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Does Financial Liberalization Influence Saving, Investment and Economic Growth?

Evidence from 25 Emerging Market Economies, 1973-96

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Abstract

This paper aims to investigate the relationship between financial liberalization on the one hand and saving, investment and economic growth on the other hand, using a new dataset for measuring financial liberalization for a sample of 25 developing economies over the period 1973-96. We find no evidence that financial liberalization affects domestic saving and total investment (although there are some signs to believe that liberalization may actually reduce rather than increase domestic saving), whereas it is positively associated with private investment, as well as with per capita GDP growth. We find a negative relationship between financial liberalization and public investment. These results suggest that financial liberalization leads to a substitution from public to private investment, which may contribute to higher economic growth.

Keywords: financial liberalization, saving, investment, economic growth

JEL classification: O16

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1 Introduction

During the past two decades many countries have reformed their domestic financial markets. In many cases, these reforms were triggered by both domestic and international developments. Domestically, many government policies that focused on controlling financial markets—known in the literature as financial repression—became increasingly criticized, for it was felt that these policies were blocking the efficient functioning and development of financial institutions. The idea that stagnating economic growth and economic crisis were related to financial repression policies has gained ground since the early 1970s (McKinnon 1973; Shaw 1973).[1] Internationally, the globalization of markets, including financial markets, also put pressure on governments to reconsider financial market controls.

One region that has experienced major changes with respect to financial market policies in recent years is the Central and Eastern European region. This group of countries has gone through a major transition process, including the restructuring of financial sectors and markets, privatization of banks and opening up domestic banking markets to foreign competitors (Balling, Lierman and Mullineux 2004). To illustrate this last point: in Eastern Europe the rise of foreign control went up from almost 8 per cent in 1994 to 52 per cent in 1999 (IMF 2000: 153). The profoundness of these reforms in Central and Eastern Europe, but also elsewhere in the world, may raise the question of what are the potential consequences of foreign liberalization on economic growth.

Reforms of financial markets may include several specific policies which in one way or another aim to improve the development of the financial system of a country. Ultimately, this should contribute to higher economic growth. Several authors claim that liberalization of financial markets contributes to the efficiency with which these markets can transform saving into investment and growth. At the same, however, financial liberalization policies themselves have been criticized for their share in triggering financial and economic crises in the past. The question, therefore, is whether these policies indeed lead to a more developed and efficient financial sector and/or whether they lead to higher economic growth. There are several papers that have looked into this debate from an empirical point of view. The general picture that emerges from a survey of this empirical literature is that the evidence remains inconclusive. One reason for these inconclusive results may be that the precise measurement of financial liberalization appears to be rather difficult.

This paper seeks to address this issue. It aims to investigate the relationship between financial liberalization and economic growth using a new dataset for measuring financial liberalization in 25 emerging market economies during the period 1973-96.[2] This dataset, developed by Abiad and Mody (2005), improves on other datasets used in

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1 See Fry (1995) for a comprehensive overview of the discussion on financial repression.

2 Originally, the research in this paper was aimed at investigating whether financial liberalization has an impact on the efficiency of allocating resources for investment, using data from a number of Central and Eastern European countries. The approach we took was similar to the one used in studies such as Abiad, Oomes and Ueda (2004) and Galindo, Schiantarelli and Weiss (2005); see also section 2 for a discussion of these papers. However, due to a lack of data we had to decline this research project and turned to a more general analysis of the effects of financial liberalization on economic growth.

the literature in that it takes into account the fact that financial liberalization is both a multi-dimensional as well as a gradual process.

Another issue this paper wants to address is to see whether the process of financial liberalization contributes to increased mobilization of resources for investment and whether this leads to increasing the quantity of investments made. Therefore, the empirical analysis not only focuses on the relationship between financial liberalization and growth, but also on saving, and private and public investment.

The remainder of the paper is organized as follows. Section 2 provides a review of the debate on financial liberalization and its effects, as well as an overview of empirical studies on the merits of such liberalization policies. In section 3 we discuss the dataset and the econometric approach we have taken. The results of the econometric analysis are presented in section 4. The paper ends with a conclusion in section 5.

2. Financial liberalization and economic growth: a brief review of the existing literature

2.1 Financial liberalization and growth: the debate

The financial system performs a number of important functions in an economy. Basically, it takes care of mobilizing financial resources, facilitating risk management, distributing resources to the most efficient projects, monitoring the use of financial resources (exerting corporate governance), and providing a payment system that makes trade among economic participants more efficient (Levine 1997). Financial development occurs when a financial system is able to improve on performing these functions. There is a large body of theoretical and empirical work emphasizing that financial development is positively related to economic growth.[3]

Closely related to the discussion of the relationship between finance and growth is the discussion of the role that financial liberalization can play in this relationship. The main idea is that financial liberalization may affect financial development which, in turn, affects economic growth. There is an ongoing debate about whether the role of financial liberalization with respect to the finance-growth nexus is positive or negative. Before going into detail with respect to this debate,[4] we first provide a short description of what we think is generally meant by financial liberalization.

While there may be several different characterizations of what financial liberalization contains,[5] in our view financial liberalization includes official government policies that focus on deregulating credit controls, deregulating interest rate controls, removing entry

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3 We refer to some of the most comprehensive reviews available, among which are: Berthélemy and Varoudakis (1996) and Levine (1997).

4 We note that, due to the limited scope of this paper, our review of the literature is necessarily limited in scope. For more comprehensive reviews of the debate, the reader is referred to reviews by, among others, Gibson and Tsakalotos (1994); Fry (1997); Singh (1997) and Andersen and Tarp (2003).

5 In fact, empirical studies on the effects of financial liberalization take different measures of this phenomenon, which indicate that there are different views on what financial liberalization exactly is or should be.

barriers for foreign financial institutions, privatizing financial institutions, and removing restrictions on foreign financial transactions. So, financial liberalization has both a domestic and foreign dimension. Moreover, it focuses on introducing or strengthening the price mechanism in the market, as well as improving the conditions for market competition.

In the literature several arguments in favour of liberalization have been put forward. Most of these arguments implicitly start from the neoclassical perspective, which assumes that markets are most efficient in allocating scarce resources. The discussion on liberalizing financial markets more or less started with the seminal publications of McKinnon (1973) and Shaw (1973). They both wrote their work as a critique of government policies, which were focused on restricting and controlling financial markets, also known as financial repression. McKinnon and Shaw held these policies responsible for the low growth rates of many developing countries during the 1950s and 1960s. They both argued in favour of liberalizing financial markets on the grounds that this would both lead to more and more efficient investment which, in turn, would lead to higher economic growth rates. In the 1990s, when the role of financial institutions in economic growth became intensively discussed in the literature, several authors explicitly modelled the relationship between finance and growth, while others focused on investigating the empirical support for these models.

Basically, the following arguments have been made in support of the positive relationship between financial liberalization, financial development and economic growth. First, it is claimed that introducing market principles and competition in financial markets increases interest rates on deposits, which leads to higher saving rates. This, in turn, increases the amount of resources available for investment (McKinnon 1973). If financial liberalization includes opening up the capital account, capital inflows may increase, again raising the availability of funds for investment and growth. Thus, in both cases financing constraints of firms are reduced and investment will rise, leading to higher growth.

Second, competition puts pressure on profit margins, in particular on the loan rates demanded for loans. This reduces the cost of capital, leading to a rise in investment and growth. Moreover, financial liberalization contributes to increased possibilities of risk diversification by financial institutions such as banks. This also reduces the cost at which loans are offered and further to a decrease of the cost of capital, and a rise of investment and growth. Again, this argument would support the idea that financial liberalization reduces financial constraints of firms, which ultimately increases macroeconomic growth.

Third, if markets are liberalized, financial intermediaries are stimulated to become more efficient by reducing overhead costs, improving on overall bank management, improving risk management, and offering new financial instruments and services to the market to keep up with their competitors by developing and offering new instruments and services to the market. Moreover, if financial liberalization means opening up domestic markets to foreign competition, this may lead to the import of bank and risk management techniques, as well as of new financial instruments and services. All these effects will help to improve the efficiency of financial intermediation in a country, contributing to higher returns to investment and thus to higher rates of economic growth. So, whereas the previous two arguments focused on the quantity effect of

financial liberalization, this argument focuses on the quality effect of financial liberalization.

On the other hand, it has also been argued that financial liberalization in many cases has led to disappointing results and in some cases even to economic and financial crises. Stiglitz (2000) and others have pointed out that financial liberalization as such does not solve the problem of asymmetric information. This may prevent financial intermediation from becoming more efficient in a liberalized market. Many papers, among which is the seminal contribution of Stiglitz and Weiss (1981), have indeed shown that problems of asymmetric information prevail in financial markets.

Some papers even make the point that financial liberalization may actually increase information problems. When financial markets become liberalized and competition is increased, this may lead to a reduction of relationship lending, since borrowers may have more opportunities and will look for the cheapest way of financing their investment. However, a reduction of relationship lending also destroys information capital and thereby increases asymmetric information (Boot 2000).

More competition in financial markets may also mean a reduction of profit margins and an increased financial fragility of financial intermediaries such as banks. Hellmann, Murdock and Stiglitz (1996, 1997, 2000) in a series of articles make the point that liberalization reduces the franchise value of banks, which makes them more prone to financial disruption and stimulates risk taking in order to try to increase profits under the pressure of falling interest rate margins. Reduced margins may also stimulate banks to economize on screening and monitoring efforts, and they may be more willing to opt for a gambling strategy when allocating loans, i.e., putting less emphasis on risk and more on profit. Thus, financial liberalization may trigger crises if it leads to excessive risk taking under the pressure of increased competition (Demirgüç-Kunt and Detragiache 1998).

Increased risk taking in financial markets and the consequent increase in the number of failures of banks and other institutions may in itself trigger bank runs (Diamond and Dybvig 1983). Bank runs are another source of weakening the financial stability of financial institutions, but this time even in a situation where some of them may be economically viable.

One way to curb the adverse effects of financial liberalization on the stability of the financial system is to install financial market regulations. Such regulations should reduce risk taking by banks and should, at least to some level, bail out depositors when their bank goes bankrupt. Such a deposit insurance system aims to reduce the probability of bank runs taking place in times of financial distress. This is why financial liberalization in combination with a weak regulatory structure may have strongly adverse effects on growth (Andersen and Tarp 2003). Examples of this abound: Chile and Argentina in the early 1980s experienced the negative effects of financial liberalization. The same holds for Mexico (in 1994-95) and recently the countries affected by the Asian crisis (1997-98), to name just a few.

2.2 Financial liberalization and growth: the evidence

In recent years, several papers have been published on the relationship between financial liberalization and growth. Some studies focus on the quantity effects of liberalization, while others concentrate on the quality effects of liberalization. These studies use firm-level, as well as cross-country data.

Laeven (2003) in a recent study finds evidence for the hypothesis that financial liberalization reduces financial constraints of firms. His study is based on information from 13 developing countries. Similarly, positive effects of financial liberalization on reducing financial constraints are found, among others, by Koo and Shin (2004) for Korea, Harris, Schiantarelli and Siregar (1994) for Indonesia, Guncavdi, Bleaney and McKay (1998) for Turkey, and Gelos and Werner (2002) for Mexico. At the same time, however, studies by Jaramillo, Schiantarelli and Weiss (1996) on Ecuador and Hermes and Lensink (1998) on Chile find much less supportive evidence for the positive effect of financial liberalization on reducing financial constraints. All studies mentioned here use firm-level panel data.

Other studies have used cross-country panel data. Nazmi (2005) uses data for five Latin American countries and finds evidence that deregulation of financial markets increases investment and growth. Bekaert, Harvey and Lundblad (2005) for a large sample of countries look at liberalization of the stock market, in particular opening them up to foreign participation. They find support for the view that a type of liberalization spurs economic growth through reducing the cost of equity capital and increasing investment. Other cross-country analyses are less positive about the quantity effect of financial liberalization. Bonfiglioli (2005), using information for 93 countries, shows that financial liberalization only marginally affects capital accumulation. Bandiera *et al.* (2000) look at the impact of financial liberalization on saving based on information from eight developing countries over a 25-year period. They suggest that saving rates actually fall, rather than increase, after financial liberalization.

Other studies have empirically investigated the impact of financial liberalization on the allocative efficiency of financial markets. Some of these studies use firm-level panel data. One example of this is a study by Galindo, Schiantarelli and Weiss (2005), in which supportive evidence is found for the qualitative effect of financial liberalization based on firm-level data from 12 developing economies. Abiad, Oomes and Ueda (2004) find strong evidence that financial liberalization improves the allocation of capital, using data from five emerging markets. Other studies based on firm-level data that find supportive evidence for the quality effect are, among others, Cho (1988) for Korea and Siregar (1995) for Indonesia. In contrast to these studies, Capoglu (1991) for Turkey shows that allocative efficiency decreased after liberalization, whereas Schiantarelli *et al.* (1994) for Ecuador, and Hermes (1996) for Chile find no evidence for any effect on allocative efficiency after liberalizations took place in these countries. Demir (2005) shows evidence for a very specific but related effect of financial liberalization based on firm-level panel data from three developing countries. In his study he investigates the investment decision of firms after liberalization between fixed and financial investment. He shows evidence that due to increased risk after liberalization, firms choose to invest more in financial investment and reduce their fixed investment. This may be interpreted as a reduction of the allocative efficiency of financial resources due to financial liberalization.

Table 1
Overview of empirical studies on the financial liberalization-growth relationship

Author(s) and year of publication	Focus on quantity or quality effect	Type of data used	Positive (+), negative (-) or no relationship (o)
Harris, Schiantarelli and Siregar (1994)	Quantity	Firm-level	+
Jaramillo, Schiantarelli and Weiss (1996)	Quantity	Firm-level	o
Guncavdi, Bleaney and McKay (1998)	Quantity	Firm-level	+
Hermes and Lensink (1998)	Quantity	Firm-level	o
Gelos and Werner (2002)	Quantity	Firm-level	+
Laeven (2003)	Quantity	Firm-level	+
Koo and Shin (2004)	Quantity	Firm-level	+
Bandiera *et al.* (2000)	Quantity	Country-level	–
Bekaert, Harvey and Lundblad (2005)	Quantity	Country-level	+
Bonfiglioli (2005)	Quantity	Country-level	+/o
Nazmi (2005)	Quantity	Country-level	+
Cho (1988)	Quality	Firm-level	+
Capoglu (1991)	Quality	Firm-level	–
Schiantarelli *et al.* (1994)	Quality	Firm-level	o
Siregar (1995)	Quality	Firm-level	+
Hermes (1996)	Quality	Firm-level	o
Abiad, Oomes and Ueda (2004)	Quality	Firm-level	+
Demir (2005)	Quality	Firm-level	–
Galindo, Schiantarelli and Weiss (2005)	Quality	Firm-level	+
Levine (2001)	Quality	Country-level	+
Eichengreen and Leblang (2003)	Quality	Country-level	–
Tornell, Westerman and Martinez (2004)	Quality	Country-level	+
Bonfiglioli (2005)	Quality	Country-level	+

Some studies use cross-country panel data to investigate the quality effect of financial liberalization. Bonfiglioli (2005) finds supportive evidence that financial liberalization spurs productivity growth, based on panel data from 93 countries. Levine (2001) focuses on the effects of international financial liberalization on the efficiency of domestic financial markets and growth. In his paper, international financial liberalization refers to both opening up stock markets as well as domestic bank markets to foreign participation. Levine finds evidence for the fact that liberalization improves the efficiency of stock markets, since it increases the liquidity of these markets. Moreover, foreign bank entry improves the efficiency of domestic banks. Both these effects in turn help to increase economic growth. In an interesting study, Tornell, Westerman and Martinez (2004) present supportive evidence for the idea that financial liberalization in the short term leads to financial fragility, but in the longer term contributes positively to economic growth. Eichengreen and Leblang (2003) empirically investigate the experience with capital account liberalization and its effect on growth over a long period of time (1880-1997). They show that the evidence on the effects is mixed and very much depends on the context. In particular, they point out that in times of financial instability, capital account controls are positive because then countries do not experience massive and disruptive outflows of capital. Yet, if financial markets are stable, capital controls have a negative impact on growth because the negative effect of capital controls on the efficient allocation of capital dominates. In a review of the literature on the growth effects of capital account liberalization, Eichengreen (2001) also shows that these effects are indeed mixed.

The conclusion of the above review of the literature must be that the theory as well the evidence on the relationship between financial liberalization and growth is mixed. A summary of the studies discussed above, together with an overview of their main findings, can be found in Table 1. This table clearly shows the differences in the results reported in these studies on the relationship between financial liberalization and growth.

The empirical analysis in this paper aims to contribute to the empirical literature by investigating the relationship between financial liberalization and growth, using a newly available dataset that allows us to better measure financial liberalization and its effects on growth.

3 Data and methodology

3.1 The financial liberalization dataset

The analysis in this paper makes use of a newly constructed dataset for financial liberalization. The data are provided by Abiad and Mody (2005). Their measure of financial liberalization takes into account six different dimensions of financial market policies for a set of 35 countries during the period 1973-96.[6] The six dimensions they consider are:

- *Credit controls*: directed credit towards favoured sectors or industries, ceilings on credit toward sectors, and high reserve requirements;
- *Interest rate controls*: direct interest rate controls by the government, or interest rate controls through the use of floors, ceilings and interest rate bands;
- *Entry barriers*: licensing requirements for newly established domestic financial institutions, entry barriers for foreign banks, and restrictions on certain types of banking practices, such as specialized bank services or establishing universal banks;
- *Operational restrictions for securities markets*: restrictions on staffing, branching and advertising, and the establishment of securities markets;
- *Privatization of financial institutions*; and
- *Restrictions on international financial transactions*: capital current account controls and the use of multiple exchange rates.

For each of these six dimensions, a country gets a score that runs from zero to three. The meaning of the scores is as follows:

- 0 means that for a particular dimension of financial market policies, the country is fully repressed;
- 1 means partial repression;
- 2 means largely liberalized; and
- 3 means fully liberalized.

6 Unfortunately, no Central and Eastern European countries are included in the dataset.

The way the financial liberalization measure is constructed allows for identifying changes in financial market policies and quantifying the extent to which they contribute to liberalizing financial markets. It also allows us to take into account periods in which governments decide to recontrol markets, for instance during or after periods of severe financial and/or economic crisis. In short, the measure enables to determine more exactly the magnitude and timing of changes of various dimensions of financial market policies.

This financial liberalization dataset improves on data used in earlier papers in a number of ways. In most cases, the data in these earlier papers have one or more of the following weaknesses. First, many papers take a crude measure of financial liberalization, for instance by taking a value of 0 for the years in which a particular financial market is not liberalized and a value of 1 from the year onwards when the market is officially liberalized. Harris, Schiantarelli and Siregar (1994), Jaramillo, Schiantarelli and Weiss (1996), Hermes and Lensink (1998), and Bekaert, Harvey and Lundblad (2005), to name a few, use this type of measure. Yet, financial liberalization is a process, rather than just one event.

Second, in several papers the analysis focuses on just one or a few dimensions of financial liberalization. Levine (2001), for example, looks only at opening up domestic banking and stock markets to foreigners, Eichengreen and Leblang (2003) consider only capital account liberalization, and Bekaert, Harvey and Lundblad (2005) focus on stock market liberalization. These papers thus do not analyse the effects of financial liberalization in all its important dimensions.

Third, some studies only look at the effects of financial liberalization in the short term of say up to ten to fifteen years. This is true for all studies using firm-level and this is not surprising, given the difficulty of getting consistent firm-level data for a long time-period. However, even some of the country-level studies take a relatively short perspective. Bekaert, Harvey and Lundblad (2005) investigate the relationship using data for the period 1980-97.

Finally, several studies focus on a single country case or a limited set of countries when investigating financial liberalization policies. Of the studies that use data for a sample of countries, Laeven (2003) has information for 13 countries, Guncavdi, Bleaney and McKay (1998) three countries, Nazmi (2005) five Latin American countries and Abiad, Oomes and Ueda (2004) four Asian countries and for Jordan, to give just a few examples.

The dataset we use enables us to look at financial liberalization as a process that evolves over time. Moreover, we are able to study the joint effect of financial liberalization policies in six different dimensions, rather than sticking to just one or a few of these dimensions. Additionally, the dataset allows us to investigate the relationship using a reasonable timespan, including information about liberalization over 24 years. Interestingly, this includes the 1970s, during which several countries experimented with financial liberalization.[7] Finally, the dataset includes information about 25 emerging market economies, which is considerably more than in several of the earlier studies.

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7 Unfortunately, it does not allow us to take into account the analysis of the effects of more recent liberalizations such as in Asia and Latin America during the late 1990s and early 2000s.

Table 2a
Financial liberalization measure of 13 Asian emerging market economies

Country	Period	Financial liberalization measure	Country	Period	Financial liberalization measure
Bangladesh	1974-77	0	Philippines	1974-77	3
	1978-81	0		1978-81	4.5
	1982-85	2		1982-85	7.5
	1986-89	2.25		1986-89	8.25
	1990-93	6		1990-93	9.5
	1994-96	7.33		1994-96	10.67
India	1974-77	0	Singapore	1974-77	15
	1978-81	0		1978-81	16
	1982-85	0		1982-85	16
	1986-89	0		1986-89	16
	1990-93	2.75		1990-93	16
	1994-96	6		1994-96	16
Indonesia	1974-77	1	Sri Lanka	1974-77	0.25
	1978-81	1		1978-81	6.5
	1982-85	3.25		1982-85	7
	1986-89	6.25		1986-89	7.25
	1990-93	9.25		1990-93	7.25
	1994-96	10.33		1994-96	9
Korea	1974-77	0	Thailand	1974-77	2
	1978-81	0.75		1978-81	3.5
	1982-85	6.75		1982-85	5
	1986-89	8.75		1986-89	6
	1990-93	9.5		1990-93	11.25
	1994-96	10		1994-96	13
Malaysia	1974-77	6	Turkey	1974-77	1
	1978-81	9.5		1978-81	3.5
	1982-85	9.75		1982-85	5.25
	1986-89	11.5		1986-89	9.25
	1990-93	13		1990-93	12
	1994-96	12		1994-96	12
Nepal	1974-77	0	Taiwan	1974-77	0
	1978-81	0		1978-81	0
	1982-85	0.75		1982-85	0
	1986-89	2.5		1986-89	1.5
	1990-93	4		1990-93	5
	1994-96	6		1994-96	6
Pakistan	1974-77	0.5			
	1978-81	0			
	1982-85	0			
	1986-89	0			
	1990-93	3.75			
	1994-96	9.33			

Source: Abiad and Mody (2005).

Table 2b
Financial liberalization measure of 7 Latin American and 5 African emerging market economies

Country	Period	Financial liberalization measure	Country	Period	Financial liberalization measure
Argentina	1974-77	2.75	Egypt	1974-77	1
	1978-81	11		1978-81	1
	1982-85	3		1982-85	1
	1986-89	5		1986-89	1
	1990-93	9		1990-93	7
	1994-96	12		1994-96	9.33
Brazil	1974-77	2	Ghana	1974-77	0
	1978-81	1.75		1978-81	0
	1982-85	2		1982-85	0
	1986-89	3.25		1986-89	2.25
	1990-93	5.75		1990-93	5
	1994-96	7		1994-96	7.67
Chile	1974-77	9.75	Morocco	1974-77	1
	1978-81	13.5		1978-81	1
	1982-85	13.25		1982-85	1
	1986-89	15		1986-89	1.25
	1990-93	15		1990-93	3.75
	1994-96	15		1994-96	9
Colombia	1974-77	3.25	South Africa	1974-77	6
	1978-81	3.5		1978-81	8
	1982-85	3		1982-85	12.25
	1986-89	3		1986-89	12
	1990-93	8.25		1990-93	13.75
	1994-96	9		1994-96	16
Mexico	1974-77	4	Zimbabwe	1974-77	2
	1978-81	4		1978-81	2
	1982-85	2		1982-85	2
	1986-89	4		1986-89	2
	1990-93	11.25		1990-93	5.25
	1994-96	12.33		1994-96	8
Peru	1974-77	0			
	1978-81	0			
	1982-85	0			
	1986-89	0			
	1990-93	7.25			
	1994-96	13			
Venezuela	1974-77	2			
	1978-81	2			
	1982-85	2			
	1986-89	2.5			
	1990-93	7			
	1994-96	4.67			

Source: Abiad and Mody (2005).

3.2 Methodology

In the empirical analysis we use data from 25 emerging markets. The original Abiad-Mody dataset also includes ten developed countries. For this paper we want to focus on the emerging market economies. The complete list of countries and scores on the financial liberalization indicator are presented in Tables 2a and 2b. The data for the indicator are four-year averages for the periods 1974-77, 1978-81, 1982-85, 1986-89, 1990-93 and 1994-96.[8] This means that the dataset we use consists of a panel of six four-year periods for a total of 25 countries.

As can be seen from both tables, most countries started to seriously liberalize their financial markets in the 1980s or 1990s. Only Argentina, Chile and, to a lesser extent, South Africa had made significant progress with respect to liberalizing financial markets in the 1970s. Singapore had almost fully liberalized financial markets during the whole period of investigation. These countries can be seen as the very early reformers. Of these countries, Argentina was forced to reverse liberalizations during most of the 1980s due to serious domestic financial problems.

Most of the other countries in the dataset, which includes all other Latin American and African countries, only started to implement serious liberalization policies in the 1990s. For countries such as India, Pakistan, Taiwan, Colombia, Venezuela, Egypt and Morocco, to name just a few, values of the financial liberalization measure of 6 or higher are reported only since the period 1990-93 or later. Seven Asian countries started implementing serious policies in the 1980s. Among them, Korea, Malaysia, The Philippines, and Sri Lanka were so-called early reformers, as their reforms were taking place during the first half of the decade. The other three (Indonesia, Thailand and Turkey) were later reformers, taking serious measures during the second half of the decade. The general picture emerging from these figures is that Asian countries were leading the financial liberalization wave, while in Latin America and Africa most countries lagged behind, except for a few very early reformers.

In the paper we estimate a set of equations to investigate the relationship between financial liberalization on the one hand and saving, investment and growth on the other hand. The econometric specification we use in this paper can be generally described as follows:

$$y_g = \alpha_j + \beta_j FINLIB_{jt} + \gamma_j X_{jt} + \varepsilon_{jt} \quad (1)$$

$$s_y = \alpha_j + \beta_j FINLIB_{jt} + \gamma_j X_{jt} + \varepsilon_{jt} \quad (2)$$

$$i_y = \alpha_j + \beta_j FINLIB_{jt} + \gamma_j X_{jt} + \varepsilon_{jt} \quad (3)$$

$$ipr_y = \alpha_j + \beta_j FINLIB_{jt} + \gamma_j X_{jt} + \varepsilon_{jt} \quad (4)$$

$$ipb_y = \alpha_j + \beta_j FINLIB_{jt} + \gamma_j X_{jt} + \varepsilon_{jt} \quad (5)$$

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8 Due to data limitations the last observation is based on a three-year period.

where y_g is the per capita growth rate, s_y is the domestic saving to GDP ratio, i_y is the total investment to GDP ratio, ipr_y is the private investment to GDP ratio, ipb_y is the public investment to GDP ratio, α_j is a country-specific constant, *FINLIB* is our measure of financial liberalization, and X is a vector of control variables. We include variables in this vector that are normally used in this type of cross-country panel studies. The variables used are specified in the notes to the tables, as well as in the data appendix. The subscripts j and t refer to a specific country and time period, respectively, and ε is an error term. All variables are four-year averages, using the same time-periods as mentioned above for the financial liberalization index. When estimating equations (1)-(5), we use fixed effects.

4 Regression results

We start the discussion of the results by reporting the association between financial liberalization and economic growth, since most other studies focus on this relationship. Table 3 provides the main results. The results support the view that financial liberalization is associated with higher economic growth. In all specifications presented, the financial liberalization measure is positively and highly significantly related to growth. The coefficient we find is between 0.20 and 0.29, which means that it does not differ much between the different specifications presented. The outcomes in Table 3 lead us to the conclusion that the relationship between financial liberalization and growth is positive and robust.

Of the usual control variables, the initial value of GDP (*LGDP*) and the inflation rate (*INFL*) are always statistically significant and have the expected negative sign. The secondary education variable (*SEC*) and the political instability variable (*ASSASS*) are not significant. Total investment to GDP (*TOTINV*) is positive and significant. Yet, if we break up total investment into private (*PRIVINV*) and public (*PUBINV*) investment, it turns out that private investment is always positive and strongly significant in all specifications. Finally, adding various measures of financial development shows that whereas measures of stock market development (*STOCKTURN* and *STOCKCAP*) are positive and significantly related to growth, measures of bank development (*CRED* and *LLY*) do not show any relation to growth.

Next, we turn to the relationship between financial liberalization, and saving and investment. Table 4 shows the results of the estimations. We have experimented with a number of different specifications of both the saving and investment equations. The table shows the most interesting outcomes.

Whereas the full specifications of the saving and investment models, i.e., including the control variables, are less satisfying than for the growth model, the results with respect to financial liberalization stand out clearly. We shortly discuss the main conclusions we draw from the results in the table.

First of all, the results in Table 4 indicate that financial liberalization is not associated with higher total investment. In the specifications presented in the table, but also in other specifications we have tried (not presented), the financial liberalization measure is positive, but it is never statistically significant.

Second, we separate total investment into private and public investment. While some papers have looked at the relationship between financial liberalization and investment (see, e.g., Nazmi 2005; Bekaert, Harvey and Lundblad 2005), we are not aware of any paper separating total investment into private and public investment. Our results suggest, however, that this separation does seem to be important in understanding how financial liberalization may affect growth. We find that financial liberalization is positively and significantly related to private investment. At the same time, we find a negative and statistically significant relationship between financial liberalization and public investment. This finding is consistent with the fact that financial liberalization is not associated with total investment. This indicates that financial liberalization stimulates private investment activities, whereas it is associated with reduced public investment activities.

Combined with the results presented in Table 3, it also suggests that this apparent substitution from one type of investment to the other due to liberalization leads to higher economic growth. In Table 3 we showed that private investment is positively and significantly related to growth, while public investment does not seem to have a relationship to growth. Thus, financial liberalization is associated with higher growth rates due to the fact that it changes the allocation of resources from public to private investment. The way we have estimated the model, this is a quantity rather than a quality effect of financial liberalization on growth. However, there is some evidence that there is also a quality effect of these liberalizations, given that in the growth regressions in Table 3 the financial liberalization measure remains significant, even though investment variables (which should pick up the quantity effect) are included in the growth equation.

Finally, the table shows the results of the saving equations we have estimated. It generally shows that the financial liberalization measure is not significant at the usual significance levels. The fact that we do not find a statistically significant relationship between saving and financial liberalization is in line with our result that total investment is not associated with financial liberalization either.

At the same time, however, we also note that the coefficients we find for the financial liberalization variable are negative and that especially in column [9] of Table 4 the coefficient is almost significant at the 10 per cent level. This result seems to suggest, albeit very weakly, that domestic saving is negatively associated with financial liberalization. This finding is not new, as Bandiera *et al.* (2000) already found some evidence for the fact that financial liberalization may be associated with falling saving. They explain their results by pointing out that the effect of interest rate liberalization on saving is ambiguous, since both income and substitution effects are involved and these both effects work in opposite directions when it comes to changing the saving rate. Moreover, financial liberalization may lead to increased access to consumer credit and/or mortgages to finance housing, which reduces saving (Jappelli and Pagano 1994).

Of course we realize that the analysis of the association between financial liberalization and the saving rate needs to be further elaborated. However, if saving is indeed reduced by financial liberalization, then this would indicate that such liberalizations stimulate capital inflows. Bandiera *et al.* (2000) and Bartolini and Drazen (1997) suggest that this type of liberalization might even bring back capital flight. These issues definitely deserve more attention in future research.

Table 3
Financial liberalization and GDP per capita growth

	[1]	[2]	[3]	[4]	[5]	[6]
Constant	35.971*** (4.08)	35.129*** (4.02)	38.154*** (3.60)	38.683*** (3.48)	28.368*** (2.71)	29.238*** (2.88)
FINLIB	0.283*** (3.55)	0.246*** (2.99)	0.199** (2.40)	0.210** (2.32)	0.215*** (3.07)	0.212*** (3.05)
LGDP	-5.069*** (-3.95)	-4.872*** (-3.81)	-5.175*** (-3.53)	-5.401*** (-3.48)	-4.004*** (-2.77)	-4.080*** (-2.81)
SEC	0.007 (0.23)	-0.002 (-0.08)				
INFL	-2.299*** (-3.61)	-2.323*** (-3.74)	-2.369*** (-3.68)	-1.960** (-2.52)	-2.363*** (-3.48)	-2.334*** (-3.44)
TOTINV	0.204*** (3.81)					
PRIVINV		0.257*** (4.06)	0.215*** (2.96)	0.238*** (2.93)	0.286*** (4.21)	0.267*** (4.04)
PUBINV		0.092 (1.00)	0.109 (1.03)	0.167 (1.42)	0.100 (1.24)	0.106 (1.32)
ASSASS	-0.081 (-0.54)					
STOCKTURN			2.997* (1.79)			
STOCKCAP				1.858* (1.74)		
CRED					-1.919 (-0.90)	
LLY						-1.643 (-0.63)
No. of observations	126	126	115	107	125	126
R^2	0.176	0.191	0.192	0.172	0.225	0.232

Note: All models presented in this table are estimated using fixed effects. All variables used in the analysis are four-year averages, except for the three-period 1994-96. The four-year periods in the model are: 1974-77, 1978-81, 1982-85, 1986-89, and 1990-93.

The dependent variable is GDP per capita growth. The independent variables are defined as follows:

FINLIB = the financial liberalization measure as discussed in the main body of the text;

LGDP = the value of GDP per capita at the beginning of the four (three) year period;

SEC = the secondary school enrolment rate;

INFL = the average annual inflation rate;

TOTINV = the total investment to GDP ratio;

PRIVINV = private investment to GDP ratio;

PUBINV = public investment to GDP ratio;

ASSASS = the number of assassinations per year;

STOCKTURN = the average annual value of the trade in stocks in the stockmarket as a percentage of GDP;

STOCKCAP = the average annual market value of the stocks listed in the stockmarket as a percentage of GDP;

CRED = value of the loans to the private sector disbursed by commercial banks as a percentage of GDP; and

LLY = value of M2 to GDP.

The figures between parentheses are t-test statistics. *, **, *** are significance levels of 10, 5 or 1 per cent, respectively. R^2 is the adjusted R^2.

Table 4
Financial liberalization, investment and savings

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Dependent	*TOTINV*	*TOTINV*	*PRIVINV*	*PRIVINV*	*PUBINV*	*PUBINV*	*SAVING*	*SAVING*
Constant	49.917 (0.50)	-3.745 (-0.06)	63.166 (1.02)	18.153 (0.36)	-11.622 (-0.27)	-18.456 (-0.43)	65.461 (1.01)	76.904 (1.25)
FINLIB	0.0996 (0.57)	0.168 (1.17)	0.302** (2.08)	0.358*** (3.02)	-0.205** (-2.02)	-0.196* (-1.94)	-0.138 (-0.89)	-0.240 (-1.59)
LGDP	12.263*** (5.98)	5.055** (2.53)	6.815*** (3.98)	0.525 (0.32)	5.385*** (4.50)	4.467*** (3.17)	12.10*** (6.83)	13.244*** (7.71)
SEC	-0.044 (-0.68)	-0.105* (-1.98)	0.038 (0.71)	-0.013 (-0.29)	-0.082** (-2.15)	-0.089** (-2.32)	0.077 (1.35)	0.091* (1.66)
INFL	-1.054 (-0.87)	-1.478 (-1.47)	-0.899 (-0.90)	-1.330 (-1.63)	-0.223 (-0.32)	-0.277 (-0.39)	0.559 (0.50)	1.928* (1.69)
LPOP	-6.918 (-1.63)	-1.203 (-0.33)	-5.991* (-1.69)	-1.107 (-0.37)	-0.997 (-0.40)	-0.270 (-0.39)	-8.100** (-2.15)	-9.374** (-2.60)
ASSASS	-0.069 (-0.25)	-0.176 (-0.76)			0.025 (0.15)	0.012 (0.07)	0.198 (0.76)	0.267 (1.07)
GOVC							-0.153 (-1.12)	-0.162 (-1.24)
SAVING		0.625*** (6.78)		0.540*** (7.12)		0.080 (1.23)		
GDPG								0.517*** (3.41)
No. of observations	126	126	126	126	126	126	132	132
R^2	0.035	0.423	0.050	0.546	0.023	0.047	0.200	0.214

Note: All models presented in this table are estimated using fixed effects. All variables used in the analysis are four-year averages, except for the three-period 1994-96. The four-year periods in the model are: 1974-77, 1978-81, 1982-85, 1986-89, and 1990-93.

The dependent variables are: total investment to GDP ratio, private investment to GDP ratio, public investment to GDP ratio and domestic saving to GDP ratio.

The independent variables are defined as follows:

FINLIB = the financial liberalization measure as discussed in the main body of the text;
LGDP = the value of GDP per capita at the beginning of the four (three) year period;
SEC = the secondary school enrolment rate;
INFL = the average annual inflation rate;
TOTINV = the total investment to GDP ratio;
PRIVINV = private investment to GDP ratio;
PUBINV = public investment to GDP ratio;
SAVING = the domestic saving to GDP ratio;
ASSASS = the number of assassinations per year;
LPOP = the log of the total population;
GOVC = the government consumption to GDP ratio;
GDPG = the GDP per capita growth rate.

The figures between parentheses are t-test statistics. *, **, *** are significance levels of 10, 5 or 1 per cent, respectively. R^2 is the adjusted R^2.

5 Conclusions

This paper has investigated the relationship between financial liberalization on the one hand and saving, investment and economic growth on the other hand. Whereas recently a number of papers have been published on the relationship between financial liberalization and growth, our paper adds to the existing empirical evidence in two ways.

First of all, we use a newly constructed dataset for measuring financial liberalization. This financial liberalization dataset improves on data used in earlier papers in a number of ways. Most importantly, the dataset we use enables us to look at financial liberalization as a process that evolves over time. Moreover, we are able to study the joint effect of financial liberalization policies in six different dimensions, rather than sticking to just one or a few of these dimensions, as most other papers have done. Additionally, the dataset allows us to investigate the relationship using a reasonable time span, including information about liberalization over 24 years. Finally, the dataset includes information about 25 emerging market economies, which is considerably more than in several of the earlier studies.

Second, the analysis in this paper explicitly considers the relationship between financial liberalization on the one hand and saving and investment on the other hand. This allows us to investigate whether the process of financial liberalization contributes to increased mobilization of resources for investment and whether this leads to increasing the quantity of investments made. As part of this analysis, we separate total investment into its private and public components. As far as we are aware, this separation has not been carried in earlier studies. Yet, our results suggest that this separation is indeed important in understanding how financial liberalization may be related to growth.

The results of the empirical analysis in the paper can be summarized as follows. First, we find no evidence that financial liberalization affects domestic saving and total investment. Yet, there are some signs to believe that liberalization may actually reduce rather than increase domestic saving. Second, financial liberalization is positively associated with private investment, as well as with per capita GDP growth. We find a negative relationship between financial liberalization and public investment. These results suggest that financial liberalization leads to a substitution from public to private investment, which may contribute to higher economic growth.

Combining the (admittedly weak) result that financial liberalization may reduce saving with the result on investment (no effect on total investment) may indicate that capital inflows from abroad are stimulated by financial liberalization. We have not studied this issue in this paper and this is certainly the way to go ahead in the future. We note, however, that evidence for this effect has been given in other papers, such as for instance in Bekaert, Harvey and Lundblad (2005) and Levine (2001).

Another issue we may address in future research is the efficiency effect of financial liberalization. Does it contribute to reallocating resources to more efficient investment projects by making the financial system more efficient in making allocation decision? Several papers have investigated this issue already by looking at changes in the efficiency of investment using individual firm data. An alternative way of investigating this issue is by looking at how the efficiency of the banking system changes due to liberalization, using individual bank data.

Yet another extension of the current research is to take into account the quality of the existing financial regulation. As was pointed out in section 2 of this paper, it has been argued by some authors that financial liberalization in combination with a weak regulatory structure may have strongly adverse effects on growth. Re-estimating growth, and saving and investment models, including measures of the quality of financial regulation, may be a fruitful way forward here.

A final extension of the research in this paper would be to increase the number of countries included in the dataset. As was already mentioned in the introduction to this paper, one region that has experienced major changes with respect to financial market policies in recent years is the Central and Eastern European region. The analysis in this paper, we believe, is especially relevant to them. Yet, comparable financial liberalization data for these countries are not available at the moment. Therefore, an interesting and important way to go beyond the analysis presented in this paper would be to create comparable data for countries in this region.

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Data sources

In the empirical analysis of this paper we have used the following data and data sources:

GDPG	=	GDP per capita growth;
FINLIB	=	the financial liberalization measure (discussed in the main text);
LGDP	=	the value of GDP per capita at the beginning of the four (three) year period;
SEC	=	the secondary school enrolment rate;
INFL	=	the average annual inflation rate;
TOTINV	=	the total investment to GDP ratio;
PRIVINV	=	private investment to GDP ratio;
PUBINV	=	public investment to GDP ratio;
ASSASS	=	the number of assassinations per year;
STOCKTURN	=	the average annual value of the trade in stocks at the stockmarket as a percentage of GDP;
STOCKCAP	=	the average annual market value of the stocks listed at the stockmarket as a percentage of GDP;
CRED	=	value of the loans to the private sector disbursed by the commercial banks as a percentage of GDP;
LLY	=	value of M2 to GDP;
SAVING	=	the domestic saving to GDP ratio;
LPOP	=	the log of the total population;
GOVC	=	the government consumption to GDP ratio.

Most of the data are taken from a dataset provided by David Roodman and available on the following website: www.cgdev.org/Publications/?PubID=36.

Exceptions are:

- *FINLIB*, which is taken from the dataset to the paper by Abiad and Mody (2005) except. Data can be downloaded from the website of the *American Economic Review.*
- *SEC*, *TOTINV*, *PRIVINV* and *PUBINV*, taken from a dataset provided by William Easterly and Mirwat Sewadeh (latest version of the Global Development Network Growth Database, available at the World Bank website on the following website: www.worldbank.org/research/growth/GDNdata.htm
- *LLY*, *CRED*, *STOCKTURN* and *STOCKCAP*, which are taken from a dataset provided by David Beck and Ross Levine and which is available on the Finance Research website of the World Bank; available at: http://econ.worldbank.org/wbsite/external/extdec/extresearch/extprograms/extfinrs/0,,contentMDK:20367320~menuPK:713352~pagePK:64168182~piPK:64168060~theSitePK:478060,00.html
- All variables have been transformed from annual data into four year averages for the periods: 1974-77, 1978-81, 1982-85, 1986-89, 1990-93 and 1994-96.