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Before and After Financial Liberalization

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I. Introduction

The impact of changes in real interest rates on saving, investment, and economic growth, is a central issue in macroeconomics. Not surprisingly, the debate on the relative merits of domestic and external financial liberalization has a long history. In the earlier literature on the subject, McKinnon (1973) and Shaw (1973) posited that financial liberalization would lead to higher levels of investment and output growth. Liberalization would also channel funds towards financing the more productive projects. According to this familiar view, an increase in real interest rates following liberalization should encourage saving and expand the supply of credit available to domestic investors, thereby enabling the economy to grow more quickly.¹ Indeed, a number of liberalization programs supported by the international financial institutions over the years have had as their explicit objective to increase interest rates from levels that in many cases were substantially negative in real terms. While increases in real interest rates have often been the outcome of liberalization episodes (see, for example, Galbis (1993) and this paper on the empirical evidence), their impact on domestic saving and investment has been mixed.²

Even when the obvious positive consequences for saving and growth are absent, however, financial liberalization some have argued, may deliver other types of benefits that are

¹ The link between saving and investment should be tighter, of course if a country has limited access to international sources of credit (i.e., foreign saving).

² The McKinnon-Shaw hypothesis has not, however, gone unchallenged (see Buffie (1982)).

associated with the process of financial deepening. For instance, the recent evidence presented in Kaminsky and Schmukler (2000) suggests that as the liberalization process matures, it may have a stabilizing influence on asset markets. In particular, they find that one of the long-term benefits of financial liberalization is to dampen the boom-bust cycles in equity markets.

However, liberalization does not come free of risks. McKinnon and Pill (1999), for example, present a framework where liberalization may lead to bouts of “overborrowing.” This overborrowing syndrome may be magnified when domestic liberalization is coupled with the liberalization of the capital account. Furthermore, if the rising levels of debt are denominated in a foreign currency, this will increase a country’s vulnerability to exchange rate fluctuations. Kaminsky and Reinhart (1999) present evidence that banking crises are often preceded by financial liberalization--indeed, liberalization helps to “predict” the crisis.

Given all the ambiguities about the outcomes of the financial liberalization process, it is relevant to ask what the systematic, cross-country evidence reveals on several questions, including: What happens to key macroeconomic and variables following domestic and external financial liberalization? Are there significant differences in the outcomes between emerging and developed economies? Are there regional patterns in the response to financial sector reforms? Does a country’s level of development shape the outcome of financial sector reforms? These are the questions we focus on in this paper.

The remainder of the paper is organized as follows. Section II reviews some of the theoretical predictions as regards the link between liberalization and saving, while Section III reviews the empirical literature on the subject. Section IV discusses the empirical methodology and summarizes the main findings. The implications for policy and future research are taken up

in the final section.

II. Saving and Liberalization: Theoretical Underpinnings

The impact of financial liberalization on key economic indicators such as investment, GDP growth, financial deepening, and saving is also ambiguous from a theoretical standpoint.

1. Liberalization as a catalyst for higher saving: McKinnon and Shaw

The early hypotheses of McKinnon and Shaw assumed that liberalization, which would be associated with higher real interest rates--as controls on these are lifted--would stimulate saving.

The underlying assumption is, of course, that saving is responsive to interest rates. The higher saving rates would finance a higher level of investment, leading to higher growth.

According to this view one should expect to see higher saving rates (as well as higher levels of investment and growth) following financial liberalization.

2. Liquidity constraints, credit channels, and financial liberalization: Campbell and Mankiw

It is plausible to assume that not all households have access to credit markets, and hence, some households have no ability to smooth consumption over time. Thus, for the liquidity constrained households, consumption decisions are entirely determined by current income. On theoretical grounds, it has been shown that a relaxation of liquidity constraints will be associated with a consumption boom and a decline in aggregate saving. Furthermore, the more binding the initial constraints, the greater the consumption boom that can be expected.

Many of the past liberalization episodes unleashed a period of rapid growth in bank lending, asset price booms, and increases in consumption that often coincided with a decline in private saving rates. Many of those episodes also ended in a full-fledged financial crisis. Hence, no analysis of saving is complete without an assessment of the pervasiveness of liquidity constraints.

The tests for the presence of liquidity constraints have often been linked to a credit channel in explaining the behavior of consumption/saving. Studies using reduced-form saving equations have tested for liquidity constraints by introducing credit (either its growth rate or as a ratio to GDP) as a regressor. The premise is that greater access to credit reduces saving. Hence, the anticipated coefficient on the credit variable is negative.

A more explicit test for the importance of liquidity constraints was proposed by Campbell and Mankiw (1989). They postulated that there are two types of households in the economy: A share of households, λ , are liquidity constrained and their consumption is entirely determined by the evolution of current income, while the remaining households, $(1-\lambda)$, have free access to capital

$$c_t = \lambda c_t^c + (1-\lambda) c_t^u,$$

markets and can smooth their consumption intertemporally. As a result,:

where aggregate consumption, c_t , is the weighted sum of the unconstrained and constrained households, denoted by superscripts u and c , respectively. Most often, equation (1) has been estimated substituting into c_t^u the simplest form of utility function with one good and no monetary considerations. Further simplifying assumptions have allowed for linearization of the Euler condition that determines the dynamics of consumption of the nonconstrained households.

If the real interest rate is assumed constant then the growth of aggregate consumption is given

$$\Delta c_t = \theta + \lambda \Delta y_t + \varepsilon_t.$$

by,

where embedded in θ is an estimate of the intertemporal elasticity of substitution (IES).

The presumption is that λ falls following liberalization. Hence, according to this story one should observe an increase in credit and consumption (a fall in saving) following financial liberalization.

3. The role of subsistence consumption: Ogaki, Ostry, and Reinhart

If a Stone-Geary utility function characterizes where the intertemporal elasticity of substitution (which determines the sensitivity of consumption to real interest rates is given by (3)

$$\sigma^i = \sigma \left(1 - \frac{\gamma}{y^i} \right) \quad (3)$$

where σ^i denotes the intertemporal elasticity of substitution in country I; y^i is a measure of permanent income in country I; and γ is a constant which reflects subsistence consumption.

Clearly, equation (3) is similar to the Stone-Geary preference specification but with permanent income replacing consumption.

Hence, increases in real interest rates will affect consumption/saving decisions in varying degrees. In countries where the representative household is close to subsistence consumption, consumption(and saving) will not be sensitive to changes in the real rate of interest. Only in wealthier countries would consumption decline (and saving increase) following an increase in real interest rates. Hence, in this story the magnitude of the increase in saving following the higher real interest rates associated with financial liberalization will depend on the level of

income (a proxy for how close are actual consumption levels to subsistence).

III. Saving and Liberalization: The Empirical Literature

In this section, we summarize some of the results of the existing empirical literature as regards the relationship between real interest rates and saving; our main focus is, however, on what the literature reveals as regards the macroeconomic effects of financial liberalization. Our particular emphasis is on the consequences of liberalization for saving.

As the discussion highlights, the most common finding in these studies, which vary widely in terms of both empirical approach and country and time coverage is that the relationship between saving rates and real interest rates is ambiguous. Not surprisingly, financial liberalization also has a mixed track record as regard saving rates. Indeed, in the studies reviewed here, in most of the cases liberalization appears to lead to a decline in the saving rate.

1. Saving and real interest rates

There is little consensus in the empirical literature on the interaction between saving and the real rate of interest.³ Some researchers have been unable to detect much of an effect of changes in real interest rates on domestic saving in developing countries. For example, Giovannini (1985), who examines this issue for eighteen developing countries, concludes that for the majority of cases, the response of consumption growth to the real rate of interest is insignificantly different

³ See, for instance, Savastano (1994) and Schmidt-Hebbel, et al. (1992) for a review of this literature.

from zero and that one should therefore expect negligible responses of aggregate saving to the real rate of interest. In a model with a single consumption good, Ostry and Reinhart (1992) confirm these findings; but, when a disaggregated commodity structure that allows for traded and nontraded goods is assumed, these authors find higher and statistically significant estimates of the sensitivity of consumption to interest rates.

Ogaki, Ostry, and Reinhart (1996), present evidence that consumption in developing countries may be more related to subsistence considerations--particularly in the case of low-income countries--than to intertemporal consumption smoothing.⁴ If households must first achieve a subsistence consumption level, letting intertemporal considerations guide their decisions only for that portion of their budget left after subsistence has been satisfied, then the intertemporal elasticity of substitution and the interest-rate sensitivity of private saving will be close to zero for countries at or near subsistence consumption levels, and rising thereafter.

The empirical literature is equally ambiguous on the effects of financial liberalization on saving rates, growth, and other key macroeconomic

⁴For models that stress the role played by subsistence considerations in consumption/saving decisions, see Rebelo (1992) and Easterly (1994).

There are, however, additional reasons why saving may be less responsive to changes in real interest rates in low-income than in middle-income countries. Rossi (1988), for example, argued that low-income developing countries are characterized by pervasive liquidity constraints which imply that consumption growth in such countries is more likely to follow income growth than changes in expected rates of return.⁵ The empirical evidence appears to point to the presence of liquidity constraints in many developing countries; however, Haque and Montiel (1989) highlight that the severity of these constraints varies considerably across countries. More recently, Vaidyanathan (1993) showed that the incidence of liquidity constraints among households is inversely related to the degree of economic development which would imply--following Rossi (1988)--that saving in poorer countries should be less responsive to interest rate changes.

With this in mind, the purpose of this paper is to quantify empirically the response of consumption/saving to changes in the real rate of interest. We proceed in two steps. First, we use macroeconomic data for a sample of countries with diverse income levels to estimate a model that allows the intertemporal elasticity of substitution to vary with the level of wealth. We then use the estimated parameters to calculate, in the context of a simple endogenous growth model, the elasticity of saving with respect to changes in the real rate of interest

2. Liberalization and saving

In the remainder of this section we provide a brief summary of papers which have

⁵Deaton (1989) has also emphasized the importance of liquidity constraints in explaining consumption/saving behavior in developing countries.

analyzed the effect of liberalization at either the case study level or in a cross-country setting.

Bandiera, Caprio, Honohan, and Schiantarelli (2000).

These authors construct an index of financial liberalization on the basis of eight different components: interest rates; pro-competition measures; reserve requirements; directed credit; bank ownership; prudential regulation; securities markets deregulation; and capital account liberalization. Their data spans from 1970-94 for Chile, Ghana, Indonesia, Korea, Malaysia, Mexico, Turkey, Zimbabwe.

Among the key findings of their estimation of their benchmark model are that: There is no evidence of positive effect of the real interest rate on saving. In most cases the relationship is negative, and significantly so in the cases of Ghana and Indonesia. Furthermore, the effects of the financial liberalization index on saving are mixed: negative and significant in Korea and Mexico, positive and significant in Turkey and Ghana. The long run impact of liberalization is sizeable. Corresponding to the realized change in the index, the estimated model indicates a permanent decline in the saving rate of 12% and 6% in Korea and Mexico, and a rise of 13% and 6% in Turkey and Ghana. Excluding the interest rate and inflation and adjusting for capital gains and losses leaves the results unchanged.

Their panel results indicate that a likelihood ratio test that imposes the equality of coefficients in the pre- and post- liberalization periods can be rejected at conventional levels. The real interest rate has a significant and positive effect and the aggregate index of liberalization has a negative effect on saving. The effect of the aggregate financial liberalization index (which is significantly negative), is large enough to offset the estimated positive effect of the increases in real interest rates.

Results from the estimation of augmented Euler equations (a la Campbell-Mankiw, as discussed in Section II) present evidence of the presence of liquidity constraints. It was not possible, however, to pin down whether financial liberalization relaxes these constraints. The Euler equation results may suggest, at best, that financial liberalization has had little impact on the amount of credit available to consumers through the formal financial sector.

The general conclusion that emerges from this study suggest that there is no systematic and reliable real interest rate effect on saving, while the effects of liberalization have a mixed record.

Bayoumi (1993).

This paper examines the effects of financial deregulation on personal saving. Within an overlapping generations framework, the author argues that deregulation produces an exogenous short-run fall in saving, some of which is recouped over time. Also, deregulation increases the sensitivity of saving to wealth, current income, real interest rates and demographic factors. The model is tested using data on the eleven standard regions of the United Kingdom. He finds that household saving showed an exogenous decline associated with financial innovation--saving also became more sensitive to wealth, real interest rates and current income.

Though the results imply that much of the decline in savings in the 1980's was caused by the rise in wealth, financial deregulation also played a significant direct role. In particular, an autonomous fall of 2.25% in the personal saving rate may be attributed to deregulation alone

Honohan and Atiyas (1993).

This paper uses data on intersectoral financial flows in developing countries to examine the elasticity of financial flows to and from different sectors. The authors ask if the business or the household sector more responsive to shifts in the availability of funds in the economy--this can be thought of as the Feldstein-Horioka “puzzle” at the sectoral level.

Using a simple model of intersectoral financial interactions, and with data mainly from the early 80's they find empirical support for a “business spending crowding-out” scenario: a change in the flow of funds from the foreign and government sectors causes, at most, a small response in the flow from the household sector by comparison to the response of the business sector. Exogenous swings in the availability of foreign finance or in the government’s surplus are absorbed, almost entirely, by changes in the rate of investment by the business sector. The household sector does not come forward, to any large extent, with additional financial saving to compensate for the shortfall in foreign financing or government borrowing.

Jappelli and Pagano (1994).

This paper investigates the role of capital market imperfections on aggregate saving and growth. The analytical framework of the paper is a simple overlapping generations model, within the context of which it is shown that liquidity constraints on households (but not on firms) can: raise the saving rate; strengthen the effect of growth on saving; increase the growth rate if productivity growth is endogenous; and may increase welfare.

Using a panel of OECD countries for the 1960 to 1987 period, the authors find empirical support for their propositions. They suggest that financial deregulation in the 1980's has contributed to the decline in national saving and growth rates in the OECD countries and worry

about the growth and welfare implications of further liberalization within European Union.

Koskela, Loikkanen and Viren (1992).

The authors describe institutional aspects of the housing markets and analyze the evolution of prices of owner-occupied housing and its interaction with the household saving ratio in Finland in the 1970's and 1980's. The volatility of house prices in relation to income can be traced to a large extent to major changes in financial market conditions.

The evidence they present suggests that financial market conditions--as measured by the household's indebtedness rate, the after tax rate of return on housing, and the "thinness" of rental markets--have all had a positive effect on housing prices. Yet, household saving was affected negatively by the rate of change of real house prices, and positively by the after tax nominal interest rate. Taken together, their findings imply that financial conditions, and the liberalization of the mid-1980's in particular, contributed to the decline in the household saving ratio in these countries.

Lehmussaari (1990).

This paper also examines household saving and consumption behavior in the Nordic countries, inspired by the sharp decline in saving rates that all these countries experienced between 1984 and 1987. Its analytical framework is based on the standard life-cycle model. The findings indicate that household consumption and saving have changed after the introduction of financial deregulation. For Finland and Denmark, and to a lesser extent, Norway, it appears that earlier structural relationships break down after the deregulation.

Wealth effects seem to have played an important role in determining consumption. After deregulation, the consumers' response to changes in real wealth is apparently increasing. Prior to deregulation low after tax interest rates were mitigated by credit rationing--after deregulation, a surge in household demand for credit was not fully countered by an increase in nominal interest rates.

Loayza, Schmidt-Hebbel, and Serven's (2000)

The authors' results suggest that the direct effects of financial liberalization are detrimental to private saving rates. The real interest rate has a negative impact on the private saving rate. Its income effect probably outweighs the sum of its substitution and human wealth effects. A 1% increase in the real interest rate reduces the private saving rate by 0.25% in the short run. (In their data there is a strong negative correlation between inflation and the real interest rate. The authors suggest then that their measure of the real interest rate may reflect more the action of nominal interest rate controls rather than the intertemporal rate of substitution of consumers).

The indicator of financial depth (M2/GNP) has a small and statistically insignificant impact on the private saving rate. The flow of private domestic credit relative to income has a negative and significant coefficient; relaxing credit constraints reduces the private saving rate. When the flow of private credit rises by 1%, the private saving rate declines by 0.32% on impact. The authors suggest that though they do not find direct positive effects of financial liberalization on the saving rate, if financial reform has a positive impact on growth, it has a potentially important indirect positive effect on the saving rate.

Miles (1992)

Evidence suggests that in the US and UK, where borrowing against the value of owner occupied housing has become easier, there has been a significant impact upon saving. For the countries that are still undergoing financial reforms, -the paper was published in 1992- the author suggests that the impact of liberalization will be mostly felt where real house prices are high or rising ie. Japan. In Germany and Italy, with flat house prices in the 80's, and in France, where the state pension income of the old is substantial relative to average earnings, the absence of second mortgages may constitute a binding credit restriction for only a small number of households.

IV. Before and After Liberalization

1. Data and methodology issues

Our sample covers 1970-1998. It consists of 50 countries--14 developed and 36 developing countries. The former include: Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, Spain, Sweden, United Kingdom, and the United States. The African countries include: Benin, Cameroon, Cote d' Ivoire, Gambia, Ghana, Kenya, Malawi, Mauritius, Nigeria, South Africa, Tanzania, and Uganda. The Asian group consists of Hong Kong, India, Indonesia, Malaysia, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, and Thailand. The Latin American countries are: Argentina, Bolivia, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela. Four countries from the Middle East, Egypt, Israel, Morocco, and Turkey complete the sample.

The data is annual and we focus on the following series: gross national saving, gross domestic saving, gross investment, current account balance, gross private capital flows, foreign direct investment, GDP growth, consumption, real interest rates, the ratio of narrow-to-broad money (M1/M2), M2/GDP, credit to the private sector, and the spread between lending and deposit interest rates.

We begin by establishing the dates for domestic and external financial sector liberalization. As regards domestic financial liberalization our emphasis (as in Galbis, 1993) is on the deregulation of interest rates. Our approach is to document what happens to the variables of interest before and after financial liberalization. In some cases, owing to policy reversals, there is more than one liberalization episode per country. Each episode is treated separately. We analyze the behavior by country, region, and level of development. We compare the pre- and post- liberalization means for each indicator and test for differences, allowing for the possibility that the variances may have also changed across regimes. For each country grouping, we also report the proportion of cases where the pre- and post-behavior recorded significant differences-- as well as showing in which direction the change went.

2. Key findings: Domestic financial liberalization

Variable	Results
Gross National Saving	Mixed pattern. Declines almost across-the-board for industrial countries; declines in Latin America; increases significantly in Asia and the Middle East; no significant changes in Africa.
Gross Domestic Saving	Mixed. Significant decline in industrial countries, Africa, and Latin America. Increases in Asian and Middle Eastern countries.
Gross Domestic Investment	Significant declines in Developed economies, Africa, and Latin America--declines also in the Middle East. Only region recording an increase is Asia. Declines across all income groups--particularly for the high income category.
Current Account Balance	Improves in nearly country groups, except for Latin America and the upper-middle income group (where most of the Latin American countries are classified).
Gross Private Capital Flows	Dramatic and significant increases for Developed economies and Asia, and less so for Latin America. Little change in the Middle East and a significant decline in Africa. The High and Upper Middle income categories record significant increase while the low income record a significant decline.
Foreign Direct Investment	Increases in Developed and Emerging economies across-the-board. Increases are significant for the Developed economies, Asia, and Latin America; increases are significant across all four income categories.
GDP growth	Growth is significantly lower in Developed economies and Asia; also lower (not significant) in Africa and Middle East. Higher in Latin America. Most of the significant slowdown occurs in the Lower-Middle income group.
Consumption/GDP	Consistent with the results on saving, consumption increases in Developed economies, Africa, and Latin America and declines in Asia and the Middle East.
Real interest rates	Rates are significantly higher in the Developed economies, Africa and Latin America. The declines in real interest rates in Asia and the Middle East are not significant. Rates rise markedly in nearly all income groups.
M1/M2	Declines across-the-board for all groups.
M2/GDP	Significant and marked increases in Developed economies and all regions except Africa, where the increase is not significant. Increases significantly in all but the low-income group.
Total Credit to the Private Sector/ GDP	Significant increase across all regions. Only in the Low-income group is the increase not statistically significant.
Nominal Interest Rate Spread (lending-deposit)	Results importantly driven by inflation patterns; needs to be redone as a ratio.

Summary of findings: Capital Account Liberalization

Variable	Results
Gross National Saving	Declines in Developed economies and in Latin America (not significantly); increases significantly in Africa, Asia and the Middle East.
Gross Domestic Saving	Mixed. Significant decline in industrial countries and Latin America. Increases in Asia. Little change in Africa and Middle Eastern countries.
Gross Domestic Investment	Significant declines in Developed economies and Latin America--declines also in Africa and the Middle East. Only region recording an increase is Asia. Declines across all income groups--particularly for the high income category.
Current Account Balance	Improves significantly for Africa and Middle East; deteriorates in Latin America and the upper-middle income group (where most of the Latin American countries are classified).
Gross Private Capital Flows	Increases for Developed economies and Asia, and less so for Latin America. Little change in the Middle East and a significant decline in Africa. The High-to-Lower-Middle income categories record significant increase while the low income record a significant decline.
Foreign Direct Investment	Increases in Developed and Emerging economies across-the-board. Increases are significant for the Developed economies, Asia, and Latin America; increases are significant across all four income categories.
GDP growth	Growth is significantly lower in Developed economies. No significant differences for all other groups.
Consumption/GDP	Consistent with the results on saving, consumption increases in Developed economies and Latin America and declines in Asia. Africa and the Middle East, unchanged.
Real interest rates	Rates are significantly higher in the Developed economies and Africa. The declines in real interest rates in Asia and the Middle East are not significant. Rates rise markedly in nearly all income groups.
M1/M2	Declines across-the-board for all groups.
M2/GDP	Significant and marked increases in Developed economies and all regions except Africa, where the increase is not significant. Increases significantly in all but the low-income group.
Total Credit to the Private Sector/ GDP	Significant increase across all regions. Only in the Low-income group is the increase not statistically significant.
Nominal Interest Rate Spread (lending-deposit)	Results importantly driven by inflation patterns; needs to be redone as a ratio.

**V. Concluding Remarks:
What Can We Expect from Financial Liberalization?**

With greater certainty, financial liberalization appears to deliver: higher real interest rates (possibly reflecting the allocation of capital toward more productive, higher return projects.); lower investment, but not lower growth (again, possibly owing to a shift to more productive uses of financial resources); a higher level of foreign direct investment; and high gross capital flows--the catch is that occurs only in the higher income countries. Liberalization appears to deliver financial deepening, as measured by the credit and monetary aggregates--but, again, low income countries do not appear to show clear signs of such a benefit. As regards saving, anything goes. In some regions saving increased following financial sector reforms; but in the majority of cases saving declined following the reforms.

Indeed, it would appear that what financial liberalization delivers is greater access to international capital markets (although this appears to be uneven across regions and income groups, in particular).

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Table 1. Before and After Domestic Financial Liberalization: Saving and Investment

Country Groups	Gross National Saving		Gross Domestic Saving		Gross Domestic Investment	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	18.94	20.19*	19.7	20.99*	22.62	22.23
Developed	22.65	20.35*	24.77	22.8*	25.3	21.45*
Emerging	17.89	20.10*	18.37	20.04*	21.92	22.63
Emerging market countries by region						
Africa	12.58	13.8	14.45	12.18*	19.0	17.27*
Asia	24.06	28.92*	23.19	28.91*	24.77	29.65*
Latin America	19.9	15.8*	23.03	19.15*	22.59	19.82*
Middle East	16.21	19.5*	11.4	14.24*	23.3	22.05
Classification by income level						
High	23.64	22.94	24.09	24.53	26.03	23.38*
Upper-middle	24.38	20.76*	24.44	23.77	24.07	23.37
Lower- middle	17.11	18.85	18.58	18.28	23.14	22.15
Low	12.71	14.75*	14.1	13.09	18.65	18.57

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 2. Distribution of Changes in Saving Following Domestic Financial Liberalization

	PERCENTAGE OF COUNTRIES WITHIN GROUP FOR WHICH :							
	GROSS NATIONAL SAVING				GROSS DOMESTIC SAVING			
Country Groups	PRE /POST DIFFERENCE IS SIGNIFICANT	MEAN IS INCREASING	MEAN IS INCREASING AND DIFF. SIGNIFICANT	MEAN IS DECREASING AND DIFF. SIGNIFICANT	PRE /POST DIFFERENCE IS SIGNIFICANT	MEAN IS INCREASING	MEAN IS INCREASING AND DIFF. SIGNIFICANT	MEAN IS DECREASING AND DIFF. SIGNIFICANT
All countries	57%	43%	23%	32%	67%	38%	25%	42%
Developed	77%	8%	0%	77%	77%	8%	0%	77%
Emerging	48%	56%	32%	15%	63%	49%	34%	29%
Emerging market countries by region								
Africa	25%	58%	17%	8%	58%	42%	25%	33%
Asia	70%	70%	50%	20%	80%	80%	60%	20%
Latin America	57%	38%	25%	25%	56%	22%	11%	44%
Middle East	50%	50%	50%	0%	50%	50%	50%	0%
Classification by income level								
High	75%	13%	6%	69%	81%	19%	13%	63%
Upper-middle	75%	63%	44%	22%	67%	44%	44%	22%
Lower-Middle	56%	50%	40%	10%	50%	40%	20%	30%
Low	23%	62%	15%	8%	62%	54%	31%	31%

Note: Significant: the difference between pre and post liberalization means is statistically significant. Increasing: post liberalization mean is higher than the pre liberalization mean. Increasing and significant: mean rises after liberalization and the difference with pre-liberalization mean is significant. Decreasing and significant: mean declines after liberalization and the difference with the pre-liberalization mean is significant.

Table 3. Before and After Capital Account Liberalization: Saving and Investment

Country Groups	Gross National Saving		Gross Domestic Saving		Gross Domestic Investment	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	17.98	21.26*	19.1	21.9*	22.41	22.45
Developed	22.72	20.39*	24.98	22.74*	25.66	21.37*
Emerging	16.93	21.83*	17.81	21.35*	21.7	23.15*
Emerging market countries by region						
Africa	12.31	15.52*	13.74	13.21	18.55	17.75
Asia	23.36	29.97*	22.91	29.69*	25.11	29.61*
Latin America	18.02	16.92	22.81	19.17*	22.87	19.37*
Middle East	16.79	18.97*	12.17	13.10	23.18	22.11
Classification by income level						
High	23.31	23.14	24.05	24.53	26.48	23.28*
Upper-middle	24.55	20.49*	24.69	23.46	24.9	22.41*
Lower- middle	17.02	19.49*	19.09	17.32*	23.16	21.83*
Low	12.42	17.13*	13.44	14.93	18.28	19.94*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 4. Distribution of Changes in Saving Following Capital Account Liberalization

	PERCENTAGE OF COUNTRIES WITHIN GROUP FOR WHICH :							
	GROSS NATIONAL SAVING				GROSS DOMESTIC SAVING			
Country Groups	PRE /POST DIFFERENCE IS SIGNIFICANT	MEAN IS INCREASING	MEAN IS INCREASING AND DIFF. SIGNIFICANT	MEAN IS DECREASING AND DIFF. SIGNIFICANT	PRE /POST DIFFERENCE IS SIGNIFICANT	MEAN IS INCREASING	MEAN IS INCREASING AND DIFF. SIGNIFICANT	MEAN IS DECREASING AND DIFF. SIGNIFICANT
All countries	53%	50%	21%	30%	65%	40%	29%	35%
Developed	77%	8%	0%	77%	85%	8%	0%	85%
Emerging	44%	67%	29%	12%	57%	51%	40%	17%
Emerging market countries by region								
Africa	27%	64%	17%	8%	50%	50%	33%	17%
Asia	50%	80%	50%	0%	80%	80%	70%	10%
Latin America	43%	63%	13%	25%	33%	22%	11%	22%
Middle East	75%	50%	50%	25%	75%	50%	50%	25%
Classification by income level								
High	69%	13%	6%	63%	81%	19%	13%	69%
Upper-middle	63%	67%	33%	22%	56%	56%	44%	11%
Lower-Middle	67%	60%	40%	20%	60%	30%	20%	40%
Low	17%	69%	15%	0%	54%	62%	46%	8%

Note: Significant: the difference between pre and post liberalization means is statistically significant. Increasing: post liberalization mean is higher than the pre liberalization mean. Increasing and significant: mean rises after liberalization and the difference with pre-liberalization mean is significant. Decreasing and significant: mean declines after liberalization and the difference with the pre-liberalization mean is significant.

Table 5. Before and After Domestic Financial Liberalization: External Indicators

Country Groups	Current Account Balance		Gross Private Capital Flows		Foreign Direct Investment	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	-3.67	-1.9*	4.3	10.28*	.74	1.74*
Developed	-1.63	-1.05	7.36	17.2*	.68	1.37*
Emerging	-4.22	-2.46*	3.56	6.3*	.75	1.74*
Emerging market countries by region						
Africa	-6.27	-3.52*	3.62	2.62*	.95	1.23
Asia	-2.13	-1.38	2.69	11.64*	.77	3.07*
Latin America	-1.83	-3.19	4.24	5.34	.4	1.8*
Middle East	-6.26	-.90*	3.94	3.75	.83	.89
Classification by income level						
High	-2.13	-.38*	8.09	19.35*	.9	1.9*
Upper-middle	-1.11	-2.61*	4.55	6.43*	.65	2.04*
Lower- middle	-4.87	-2.91*	1.89	2.82*	.56	1.5*
Low	-5.57	-3.97*	3.08	2.28*	.81	1.17*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 6. Before and After Capital Account Liberalization: External Indicators

Country Groups	Current Account Balance		Gross Private Capital Flows		Foreign Direct Investment	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	-4.03	-1.4*	3.78	11.66*	0.77	1.84*
Developed	-1.79	-0.98*	6.56	17.42*	0.70	1.3*
Emerging	-4.53	-1.67*	3.25	7.43*	0.78	2.21*
Emerging market countries by region						
Africa	-5.89	-2.51*	3.42	2.37*	.89	1.62*
Asia	-3.24	-.31*	2.9	13.27*	.93	3.31*
Latin America	-2.36	-2.88	3.27	6.0*	.40	1.9*
Middle East	-5.78	-.94*	3.31	4.64	.81	.93
Classification by income level						
High	-2.78	-.18*	7.34	19.48*	.92	1.95*
Upper-middle	-1.98	-1.96	4.27	6.70*	.75	1.98*
Lower- middle	-4.32	-3.03*	1.88	3.12*	.64	1.66*
Low	-5.45	-3.18*	3.03	1.81*	.78	1.48*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 7. Before and After Domestic Financial Liberalization: Selected Indicators

Country Groups	GDP growth rate		Total Consumption		Real Interest Rate (lending rate)	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	4.28	3.68*	80.29	79.00*	1.58	7.73*
Developed	3.04	2.54*	75.22	77.19*	.43	6.27*
Emerging	4.62	4.29	81.62	79.95*	1.98	8.83*
Emerging market countries by region						
Africa	4.08	3.38	85.54	87.81*	-1.49	8.96*
Asia	6.56	5.66*	76.80	71.08*	5.52	5.0
Latin America	2.89	3.72	76.96	80.84*	1.42	14.7*
Middle East	5.22	4.07	88.59	85.75*	12.12	8.06
Classification by income level						
High	3.8	3.26	75.90	75.46	1.10	6.02*
Upper-middle	4.52	4.41	75.55	76.22	-3.28	9.03*
Lower- middle	4.59	3.57*	81.41	81.71	15.47	9.97
Low	4.32	4.04	85.89	86.9	.06	9.73*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 8. Before and After Capital Account Liberalization: Selected Indicators

Country Groups	GDP growth rate		Total Consumption		Real Interest Rate (lending rate)	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	4.15	3.77	80.89	78.09*	2.88	7.31*
Developed	3.05	2.54*	75.01	77.25*	.67	6.13*
Emerging	4.41	4.57	82.18	78.64*	3.53	8.37*
Emerging market countries by region						
Africa	3.75	3.97	86.25	86.78	1.13	8.62*
Asia	6.22	5.98	77.08	70.30*	5.38	5.01
Latin America	3.08	3.56	77.18	80.82*	3.80	12.79
Middle East	5.07	4.2	87.82	86.89	12.11	7.43
Classification by income level						
High	3.57	3.4	75.94	75.46	1.25	5.88*
Upper-middle	4.77	4.13	75.3	76.53	-1.08	7.66*
Lower- middle	4.39	3.59	80.9	82.67*	12.93	11.02
Low	4.02	4.87	86.55	85.06	2.42	9.94*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 9. Before and After Domestic Financial Liberalization: Financial Indicators

Country Groups	M1/M2		M2/GDP		Total Credit to the private sector % of GDP		Nominal Interest Rate Spread (lending-deposit)	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	54.41	37.59*	35.13	46.28*	32.21	55.2*	16.28	8.6
Developed	39.28	34.17*	56.09	62.79*	56.93	82.48*	3.14	3.82*
Emerging	57.87	39.13*	29.57	37.64*	25.62	39.63*	21.23	12.26
Emerging market countries by region								
Africa	63.84	55.05*	25.95	27.78	19.73	26.77*	6.06	9.65*
Asia	45.29	31.22*	37.97	54.59*	32.7	57.86*	2.88	2.07
Latin America	61.44	33.66*	18.7	24.8*	25.79	33.48*	143.17	28.01
Middle East	60.15	34.01*	41.86	53.4*	28.31	37.65*	30.46	8.78
Classification by income level								
High	38.16	32.55*	54.99	64.17*	56.48	81.94*	12.24	4.12
Upper-middle	48.42	29.37*	27.82	35.3*	32.12	44.67*	3.45	14.69*
Lower-Middle	59.25	36.32*	31.61	37.41*	24.54	41.55*	53.12	14.32
Low	66.73	55.93*	23.87	24.8	17.66	18.23	6.26	9.93*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

Table 10. Before and After Capital Account Liberalization: Financial Indicators

Country Groups	M1/M2		M2/GDP		Total Credit to the private sector % of GDP		Nominal Interest Rate Spread (lending-deposit)	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
All countries	55.01	34.34*	33.77	49.61*	30.4	60.35*	8.6	13.08
Developed	40.2	33.75*	56.6	62.24*	55.61	82.42*	3.48	3.70
Emerging	57.83	34.68*	28.75	41.12*	24.78	44.38*	10.06	21.89
Emerging market countries by region								
Africa	63.23	51.07*	25.49	30.89*	19.45	33.05*	6.57	10.32*
Asia	44.02	30.8*	36.61	59.52*	32.16	62.96*	2.85	1.94*
Latin America	62.8	30.7*	17.81	26.08*	24.94	34.68*	29.5	52.18
Middle East	61.09	27.77*	41.49	55.99*	26.69	42.04*	27.65	10.09
Classification by income level								
High	38.91	32.26*	55.68	63.4*	55.3	81.74*	13.01	4.01
Upper-middle	49.11	28.12*	28.16	35.1*	31.73	45.42*	4.33	14.65*
Lower-Middle	56.56	34.07*	31.33	39.62*	25.5	44.6*	9.72	42.4
Low	66.09	51.06*	23.59	26.54	17.37	19.77	6.81	10.66*

Note: An asterisk indicates that the difference between the respective pre- and post-liberalization sample means is statistically significant at a level of 5% or lower.

