexico, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	3.5	0.6	4.4	15.9	75.7	100.0
1991	2.9	4.9	6.2	14.3	71.7	100.0
1992	4.1	2.4	6.6	7.6	79.2	100.0
1993	6.1	3.4	8.6	7.4	74.5	100.0
1994	2.4	4.8	2.4	6.2	84.2	100.0
1995	2.1	3.6	2.1	-24.2	116.4	100.0
1996	-0.3	3.2	1.9	4.0	91.3	100.0
Average 1990-1996	3.0	3.3	4.6	4.4	84.7	100.0
Average 1991-1994	3.9	3.9	6.0	8.9	77.4	100.0
Average 1995-1996	0.9	3.4	2.0	-10.1	103.8	100.0

Source: Table 6.

Table 14

Sources of Funds of Private Corporate Firms in Peru, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	-1.2	0.0	0.0	28.6	72.7	100.0
1991	-1.8	0.0	0.0	-2.0	103.8	100.0
1992	0.2	0.0	2.5	4.8	92.5	100.0
1993	4.8	0.4	1.0	4.0	89.7	100.0
1994	6.5	1.4	2.6	7.1	82.5	100.0
1995	0.8	0.0	2.9	6.7	89.6	100.0
1996	0.3	0.0	6.2	9.5	84.0	100.0
Average 1990-1996	1.4	0.3	2.2	8.4	87.8	100.0
Average 1991-1994	2.4	0.5	1.5	3.5	92.1	100.0
Average 1995-1996	0.6	0.0	4.5	8.1	86.8	100.0

Source: Table 7.

Table 15

Sources of Funds of Private Corporate Firms in Venezuela, 1990-1996
As a percentage of total sources

Year	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving	Total
1990	-6.5	0.0	0.0	24.2	66.7	100.0
1991	0.0	0.2	7.8	18.4	74.8	100.0
1992	1.2	0.6	4.4	0.1	91.7	100.0
1993	-4.8	0.1	8.2	-6.2	108.3	100.0
1994	-14.9	1.5	4.3	-12.2	120.3	100.0
1995	-3.9	0.1	2.9	6.4	93.9	100.0
1996	-2.7	0.2	3.3	-25.5	121.8	100.0
Average 1990-1996	-4.5	0.4	4.4	0.8	96.8	100.0
Average 1991-1994	-4.6	0.6	6.2	0.0	98.8	100.0
Average 1995-1996	-3.3	0.2	3.1	-9.5	107.9	100.0

Source: Table 8.

Consistent with earlier results, corporate saving is by far the most important source of funds (80.6% for the whole sample). Bank loans, domestic debt, international debt, and equity

contribute with 7.4%, 5.9%, 3.3%, and 2.5% of the total, respectively.[8] These percentages give definite support to the pecking order hypothesis, coined by Myers (1984), according to which firms prefer internal funds to debt, and debt to equity. Among the debt sources, banks are the chief suppliers of external financing, while international loans are still limited in spite of the increasing financial integration to international markets. It can also be noticed that the average proportions over the entire period are rather similar across countries, although larger variations seem to occur on a year-by-year basis.

The pairwise correlation matrix among the different sources of funds unveils another interesting pattern, as shown by the following table:

Table 16

Correlations among Sources of Funds in Latin America, 1990-1996

	International Debt Issues	Equity Issues	Domestic Debt Issues	Domestic Bank Loans	Corporate Saving
International Debt Issues	1.00				
Equity Issues	0.38	1.00			
	(0.007)				
Domestic Debt Issues	0.59	0.51	1.00		
	(0.000)	(0.000)			
Domestic Bank Loans	0.27	0.03	0.11	1.00	
	(0.065)	(0.853)	(0.454)		
Corporate Saving	-0.71	-0.47	-0.61	-0.78	1.00
	(0.000)	(0.000)	(0.000)	(0.000)	

* p-values in parenthesis.

Market sources (international debt, domestic debt, and equity) appear to be positively correlated with each other, but much weakly with bank loans, while corporate saving is negatively correlated with all alternative sources. In principle, the first feature may be revealing that the access to any market source has a signaling role for other providers of funds. The second

[8] It must be noted that 55% of total equity issues is explained by the privatization process. Information on privatization revenues by form of divestiture comes from IDB (1997).

characteristic may be indicating that the incentives to save on the part of private firms are to some extent inversely linked to the availability of external sources. This point will be further developed in Section 3.

To offer a comparative standard, Table 17 shows the sources of funds for a group of OECD countries over the period 1990-1995:

Table 17

Sources of Funds of Non-financial Corporations
Selected OECD Countries, 1990-1995
In percentage of total sources

Country	Debt	Equity	Corporate Saving	Total
Austria	-2.7	9.6	93.1	100.0
Canada	31.0	11.8	57.1	100.0
Italy	24.9	9.1	66.0	100.0
Japan	41.6	5.2	53.2	100.0
Netherlands	17.1	17.6	65.3	100.0
Sweden	20.5	-1.0	80.4	100.0
Spain	26.9	11.4	61.7	100.0
US	-7.9	15.6	92.2	100.0
Average	18.9	9.9	71.1	100.0

Source: Author's calculations from OECD Financial Statistics.

Again, corporate saving is the primary source in these developed countries, with a participation of 71.1%. Given the difference in financial development between the two country groups, this figure, in spite of being lower than in Latin America, appears to be high. Ratifying the validity of the pecking order once more, debt financing (18.9%) exceeds the equity raised (9.9%). The dispersion across countries is greater than in Latin American countries, while changes over time in each country (not reported) repeat the volatile pattern encountered in Latin America.

Section 3: Corporate Saving and Macroeconomic Factors: An Econometric Exploration

While very few studies have analyzed total private savings in Latin America (see Edwards (1995, op.cit.) and Corbo and Schmidt-Hebbel (1991)), no one has investigated the role of corporate saving in the determination of the private saving and investment rate in the region as a whole. Most likely, the lack of information about this variable is to be blamed. To overcome this omission, an econometric exploration will be carried out in this section. The sample consists of 49 pooled cross-section, time-series observations (7 time-series observations for each of the seven countries) over the period 1990-1996. While aware of potential size and measurement problems, this is a first step to launch a deeper discussion on corporate saving.

We are especially interested in addressing two questions: i) Do capital-market imperfections matter for private saving?, and ii) Is there full offset between corporate and household saving?.

A major problem at this point is the joint endogeneity of most macroeconomic variables. In particular, the corporate and household components of saving are jointly determined, and the same may be expected regarding corporate saving and investment. To deal with this, two-stage least squares will be used to estimate the following equations:

$$cs_{i,t} = \lambda_0 + \lambda_1' x_{i,t}^{cs} + \eta_i + \varepsilon_{i,t} \qquad i = 1, ..., 7 \qquad t = 1, ..., 7$$
$$ps_{i,t} = \beta_0 + \beta_1 cs_{i,t} + \beta_2' x_{i,t}^{ps} + \eta_i + \mu_{i,t}$$
$$pi_{i,t} = \tau_0 + \tau_1 cs_{i,t} + \tau_2' x_{i,t}^{pi} + \eta_i + \upsilon_{i,t}$$

where *i* stands for each of the *7* countries, *t* represents each of the 7 time-series units. *cs*, *ps*, and *pi* stand for corporate saving, private saving, and private investment, respectively, while *x* in each particular equation represents a set of explanatory variables associated with the

corresponding dependent variable. q represents country characteristics assumed to be common to the three endogenous variables.

We postulate that x^{cs} includes the following variables: the maximum marginal tax rate on personal income (source: Edwards (op.cit.)), a very crude measure for the tax disadvantage of dividend payout; the current account balance as a share of GDP, which is expected to capture the substitutability between domestic and foreign saving; the volume of bank credit to the private sector as a share of GDP, thought of as another possible substitute of corporate saving; and the economy's rate of growth, as a proxy for profitability. The vector x^{ps} comprises a number of variables expected to explain household saving as a fraction of GDP. The current account balance captures a possible crowding-out of personal saving for foreign saving. The existence of borrowing constraints is also tested through the ratio credit to the private sector to GDP. The introduction of the corporate saving and the consolidated public balance, both as a share of GDP, serves to evaluate the extent to which households pierce the corporate veil and satisfy the Ricardian equivalence. The economy's growth rate is also included. In this short-run study, a positive sign would be suggesting that growth is perceived as temporary, and/or a precautionary motive exists (see Carroll and Weil (1993) for a study on long-run causality of growth on saving). Finally, the private investment rate is explained in terms of the investment opportunities, measured here by the rate of growth, and the availability of internal and external financing sources, namely, corporate saving, domestic credit, and foreign saving. In the latter case, positive signs on the financing sources would indicate that capital-market imperfections are relevant. Under these circumstances, the Modigliani-Miller (1958) proposition about capital structure irrelevance would not hold.[9] The remaining controlling variables in the three equations are the average inflation rate and the index of rule of law (source: World Bank growth database), intended to assess the role of the policy and institutional environment.

[9] In fact there are many different reasons for the Modigliani-Miller (1958) proposition not to hold, among them, tax considerations, financial distress, transaction costs, and informational frictions (see Harris and Raviv (1991), Copeland and Weston (1988), and Hubbard (op.cit.)).

Since some additional explanatory variables may also be suspected of being endogenous, they were instrumentalized as well. The real exchange rate, the log of the black market premium, and the lagged value of the current account were used as instruments for the current account balance. For the growth rate, the instruments were its own lagged value, the lagged private investment rate, and a dummy with value 1 for 1995 and 1996 and 0 otherwise, representing the external shock caused by the Mexican crisis of December 1994. For the ratio credit to the private sector to GDP, the stock market capitalization and its own lagged value were employed. The fiscal public balance was instrumentalized through its own lagged value. It was assumed that the index of rule of law, the marginal income tax rate, and the dummy variable are exogenous. The index of rule of law and the tax rate, as well as the inflation rate, are taken as cross-section characteristics, while the rest are time-series variables. Results are reported in the following table:

Table 18

Regression Results

Explanatory Variables	*Dependent Variables*		
	Corporate Saving Rate	Private Saving Rate	Private Investment Rate
Corporate Saving Rate (% of GDP)		0.606	0.762
		(5.301)	(5.312)
Current Account Balance (% of GDP)	-0.271	0.782	-0.009
	(-1.382)	(4.926)	(-0.050)
Credit to Private Sector (% of GDP)	-0.072	0.165	0.213
	(-1.187)	(3.441)	(4.437)
Public Sector Balance (% of GDP)		-0.627	
		(-3.677)	
Personal Income Tax Rate	0.197		
	(5.607)		
Growth Rate	-0.220	0.387	0.566
	(-1.431)	(3.443)	(4.075)
Index of Rule of Law	0.972	0.689	0.036
	(1.865)	(1.583)	(0.082)
Average Inflation Rate	0.000	0.000	0.001
	(-0.864)	(1.223)	(1.824)
F-Test (p-value)	8.21 (0.000)	27.26 (0.000)	26.12 (0.000)
Adjusted R-Squared	0.490	0.794	0.644
No. of Observations	42	42	42

*T-Statistics (based on White's variance estimators) in parenthesis at the bottom of estimated coefficients. Two-stage least squares were used in the estimation. Instruments are listed in the text.

As explained earlier, the estimation was carried out with two-stage least squares. However, ordinary least squares without instrumental variables yielded similar outcomes, providing an out-of-sample robustness check once the sample size went up from 42 to 49. In this case, the tests of Ramsey and Cook-Weisberg allowed to reject the hypotheses of correlation between the explanatory variables and of heteroskedasticity, respectively.[10] The estimators' variances were calculated using White's heteroskedastic-consistent procedure. Also important to note is that the estimated coefficients were reasonably robust to specification changes.

Given the limited sample size and potential measurement problems, any conclusion from the estimation should be cautious. However, the results are challenging and are called to pave the way for subsequent research in this area. The first observation is that the time variation of the corporate saving rate is poorly predicted by the present set of macroeconomic variables. In fact, the main predictor is the marginal personal income tax rate. Compensating for the global poorness of the estimation, this variable can be considered exogenous (at least, more exogenous than other variables), thus representing a valid instrument. It is noticeable that alternative sources of corporate funding do not seem to crowd out the generation of internal funds (corporate saving). In particular, the corporate saving rate rises simultaneously with the foreign saving rate, although the effect is not economically significant, and neither is it the depressing impact of the expansion in domestic credit. The rate of growth enters negatively but without attaining an acceptable significance level.

Although the coefficient are not significant and therefore they do not convey any reliable information, the results are interesting enough to be subject to some speculation. A plausible interpretation for these outcomes would be that, unlike domestic credit, foreign saving has not been channeled towards corporate investment but towards consumer credit. The negative

[10] The regressions were also run through a panel data technique using Generalized Least Squares with an unrestricted error covariance matrix. Once again, the estimation yielded results similar to those reported. Moreover, it led to discard any concern about serial autocorrelation within each cross-section unit.

(although statistically insignificant) sign on domestic credit and growth may indicate that an improvement in credit terms, linked to higher net worth and availability of funds, leads to some increased dividend payout. In view that the dividend payout has been extremely low in the past, cash distributions may have had a market valuation benefit that outweighed the costs of resorting to credit. [11] A priori, if profits increase with the rate of growth, and if internal funds are less expensive than alternative sources, it is to be expected for growth to have a positive effect on corporate saving. The negative sign would suggest that the reduction in the differential cost of external finance in good economic times (see Bernanke et al. (1996)) turned an increase in dividends more valuable than retention.

The second column in Table 18 displays the private saving rate estimation. In sharp contrast to corporate saving, a one percent of GDP increase in foreign saving (current account deficit) is associated with a fall of 0.78 percentage points reduction in private saving, while the same increase in domestic credit elevates the private saving rate by 0.17 percentage points. The first finding gives rise to the presumption that the crowding-out effect of foreign saving on private saving runs through the household component rather than the corporate one. Our hypothesis is that current account deficits relax households' liquidity constraints[12], although they do that not by promoting additional lending through financial intermediaries but mainly by increasing commercial consumer credit to finance the purchase of durables.

This line of reasoning also reconciles the simultaneous existence of liquidity constraints, reflected in several episodes of "consumption boom" in Latin American countries in the 1990s, and the positive impact of the volume of domestic credit on private saving. [13] The very expansion

[11] Rojas-Suarez and Weisbrod (1997) offer some indirect evidence by showing that retained earnings ratios for listed companies in Argentina, Chile, Colombia, and Mexico have lowered over the period 1990-1994 compared to the 80s, although remaining above 86%.

[12] This view implicitly assumes that the availability of foreign saving represents a shock to some extent exogenous to these countries. Calvo et al. (1996) support this position. Conversely, in a standard permanent income framework, the current account balance is an endogenous variable determined by consumption decisions (see Obstfeld and Rogoff (1996)).

[13] Financial intermediaries may refrain from intensively providing consumer credit to avoid excessive risk-taking arising from informational and contract enforcement features. Retail firms, attracted by the relatively inelastic demand for financing on the part of some consumers, may have taken over this activity. Partial evidence of this phenomenon is that the current account balance explains virtually nothing of the evolution

of the financial system is likely to reduce transaction and information costs of the intermediation process between savers and borrowers, making depositors less reluctant to give up control over their savings. In other words, a larger -and thus supposedly better- financial system turn saving a better substitute for consumption.[14] As massive withdrawals from the banking system encourage more withdrawals, confidence in the system creates a positive feedback. In this sense, it is suggestive that the value and significance of the coefficients on domestic credit and the index of rule of law get notoriously larger when the other variable is eliminated from the regression, ratifying that the institutional setup is relevant when it comes to saving decisions. Regarding public savings, the estimation corroborates that full Ricardian Equivalence fails on empirical grounds, the compensation coefficient being well below -1 (-0.63, and statistically significant at a 1% level). Growth has an important impact, which leads to believe that private agents visualized changes in GDP as temporary.

It is remarkable that some of the previous results on private savings are in accord to previous works on Latin American private savings. Corbo and Schmidt-Hebbel (1991), analyzing the period 1968-1988, find coefficients of public on private saving quantitatively similar to the one in this study. Edwards' (1995, op.cit.) research on private saving in Latin America in 1970-1992 finds a positive effect of growth and credit, a negative effect of foreign saving, and no significant effect of inflation.

A major novelty of the present work is the integration of corporate saving into the analysis. The estimated private saving equation reveals that households do not completely pierce the corporate veil. Indeed, household saving falls only by 0.39 percentage points of GDP before a one-percentage point increase in corporate saving. Economic policy implications of this partial offset are discussed along with the conclusions.

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of domestic credit in the sample, implying that capital inflows were not fully intermediated by the financial system.

[14] It is sensible to hypothesize some household heterogeneity, with high-income agents acting as net savers, and low-income agents suffering liquidity constraints and rationing in formal credit markets.

Finally, the last column in Table 18 shows that the private investment rate is not driven solely by profitability considerations, captured by the growth rate[15], but also by the availability of internal funds (corporate saving) and domestic credit. Estimated coefficients imply a one-to-one combined effect from financing to investment, with about three fourths of the effect explained by corporate saving. As claimed by different studies for developed countries, financing constraints are crucial to understand the dynamics of corporate investment (see Hubbard (1998) for a survey, and Kadapakkam et al. (1998)).[16]

[15] Other measures of profitability, like the GDP per capita and the growth rate to lagged investment ratio, yield the same result. The counterintuitive, positive sign on inflation can also be interpreted in this light. In a context of unemployment in most countries, nominal wages did not adjust at the same pace as inflation, which then boosted corporate profits. It is puzzling that, being a forward-looking activity, investment tends to respond to current growth even though savers seem to perceive it as temporary. Myopia and reliance on current information in a context of uncertainty may explain this behavior.

[16] A possible caveat to this interpretation is that corporate saving is tightly associated to profits, and so it may be just signaling investment opportunities as opposed to a financing constraint. However, the simple correlation between corporate saving and different measures of profitability (see the previous footnote) is negative, but not statistically significant, in all cases, offering support to the presence of actual financing constraints.

Conclusions

This study examined private saving behavior in Latin America during the 1990s, paying special attention to the measurement and analysis of corporate saving. The first part dealt with the theoretical and practical relevance of corporate saving, subsequently providing a measure of it for seven countries of the region. The central lesson is the duality consumers/savers-firms/borrowers is a unrealistic textbook representation. As should be clear from the earlier exposition, saving and investment activities are not independent of each other and both of them are predominantly accomplished by the same units: firms.

It was shown that corporate saving accounts for more than 67% of private saving in all countries, and that it represents 80% of total sources of corporate funds over the period 1990-1996. The high reliance on internal funds demonstrates that the financial vulnerability to negative shocks has not been magnified by the growing access to outside sources over the period.

Afterwards, a regression analysis was undertaken to look for the macroeconomic factors correlated with corporate saving. Although the sample size is not large and some measurement problems might exist, the results are challenging and worthy of further research and debate. The main findings were:

a) Household do not fully pierce the corporate veil. A one-percentage point of GDP increase in corporate saving elevates private saving by 0.61 percentage points, which is substantially higher than the nil effect expected under perfect trade-off. Capital-market imperfections and different propensities to consume out of dividends vis-a-vis capital gains explain this incomplete offset. This is a more than powerful argument against the lack of attention towards corporate saving in previous private saving studies, in both Latin America and other economies.

b) Foreign savings (current account deficits) crowd out household saving, but not corporate saving. The crowding-out coefficient is high (0.78), leading to believe that liquidity constraints are liberated as foreign savings becomes more available. Apparently, these funds

are not entirely intermediated by the financial system but instead channeled as commercial consumer credit. Corporate saving and investment are unresponsive to foreign savings, suggesting again that capital inflows may have financed consumer goods, especially durables.

c) The expansion of banking credit to the private sector is associated with an increase in household saving, without a significant effect on corporate saving. The first feature may be revealing that the growth of the financial system builds savers' confidence instead of promoting higher consumption, while the second phenomenon may be related to an increase in dividend payout, which had been very low in the 80s.

d) Full Ricardian Equivalence between public and private savings is rejected on empirical grounds. The compensation coefficient is -0.63 (the null hypothesis is -1).

e) The private investment rate is a function of not only profitability but also of the availability of internal funds (corporate saving) and, to a lesser extent, of domestic credit. In particular, a one-percentage point of GDP increase in these sources of funds generate an increase of 0.76 and 0.21 percentage points in the private investment rate, respectively. These estimates uncover the presence of financing constraints.

From an economic policy standpoint, the study raises several interesting points regarding savings promotion. It must be kept in mind that welfare considerations are being left out, though. In the first place, the estimation highlights the risks surrounding tax-based stimuli to saving. In particular, fiscal incentives to household saving at the expense of a higher burden on corporations appear to be questionable in that they may end up reducing total private savings and investment. Assuming a lump-sum tax and a balanced fiscal budget, this is equivalent to a (compulsory) dividend. Total private savings is expected to fall because of the less-than-perfect offset between corporate and household saving, whereas private investment is expected to fall as a result of binding financing constraints.

As far as saving and investment are concerned, a broader access to foreign saving tends to discourage private saving without promoting more investment. A priori, this is an argument

favorable to proposals of capital controls. However, the debate involves other issues, such as the long-run growth and welfare effects of trade and financial openness in terms of consumption smoothing, productive efficiency and investment dynamics, as well as the link between capital flows and macroeconomic stability. Conversely, the development of the domestic financial system tends to favor aggregate private saving, rejecting the notion that financial reforms may be detrimental to saving decisions.

Appendix on Methodological Assumptions

In this Appendix, the assumptions and the possible associated biases brought on by the estimation of gross corporate saving are made explicit. All figures refer to nonfinancial firms, and are expressed in nominal U.S. dollars; where necessary, the conversion of national currency amounts was made at the annual average official exchange rate.

International debt issues include any form of foreign bank loans and bonds, and include, unlike equity and domestic debt, only net flows. Equity issues, containing domestic and international offerings, are presented on a gross basis, given the lack of information on repurchases. Similarly, domestic debt issues do not net out debt repayments. The only exception is Mexico, for which it was possible to obtain net financing flows. As long as the data are expressed in gross terms, the access to external sources of funds is overestimated and corporate saving is underestimated.

Domestic bank loans were estimated from total deposits in the financial system. Domestic credit to the private sector is not an adequate measure not only because it includes credit to households, but also because it may imply some double-counting. Due to the fact that debt and equity issues by the private sector are not broken down according to the financial or non-financial category of the firms, we were forced to assume that all the foreign and domestic debt raised by financial intermediaries is channeled to non-financial companies. As a result, only the loans funded with deposits must be added to obtain an estimation of bank loans.

Following the previous assumption, deposits of both businesses and households must finance loans to the government and public enterprises, credit to households, reserves, and other investments. An obstacle here is that there is scarce information about the businesses and households classification of deposits and loans. Some fragmentary data are provided by Rojas-Suarez and Weisbrod (1997), who indicate that in recent years corporate deposits represented 37.1% of total in Chile, 50.3% in Mexico, and 45.1% in Peru. Additionally, a Survey of Financial Systems in Latin America elaborated by the Interamerican Development Bank in 1997

shows that, as of September 1995, consumer credit and mortgages represent 22% of total credit in Brazil, 21% in Chile, 44% in Colombia, and 11% in Mexico. Investments other than loans constitute 28% of total deposits for all the countries except Peru. Based on these few point observations, we took a crude estimate for all countries and years that 40% of total deposits is directed towards non-financial firms as net bank credit.

As explained earlier, the total change in assets comprises the change in gross fixed investment, inventory, and cash and equivalents. Trade credit cancels out in the aggregate, provided commercial ties with foreign firms are nil. Gross private investment is taken from national accounts, subtracting public investment from total investment. Investment by public enterprises and newly privatized firms is generally part of private investment. Lack of information impedes to substract household investment. The change in inventory is also drawn from national accounts, and attributed entirely to the private sector. The variation in cash and equivalent working capital items is taken as equal to the deposits of the corporate sector in the financial system, and therefore cancels out after the adjustment made on total deposits.

Since the available data comprises both private and public enterprises, as well as newly privatized companies, equity issues related to the privatization process should be treated as a mere substitution in the shareholding structure, by which shares by the government are repurchased and its participation is taken over by private investors. In this sense, these issues suffer from the same bias as other regular issues, in that they contribute to corporate saving underestimation. Regional aggregate information elaborated by IDB (1997) indicates that about 50% of total equity issues in 1990-1995 may be attributed to privatizations (see footnote 3). Lack of information at country level renders troublesome to make the necessary adjustment. Nevertheless, the global bias is likely to be unimportant, considering that privatization-related equity issues account for just 1.7% of total sources of funds over the period 1990-1995.

Finally, the private saving rate is calculated as a residual from the identity indicating that the difference between saving and investment, for both the private and public sector, equals the

current account balance. The measurement problems of saving and investment data from using national accounts information are explained in detail by Schmidt-Hebbel and Serven (1997).

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