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Saving in Southeast Asia and Latin America Compared: Searching for Policy Lessons[1]

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Abstract

This paper examines empirical determinants of private saving for a sample of economies in Southeast Asia and Latin America over the period 1975–95. It uses panel estimations to establish relationships between private saving rates and a range of policy and nonpolicy variables. The findings show that fiscal policy, particularly social security arrangements, influence private saving; also macroeconomic stability and financial deepening appear to have been important in accounting for differences in saving behavior between the two regions.

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SUMMARY

This paper analyses empirical determinants of private saving for a sample of Southeast Asian and Latin American economies over the period 1975–95. Saving rates in Southeast Asia have been on an upward trend over the period, while in Latin America the trend has been downward. Understanding the driving forces behind the widely differing saving behavior may help shed light on the different growth performance between these two regions.

The paper distinguishes between policy factors affecting saving such as fiscal policy, social security arrangements, macroeconomic stability, and financial market development, and nonpolicy factors, which include growth, demographics, and external factors. Panel regressions are used to establish empirical relationships between these factors and the rate of private saving. The estimations were conducted for the two regions separately as well as for a combined sample.

The findings suggest that a wide range of factors have an impact on private saving. Government saving crowds out private saving only partially; social security expenditures are associated with lower private saving, and the fully funded pension schemes (which exist in some of the countries in the sample) generally have a positive effect on private saving. However, where restrictions on withdrawals from these funds were eased, the effect on saving was found to be smaller or ambiguous. Macroeconomic stability—proxied by variation in the inflation rate—and financial deepening—proxied by *M*2/GDP—are both found to have a positive effect on saving and are important in explaining differences in saving behavior between the two regions. Although economic growth was not found to be significant, increases in per capita income have a positive impact on saving.

I. Introduction

Southeast Asia's high saving rates have received much attention from researchers and policymakers alike, not least because they have been associated with great economic success. From 1975 to 1995, the rate of private saving rose continuously, from 15 percent to 25 percent of GDP, and the region's real per capita GDP increased by almost 200 percent. This association has given rise to the question of whether there is a causal link between high saving and high growth and rapid development. Such a link seems to be confirmed by the experiences in other developing regions: in Latin America, saving rates have stayed broadly constant since 1970 and real per capita GDP has increased by only 35 percent; in sub-Saharan Africa, saving rates were actually lower in 1995 than they were in 1970, as was real per capita GDP. Thus, understanding the driving forces behind Southeast Asia's high saving might help improve our understanding of the comparative growth performance across the two regions.

Within Southeast Asia itself, however, saving is still an issue. High current account deficits in Malaysia, Thailand, and, to a lesser degree, Indonesia, have pointed out that domestic savings are not yet high enough to cover domestic investment needs and that the current account correction could come about through, among other means, increasing domestic saving further.[2] The importance of domestic saving gives rise to the question of which policy instruments have been crucial in fostering saving in the past and which could be used in the future.

Many studies have been done of Southeast Asia's saving rates, and many conclusions have been drawn, including the following: saving has not preceded growth, but has actually followed it; saving has risen because of demographic factors that reduced dependency ratios; saving has risen because the financial sector has developed rapidly; saving has been high because of macroeconomic stability; and private saving has been high because of prudent government policies and low government transfers, implying the need for higher private saving to protect individuals against unexpected income loss or to provide funds for retirement.

This paper studies the trends in private saving in Southeast Asia and Latin America from 1975 to 1995. It uses pooled time-series and cross-country regressions to establish empirical relationships between private saving and a broad range of variables. The different experiences of the two regions introduce a larger variation in the data than would be obtained from examining only one region and should therefore make the estimates more robust and allow for clearer policy conclusions.

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[2]Ostry (1997) shows that the current account deficits in Indonesia, Malaysia, and Thailand are sustainable, but could pose risks.

II. Empirical Background and Results From the Literature

A. Saving Trends in Southeast Asia and Latin America

Private saving rates in Southeast Asia have trended upward consistently since the mid-1970s, from about 15 percent of GDP to about 25 percent in 1995, surpassing private saving rates in Latin America in the late 1970s. Since the latter have been trending slightly downward since then, to reach only 14 percent by 1994, there exists at present a gap in private saving rates of roughly 10 percent of GDP between the two regions (Figure 1).

This contrast becomes even sharper when government saving is included. In the Latin American countries considered here (Table 1), governments have contributed little to national saving. By contrast, government saving in the Southeast Asian countries in the sample had reached roughly 10 percent of GDP by 1995, so that the gap between national saving rates in the two regions amounted to about 20 percent of GDP (Figure 2).

Table 1. Private Saving Rates

(Period averages in percent of GDP)

Southeast Asia	1970–75	1990–95	Latin America	1970–75	1990–95
Indonesia	9.8	23.9	Argentina	19.1	15.4
Malaysia	11.5	19.0	Brazil	19.5	16.6
Philippines	19.9	16.8	Chile	9.0	18.2
Singapore	12.6	32.8	Colombia	7.8	9.1
Thailand	18.9	23.2	Mexico	20.3	12.3
			Paraguay	20.1	14.2
			Peru	22.4	12.4
			Uruguay	14.4	9.5
			Venezuela	14.9	12.9

Source: IMF, WEO database.

There is relatively little variation in private saving trends within the Asian sample. For all countries except the Philippines, saving has increased significantly over the sample period; it has more than doubled in Indonesia and Singapore, increased by more than half in Malaysia, and by almost a third in Thailand (Table 1). The variation across the Latin American economies is much larger. Saving fell markedly in the major economies—Argentina, Brazil, and Mexico—while the experience in the smaller economies has been mixed, with upward trends in Chile and Colombia and declines in Paraguay, Peru, Uruguay, and Venezuela.

Figure 1: Trends in Private Saving Rates

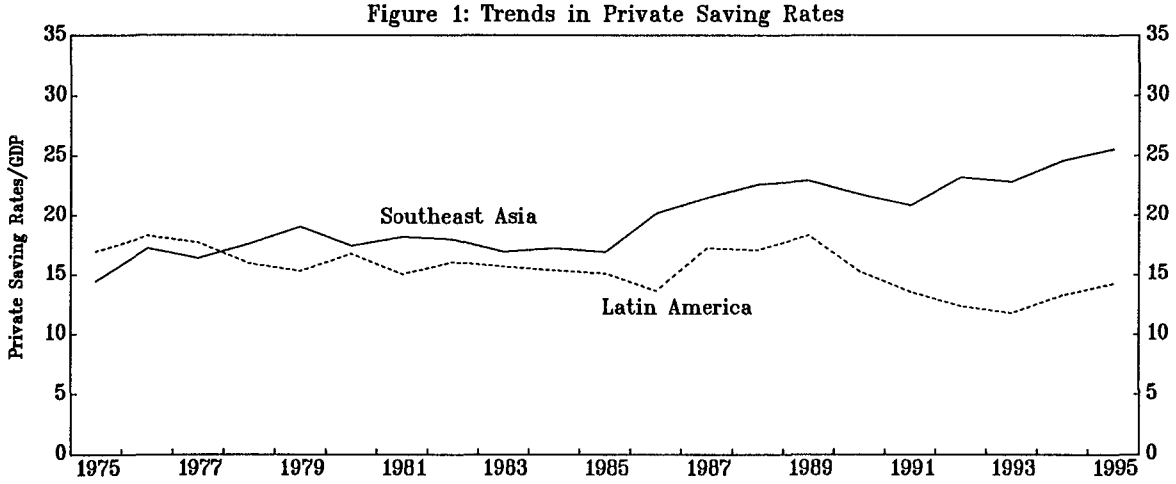


Figure 2: Trends in National Saving Rates

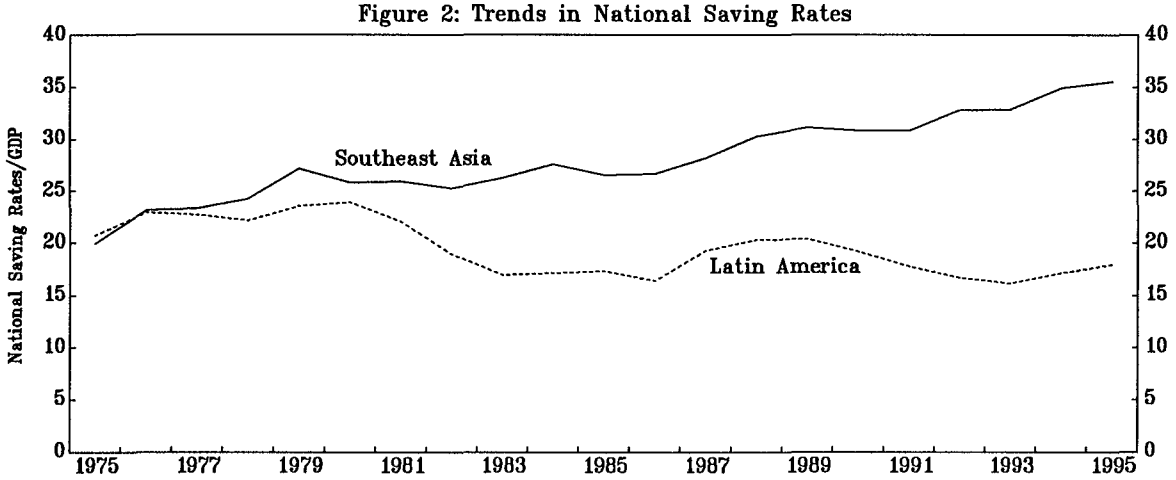
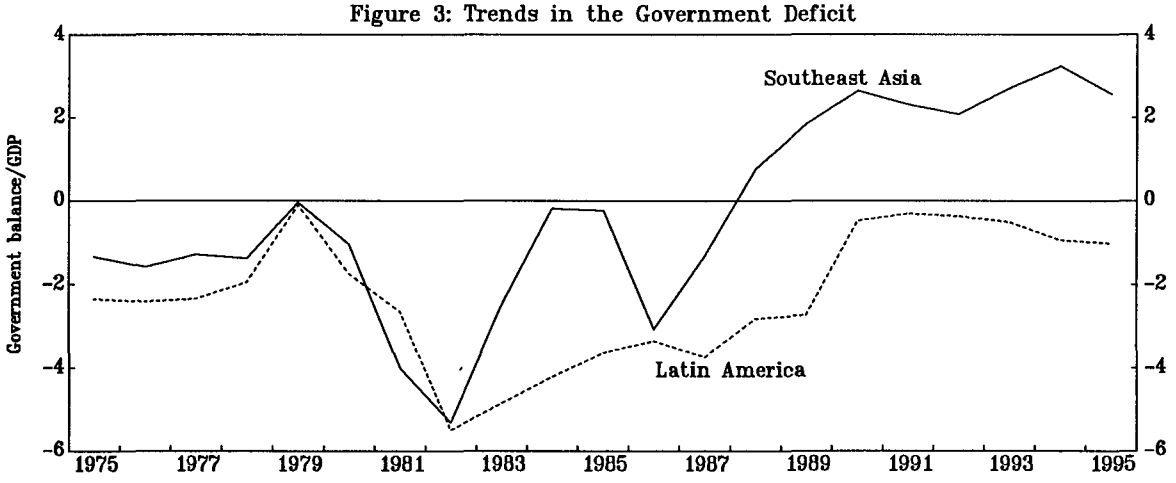


Figure 3: Trends in the Government Deficit



Source: IMF, WEO database.

B. Factors That Affect Saving

The main policy variables that have been thought to influence saving behavior are fiscal policy and government saving, social security arrangements, financial market development, and macroeconomic stability. The nonpolicy factors most likely to affect saving are growth, demographics, and external factors.[3] While the separation between policy and nonpolicy factors is open to debate, its purpose is to convey the idea that policymakers have a direct influence on only some of the variables that affect saving. Other factors, such as growth, demographics, and external factors, including the terms of trade, may be influenced by economic policy but are not themselves policy variables.

C. Policy Factors

Fiscal policy and government saving. Fiscal policy can potentially affect saving through revenue policy (tax structure, tax incentives), expenditure policy (transfers, income redistribution), and the degree of government saving. The main robust finding relates to the last mentioned, which has been found to crowd out private saving only partially. This means that raising government saving helps raise national saving.

Social security systems. Social security systems are thought to have a significant impact on private saving because they replace an important saving motive: provision for retirement. Cross-country data, however, reveal little correlation between the private saving rate and the size of the pension system (International Monetary Fund, 1995b). Feldstein (1980, 1995) found a significant negative impact of pay-as-you-go pension systems on private saving, but his findings have been criticized on empirical and theoretical grounds (Busch and Wueger, 1981; and Koskela and Viren, 1983). Some economists have argued that public pension schemes can even encourage saving because they create awareness of the need to provide for retirement. In studies on developing countries, social security schemes were found in some cases to have a significant impact on private saving (Shome and Saito, 1980; and Edwards, 1995).

Financial market development. The development of financial markets has been shown to be a double-edged sword with regard to saving. Naturally, the development of such markets increases the availability of saving instruments and most likely also the return on saving, but it also makes it easier for individuals to borrow and can thus result in lower saving (see, for example, Bayoumi, 1993, and Ostry and Levy, 1995). Financial market development is difficult to quantify. The volume of total assets (or employees) of financial institutions, the geographical density of banking outlays, or the share of value added of this sector in the

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[3]See Bank of Thailand (1996) for a recent discussion of these issues and their relevance for Thailand.

economy could be useful indicators, but on most of them no data are available.[4] Thus, virtually all studies have used the degree of monetization of the economy—generally measured as the ratio of broad money (*M*2) to GDP—to capture the degree of financial development. The coefficient has been found to be significant and positive throughout (Edwards, 1995; Johansson, 1996; and Harrigan, 1995), leading to the conclusion that financial market development has a positive net effect on saving.

Macroeconomic stability. Macroeconomic stability is typically thought to have been important in accounting for Southeast Asia's high levels of saving (World Bank, 1993). Low volatility in fiscal outcomes, inflation, interest rates, or exchange rates has been regarded as important for growth, development, and saving (Gavin and others, 1996). This paper uses the deviation of inflation from an underlying moving average to capture volatility and examine its possible effect on saving in Asia and Latin America.

D. Nonpolicy Factors

Growth. The rate of growth is an obvious candidate for explaining the rate of saving for two reasons. First, saving and growth have been highly correlated over long time horizons as well as for many regions and stages of development (see Schmidt-Hebbel, Serven, and Solimano, 1996; and Bosworth, 1993). Second, saving is directly associated with output through investment, so that, to the extent that it increases domestic investment, higher domestic saving will generally result in higher growth if the economy is below its steady state.

The main theoretical foundation for the link between growth and saving comes from Modigliani's life-cycle hypothesis, according to which growth increases saving because it increases the income of the young relative to that of the elderly (Modigliani, 1970).[5] There are additional channels through which growth can positively affect saving, particularly in developing countries. Growth and higher incomes raise more households above the subsistence level, below which they cannot save, and make households more responsive to changes in the interest rate (Ogaki, Ostry, and Reinhart, 1996). The permanent-income hypothesis, however, would suggest a negative link between growth and saving because

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[4]There are a number of studies on financial sector development (e.g., Fry, 1995 provides an overview), but the data used in these studies are relatively scant and tend not to be internationally comparable.

[5]Causality tests by Carroll and Weil (1993) found growth to "Granger-cause" saving and not vice versa.

forward-looking consumers who expect their (permanent) incomes to rise will dissave against future income.[6]

Demographics. The effect of demographic changes on saving can also be derived from the life-cycle model. When the share of the working population relative to that of retired persons increases, saving is likely to increase (see Lahiri, 1989; Bosworth, 1993; and Higgins and Williamson, 1996). Demographics, however, are likely to help explain only the long-term trends in saving and not short-term fluctuations.

External factors. For open economies, it is natural to investigate whether external factors influence saving. The current account balance has often been tested in this context and has consistently been found to affect the level of private domestic saving positively—with a coefficient of less than unity (Edwards, 1995; and Masson, Bayoumi, and Samiei, 1995). These findings suggest that foreign saving is a substitute, albeit a less than perfect one, for domestic saving. However, given that private saving is calculated as domestic investment plus the current account surplus minus public saving, the addition of the current account balance to public saving as an explanatory variable brings the regression equation close to being over identified: the high significance levels on the current account balance could therefore be merely a statistical artefact. A second potential external factor influencing saving is terms-of-trade shocks (Ostry and Reinhart, 1992). The results have generally supported the Harberger-Laursen-Metzler effect that positive terms-of-trade shocks increase saving through the positive effect on wealth and income (Fry, 1986; and Masson, Bayoumi, and Samiei, 1995).[7]

III. An Empirical Comparison of Saving in Southeast Asia and Latin America

To examine the determinants of saving behavior in the sample of Southeast Asian and Latin American countries, a panel data set was constructed comprising the five major economies of the Association of South East Asian Nations (ASEAN)—Indonesia, Malaysia, Philippines, Singapore, and Thailand—as well as nine Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru, Uruguay, and Venezuela. Data on national and private saving and a number of explanatory variables were collected for the period 1975 to 1995. Unless mentioned otherwise, the economic data were taken from the IMF's WEO database, and the data on demographics were taken from United Nations (1994). The mean

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[6]The permanent-income hypothesis also brings up possible estimation problems when growth is used to explain saving because, if unexpected income growth is saved, a short-term correlation between current income and saving results (Faruqee and Husain, 1995).

[7]Some theoretical considerations about the ambiguity of the Harberger-Laursen-Metzler effect, however, remain. They relate in particular to whether the terms-of-trade shocks are anticipated or not and to whether they are temporary or permanent (Svensson and Razin, 1983).

Table 2. Descriptive Statistics for East Asia and Latin America, 1975–95

(Mean in percent followed by standard deviation in parentheses)

	ASEAN	Latin America
Private saving/GDP	19.78 (5.54)	15.47 (6.51)
National saving/GDP	28.07 (8.97)	19.49 (6.94)
Central government balance/GDP	-0.25 (4.77)	–2.40 (3.33)
Social security expenditure/GDP	0.70 (0.33)	1.36 (0.78)
Pension fund saving/GDP	2.68 (3.73)	0.44 (2.20)
M2/GDP	53.78 (28.65)	32.02 (17.66)
Inflation	7.15 (6.69)	208.10 (722.50)
Growth	6.47 (3.47)	3.12 (4.94)
Per capita income relative to the United States	26.23 (18.74)	28.35 (8.85)
Dependency ratio	104.70 (22.41)	108.55 (19.16)
Terms of trade (percent change)	0.09 (8.92)	-0.19 (13.32)

Sources: IMF, WEO database; and United Nations (1994).

Table 3. Analysis of Variation for ASEAN and Latin American Countries

(Percent of total variation for each sample)

	ASEAN		Latin America	
	Cross-Sectional	Time-Series	Cross-Sectional	Time-Series
Central government balance/GDP	39.8	60.2	45.7	54.3
Social security expenditure/GDP	42.3	57.8	60.6	39.4
Growth	22.3	77.7	5.7	94.3
Per capita income relative to the United States	80.5	19.5	78.1	21.9
Pension fund saving/GDP	79.1	20.9	25.9	74.2
Dependency ratio	51.5	48.5	64.1	35.9
Inflation	25.6	74.4	54.0	46.0
M2/GDP	66.1	33.9	9.1	90.9
Terms of trade (percent change)	8.3	91.7	3.9	96.2

Source: Authors' calculations.

and standard deviation for these variables are given in Table 2. Table 3 presents the cross-sectional and time-series decompositions of the variance of these variables.

Estimates of gross national and private saving used in the paper are based on national accounts data. National saving was calculated as domestic investment plus the current account surplus. Private saving was then calculated as national saving less the central government fiscal surplus and public fixed-capital formation.[8] Thus, in the definition of the paper, private saving includes personal and corporate saving.

A. Policy Factors

Fiscal policy and social security arrangements

Differences in the macroeconomic environment across regions are particularly marked with regard to fiscal policies. The ASEAN countries have had much lower fiscal deficits, which have been declining over time (Figure 3).[9] This is reflected in the higher variation across time of the overall government balance for these countries. Although the average fiscal position within Latin America has improved since the early 1980s, it is much smaller than that in the ASEAN countries.

Apart from the effects of fiscal deficits, government policies can affect private saving through social security arrangements. In the ASEAN countries, the share of social security expenditure in GDP is much lower than in Latin America. Furthermore, these expenditures relative to GDP have remained roughly unchanged in Southeast Asia (Figure 4).

A large component of social security expenditures is pension payments. Within Southeast Asia, Malaysia and Singapore have had compulsory saving schemes,[10] while in Latin America, Chile instituted a fully funded saving scheme in 1981.[11] The estimates of the share of compulsory saving contributions in private disposable income used in the analysis are adjusted for withdrawals in Southeast Asia. Reflecting these withdrawals, net saving (gross saving net of withdrawals) in these funds has actually declined as a share of GDP over a number of years. This is especially true in Singapore, where withdrawal restrictions have been eased significantly since the mid-1980s, but it is also true in Malaysia for some years. For Chile, the

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[8]Ideally, private saving would have been estimated using the consolidated general government surplus, but these data are not available for all countries.

[9]While it would be useful to examine the effects on private saving of the composition of government spending, that is, consumption and investment expenditure, the data are not available on a comparable basis for the entire sample period.

[10]For a description of the institutional setup and financing of Singapore's Central Provident Fund, see Carling and Oestreicher (1995).

[11]Although introduced in 1981, the scheme effectively went into operation in the mid-1980s.

Figure 4: Trends in Social Security Expenditures

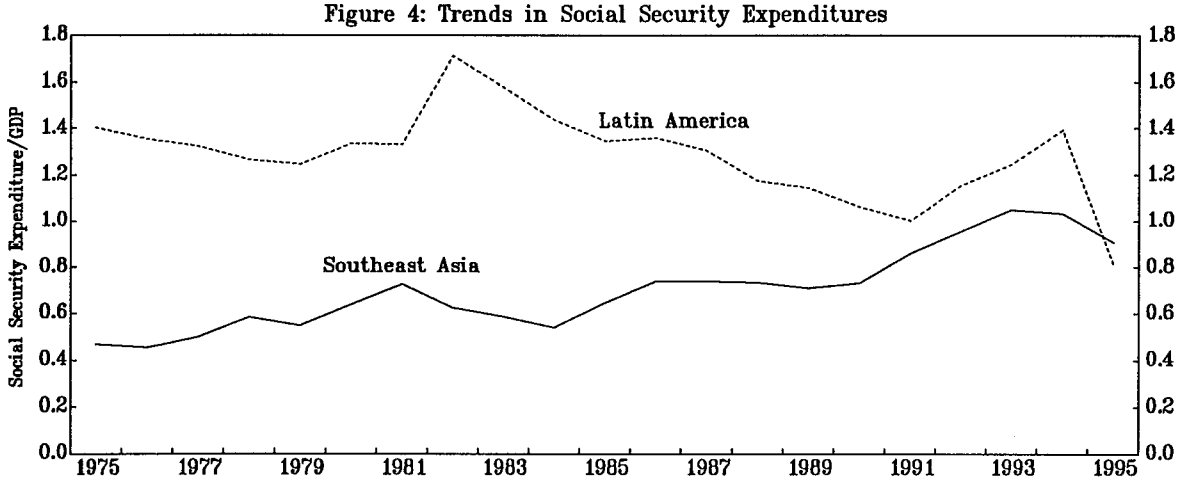


Figure 5: Developments in M2/GDP

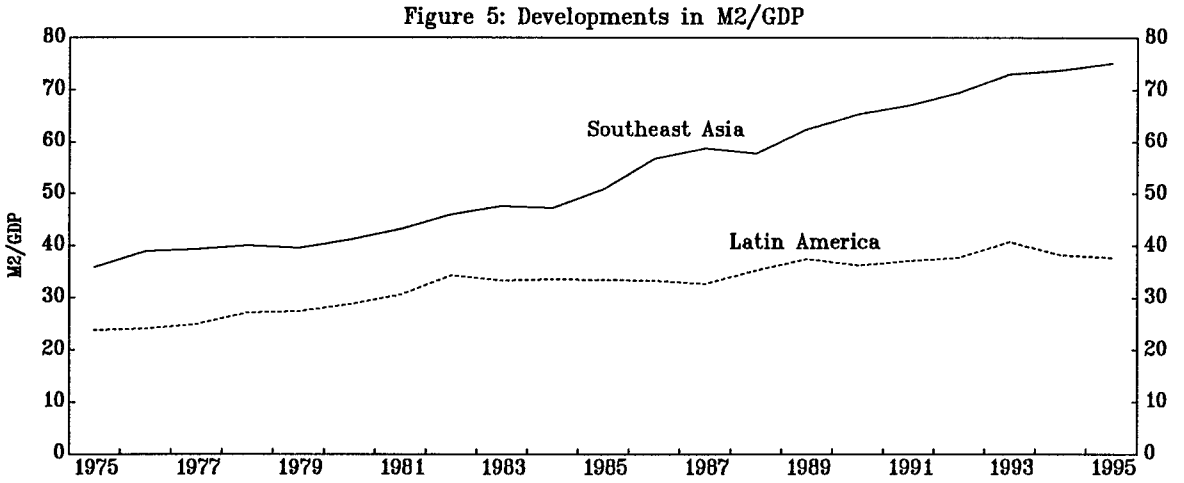
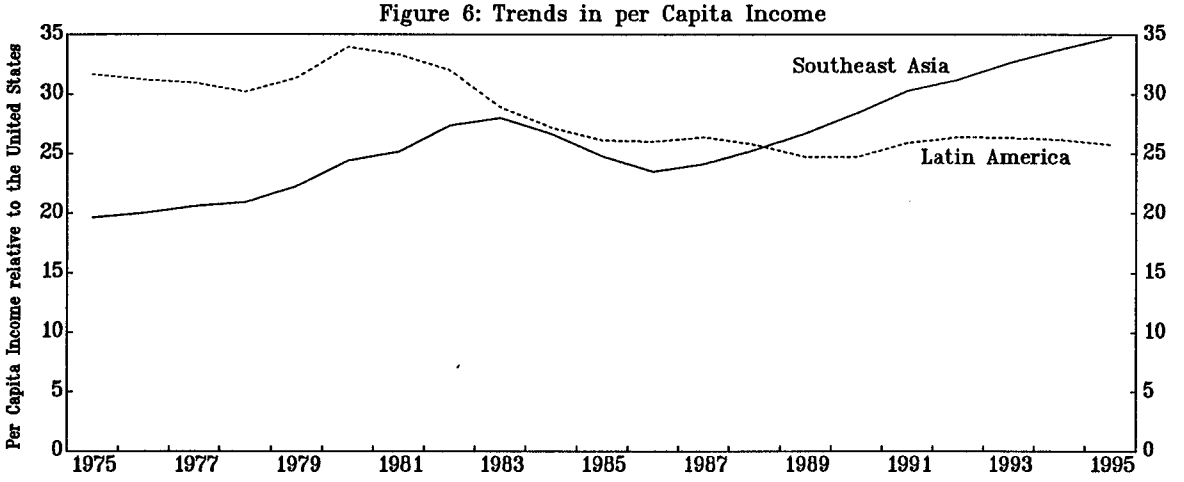


Figure 6: Trends in per Capita Income



Source: IMF, WEO database.

data are unadjusted because withdrawals are not allowed before retirement.[12] Even after taking into account the effect of withdrawals, however, the net saving in the fully funded pension schemes as a share of income is higher in Southeast Asia than in Latin America.

Financial market developments

As mentioned above, financial market developments are difficult to quantify in a way that is comparable across countries. This study uses the ratio of *M*2 to GDP to proxy financial deepening. This ratio has been much higher in the ASEAN countries than in the Latin American countries throughout the sample period. It has also increased much more markedly in Southeast Asia than in Latin America (Figure 5). In 1995, financial deepening, as measured by the ratio of *M*2 to GDP, was almost 80 percent, compared with only 40 percent in Latin America.

Macroeconomic stability

This paper uses the volatility of the inflation rate to proxy macroeconomic stability. The rate of inflation is much lower and less volatile in the ASEAN countries than in Latin America (Table 2). Inflation levels and volatility have also been declining over time in the ASEAN countries. The average inflation rate fell from 11 percent during the 1970s to about 6 percent since 1980; volatility fell by a little less than a third over the same period. In contrast, in Latin America, the average inflation rate rose from about 50 percent to over 250 percent over the same period and volatility increased sharply. In addition, for the Latin American countries, there is considerable variation both across countries and over time, whereas for the ASEAN countries most of the variation is across time (Table 3).

B. Nonpolicy Factors

Growth and demographics

The ASEAN region has been characterized by relatively high rates of real GDP growth. Furthermore, changes over time dominate cross-sectional differences for both groups of countries. Despite higher growth rates in Southeast Asia, average per capita income levels relative to the United States (measured using purchasing power parity exchange rates) are similar in both regions for the period as a whole. But, a closer look at the data shows that the difference in per capita income between the two regions has been widening since the late 1980s (Figure 6). Demographic trends are measured using the dependency ratio, which is defined as the sum of the population under 19 years and over 65 years as a percentage of the working-age population.

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[12]In Malaysia and Singapore, contributors to the pension funds may withdraw a fraction of their savings for housing and medical expenses. In some cases, it is also possible to withdraw savings a few years before retirement.

External factors

The terms of trade have on average changed only marginally in both groups of countries. However, while they have improved somewhat in the ASEAN sample over time, they have actually worsened, albeit slightly, in Latin America (Table 2). For both regions, there were large fluctuations in the terms of trade over the sample period. However, these fluctuations affected the countries within each region in a similar fashion, as shown by the low cross-sectional variation (Table 3).[13]

IV. Estimation Results

To examine the role of these different factors in influencing saving, the private saving rates for Southeast Asia and Latin America were regressed on a number of explanatory variables. These included the fiscal variables discussed above as well as inflation, demographics, GDP per capita, income growth, and external variables, such as the terms of trade. The main results are given by the full sample regression, which comprises both regions (Table 4). Separate regressions were then estimated for each region to examine possible regional differences in saving behavior.

In the panel estimations, the constant terms were allowed to vary across countries in order to capture underlying country-specific factors. Table 4 reports the main results for the entire sample. The separate panel regression results (reported in Tables 5 and 6) largely confirmed the results of the full sample. All regressions were done in a general specification using the full set of variables mentioned above, and a more parsimonious specification that excluded insignificant variables and used instrumental variables to take into account problems of simultaneity.[14] The covariance matrix was adjusted to allow for heteroskedasticity within the samples using the White adjustment procedure. These results are reported in Tables 4–6.[15] All of the estimated equations explain roughly 60 percent of the variance in saving.

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[13]To capture the effect of foreign saving on private saving, a number of variables that could proxy for external resource constraints—such as the current account, the ratio of exports to GDP, and the debt-service ratio—were tested as regressors, but were excluded from the final results because of problems of endogeneity or because they were insignificant.

[14]The instrumental variables used were, for the government balance, lags of the government balance, inflation, and terms-of-trade changes; for growth, its moving average; for broad money over GDP, its lagged value.

[15]The inclusion of time dummies did not significantly influence the estimated coefficients and these are excluded in the results reported below. The Prais-Winsten algorithm was applied to estimate a first-order autocorrelation model, but the results remained robust.

Table 4. Southeast Asian and Latin American Countries Combined: Estimation Results

(Dependent variable—private saving as a share of GDP)

	Fixed Effects	
	Unrestricted	Instrumental Variables 1/
Central government balance/GDP	-0.42	-0.23
	(-4.29)	(-1.35)
Social security expenditure/GDP	-2.29	-1.96
	(-4.20)	(-3.50)
Pension fund saving/GDP	0.24	0.36
	(1.81)	(2.84)
*M*2/GDP	0.10	0.09
	(4.67)	(3.85)
Inflation volatility	-0.001	-0.002
	(-2.26)	(-2.21)
Per capita income	0.35	0.32
	(4.75)	(4.97)
Growth	0.03	-0.10
	(0.66)	(-1.13)
Dependency ratio	-0.06	-0.04
	(-2.44)	(-1.80)
Terms of trade (percent change)	0.06	0.05
	(2.68)	(2.20)
R^2	0.68	0.67
R^2 adjusted	0.66	0.65

Note: *t*-ratios are in parentheses.

1/ The restricted regression uses instruments for central government balance and growth to correct for possible endogeneity in these variables.

Table 5. ASEAN Countries: Estimation Results

(Dependent variable—private saving as a share of GDP)

	Fixed Effects	
	Unrestricted	Instrumental Variables 1/
Central government balance/GDP	-0.15 (-1.13)	0.18 (0.88)
Social security expenditure/GDP	-3.71 (-3.00)	-4.56 (-3.34)
Pension fund saving/GDP	-0.23 (-0.48)	-0.18 (-0.60)
M2/GDP	0.13 (2.97)	0.15 (4.44)
Inflation volatility	0.07 (0.95)	... ...
Growth	0.32 (3.41)	0.02 (0.02)
Per capita income	0.30 (3.38)	0.22 (2.78)
Dependency ratio	-0.05 (-1.21)	... ...
Terms of trade (percent change)	0.02 (0.79)	... ...
R^2	0.64	0.59
R^2 adjusted	0.59	0.55

Note: *t*-ratios are parentheses.

1/ The instrumental variables regression uses instruments for central government balance, *M2*/GDP ratio, and growth to correct for possible endogeneity in these variables.

Table 6. Latin America: Estimation Results

(Dependent variable—private saving as a share of GDP)

	Fixed Effects	
	Unrestricted	Instrumental Variables 1/
Central government balance/GDP	-0.70	-0.68
	(-6.92)	(-2.97)
Social security expenditure/GDP	-1.71	-1.31
	(-3.29)	(-2.49)
Pension fund saving/GDP	0.20	0.70
	(4.61)	(4.84)
M2/GDP	0.06	0.05
	(3.18)	(2.01)
Inflation volatility	-0.001	-0.002
	(-2.87)	(-2.31)
Per capita income	0.20	0.25
	(1.79)	(2.50)
Growth	-0.05	-0.14
	(-0.09)	(-1.45)
Dependency ratio	-0.003	...
	(-0.08)	...
Terms of trade (percent change)	0.07	0.07
	(2.99)	(2.41)
R^2	0.71	0.65
R^2 adjusted	0.68	0.62

Note: *t*-ratios are in parentheses.

1/ The instrumental variables regression uses instruments for central government balance and growth to correct for possible endogeneity in these variables.

A. Fiscal Policy and Social Security Arrangements

In keeping with recent empirical evidence, the estimation results reject the Ricardian equivalence hypothesis for all countries: changes in public saving are not fully offset by changes in private saving. The estimated coefficient of the unrestricted regression suggests that an increase in the budget surplus of 1 percent lowers private saving by approximately ½ of 1 percent (Table 4). The disaggregated results (Tables 5 and 6) show that the offset coefficient is lower for the ASEAN countries and higher for Latin America. Therefore, an increase in public saving has a stronger positive effect on national saving in the ASEAN countries than it has in the Latin American countries. The difference in coefficients could be due to the fact that the Latin American countries in general have higher debt ratios and are thus closer to Ricardian equivalence because the probability of fiscal adjustment is greater (Debelle and Faruqee, 1996).[16] In the instrumental variable regressions for the full sample, the offset coefficient is lower and becomes less significant. For Latin America, the estimated coefficient using instrumental variables remains highly significant, but the coefficient is no longer significant for the ASEAN countries. On the whole, these results suggest that an increase in the public sector surplus would not be fully offset by lower private saving in both Southeast Asia and Latin America, so that national saving would increase. For the same reason, the sharp increase in national saving rates in Southeast Asia can be attributed to higher public saving rates over the period of the study.

As to the effect of social security expenditures, the results show that a reduction in such expenditures tends to increase private saving. The disaggregated results show that the impact of government social security expenditures on private saving is higher in the ASEAN region than in Latin America, but in both regions a reduction in social security expenditures would tend to increase private saving.

With regard to the effect of fully funded pension schemes, the results suggest that contributions to such schemes have a positive and significant effect on private saving over the full sample (instrumental variable regression). Turning to the disaggregated results, the coefficient in the Latin American panel is positive and highly significant, but it is not significant in the ASEAN sample (Table 5). This may reflect the fact that in Chile withdrawals are not allowed before retirement, whereas withdrawals are allowed in Malaysia and Singapore. The findings on Latin America seem to underscore previous findings of positive effects on saving from the transition to a fully funded pension scheme, which Chile made in

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[16]The results on the coefficient of the government balance in the case of Latin America could also be affected by the high levels of inflation in the region. In a regime of high inflation or hyperinflation, nominal interest payments on government debt are likely to increase, causing the fiscal deficit to rise. These payments are, however, mostly payments to the private sector where they would be reflected in higher savings. Hence, the estimates of the offset coefficient in Latin America may be affected by an inflationary bias in the national accounts data.

the mid-1980s (Holzmann, 1996).[17] Thus, the results here suggest that compulsory saving increases the saving rate, but that the effects are likely to be mitigated over time as withdrawal restrictions are eased.

B. Financial Market Development

The ratio of *M*2 to GDP is used as a proxy for the depth of financial development. Its coefficient is positive and highly significant, as expected. This indicates that financial deepening—which has taken place in Southeast Asia to a greater extent than in Latin America over the past decade—contributes positively to private saving. The positive coefficient is robust across samples and estimation techniques.

C. Macroeconomic Stability

To examine whether macroeconomic stability has been a significant determinant of saving in these countries, a proxy for macroeconomic stability—absolute deviations of the inflation rate from a three-year moving average—was constructed. The results show that increases in this proxy indeed tend to reduce private saving, especially for the Latin American countries in the sample where inflation has been much more volatile.

D. Growth and Demographics

The full sample results suggest, in line with previous studies, that demographics have a significant effect on private saving ratios. In our study, the coefficient of the dependency ratio is negative and significant in the unrestricted regression for the full sample. It loses significance, however, in the instrumental variable specification and becomes insignificant in the split samples. This suggests that while other variables—which, like the financial deepening variable, may be collinear with the dependency ratio—may reduce the significance of the demographic variable in the smaller (regional) samples, differences in demographic trends are still an important element in the explanation of saving across the two regions.

Although more rapid growth is generally expected to increase saving, higher saving is also likely to lead to faster capital accumulation and increase growth. This "virtuous" circle from growth to saving and again to growth reminds us that the rate of growth is endogenous and that the estimated coefficient may thus be biased. A significant, positive impact of growth on saving was found only in the ASEAN sample using the unrestricted regression (Table 5). Once instruments were used, growth became insignificant, suggesting the importance of endogeneity in this case.

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[17]Using a time dummy for the switch from the pay-as-you-go to the fully funded pension scheme in Chile after 1983 showed that this transition had a substantial positive effect on private saving.

Much of the growth effect will, however, be taken up by the per capita income variable, which is strongly significant and positive in all samples and specifications (a strong collinearity between growth and per capita income was avoided because the latter was specified relative to the United States and at purchasing power exchange rates). As growth raises per capita income above subsistence levels, saving rates should increase.[18] The results suggest that relative per capita income, which has risen significantly in Southeast Asia but which has actually fallen since 1980 in our sample of Latin America countries (Figure 6), is indeed important for explaining differences in saving rates across regions.

E. External Factors

There is some evidence of a positive correlation between transitory terms-of-trade shocks and saving (Ostry and Reinhart, 1992) and terms-of-trade variability and saving (Ghosh and Ostry, 1994). The results here underscore the evidence found so far; they indicate that positive terms-of-trade shocks positively affect the saving rate. The split samples show that terms-of-trade shocks are more significant in Latin America.

V. Conclusions and Policy Implications

This empirical study was intended to shed light on factors that could explain the relatively high saving rates in the ASEAN countries, as well as the policy implications arising therefrom. The results suggest that the macroeconomic policy framework is important and that governments can indeed usefully undertake policies to foster saving. An examination of the coefficients and the trends in the explanatory variables shows that, apart from the rapid rise in per capita income, financial deepening accounts for a sizable part of the increase in saving in Southeast Asia relative to Latin America. In addition, a prudent fiscal policy—in particular with regard to social security expenditure—and a stable macroeconomic framework also contributed to Asia's relatively high saving rates. As far as national saving is concerned, much of the difference can be explained by higher public saving in Southeast Asia, particularly given the relatively low offset coefficient in that region.

A number of countries—for example, Thailand and some of the Latin American countries—are considering establishing fully funded pension systems. Based on the evidence presented here, this can be expected to increase private saving, especially if withdrawal criteria are relatively stringent. When withdrawals are prohibited, as in Chile, the effect of such a scheme on saving rates is found to be unambiguously positive; when withdrawal restrictions are eased, as in Malaysia and Singapore, the effect on saving may be smaller or ambiguous. In practice, however, at the introductory stage of a fully funded scheme, withdrawals tend to be limited so that a positive effect can generally be expected. The same holds true for an increase

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[18]Ogaki, Ostry, and Reinhart (1996) also show that the responsiveness of private saving to changes in real interest rates is a function of a country's income level. The study does not examine the effect of real interest rates on saving as interest rate data are not available for the countries in the sample over the entire period.

in pension fund contributions when no changes in withdrawal regulations are planned (such as in Malaysia in January 1996). By the same token, an easing of withdrawal restrictions can be viewed as increasing access to credit and hence could adversely affect the saving rate.

The results also suggest that the framework within which saving decisions are made can have a significant effect on the private saving rate. Inflation volatility appears to have had a negative effect on the private saving rate in Latin America. Thus, economic policies that attempt to limit volatility in the economy—in particular with regard to inflation—would seem to raise financial saving. The same is true of economic policies that liberalize financial markets and foster financial deepening.

In addition, policies that foster economic growth and increase the level of income tend to increase saving. Although growth was not found to be significant in the final estimations, the effect of changes in per capita income was found to be a significant factor behind high private saving rates in Southeast Asia, accounting for about 4 percent of the increase in private saving over the past 20 years. In Latin America, by contrast, where per capita incomes have actually fallen relative to the United States, the saving rate has also declined.

The results presented in this paper show that a broad range of variables, rather than a single policy variable, explains the differential saving performance between the two regions. Specifically, prudent fiscal policy and funded social security arrangements may be the core policy instruments that boosted saving rates in some ASEAN countries, but policies that improved the framework in which saving decisions were made, including macroeconomic stability and financial market development, were clearly important as well.

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