FDI and economic growth: the role of local financial markets

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Abstract

In this paper, we examine the various links among foreign direct investment (FDI), financial markets, and economic growth. We explore whether countries with better financial systems can exploit FDI more efficiently. Empirical analysis, using cross-country data between 1975 and 1995, shows that FDI alone plays an ambiguous role in contributing to economic growth. However, countries with well-developed financial markets gain significantly from FDI. The results are robust to different measures of financial market development, the inclusion of other determinants of economic growth, and consideration of endogeneity.
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1. Introduction

In a trade English capital is instantly at the disposal of persons capable of understanding the new opportunities and making good use of them. In countries where there is little

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Table 1
FDI facts

	Value (billion dollars)			Annual growth		
	1982	1990	2001	1986–1990	1991–1995	1996–2000
FDI inflows	59	203	735	24	20	40
FDI inward stock	734	1874	6846	16	9	18
Gross product foreign affiliates	594	1423	3495	19	7	13

Notes: The data are from UNCTAD (2002), World Investment Report. UNCTAD (2002) defines FDI as an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity in one economy in an enterprise resident in an economy other than that of the foreign direct investor. FDI inflows comprise capital provided by a foreign direct investor to an FDI enterprise. FDI stock is the value of the share of the foreign enterprise capital and reserves (including retained profits) attributable to the parent enterprise plus the net indebtedness of affiliates to the parent enterprise. A parent enterprise is defined as an enterprise that controls assets of other entities in countries other than its home country, usually by owning a certain equity capital stake (10% or more of the equity stake). A foreign affiliate is an incorporated or unincorporated enterprise in which an investor, who is resident in another economy, owns a stake that permits a lasting interest in the management of the enterprise (an equity stake of 10% for an incorporated enterprise or its equivalent for an unincorporated enterprise).

money to lend enterprising traders are long kept back, because they cannot at once borrow the capital, without which skill and knowledge are useless (Bagehot, 1873).

The past decade was marked by the increasing role of foreign direct investment (FDI) in total capital flows (see Table 1). In 1998, FDI accounted for more than half of all private capital flows to developing countries [1]. This change in the composition of capital flows has been synchronous with a shift in emphasis among policymakers in developing countries to attract more FDI, especially following the 1980s debt crisis and the recent turmoil in emerging economies. The rationale for increased efforts to attract more FDI stems from the belief that FDI has several positive effects which include productivity gains, technology transfers, the introduction of new processes, managerial skills, and know-how in the domestic market, employee training, international production networks, and access to markets [2].

If foreign firms introduce new products or processes to the domestic market, domestic firms may benefit from accelerated diffusion of new technology. In other situations, technology diffusion might occur from labor turnover as domestic employees move from foreign to domestic firms. These benefits, in addition to the direct capital financing it generates, suggest that FDI can play an important role in modernizing the national economy and promoting growth [3]. Based on these arguments, governments often have provided special incentives to foreign firms to set up companies in their country.

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[1] See World Development Report Bank (200a, b)

[2] See Caves (1996) for a review of the empirical and theoretical literature on multinational enterprises.

[3] See Grossman and Helpman (1991, 1995), Barro and Sala-i-Martin (1995, 1997) for the role of technology transfers and market integration in growth. In addition to the technology transfer literature, the positive role of FDI has appeared in the broader capital market integration and development literature. With particular reference to FDI within the international financial integration, Rowland and Tesar (2003) and Hull and Tesar (2003) specifically emphasize that multinationals can allow for greater risk diversification.

Yet, curiously, the empirical evidence of these benefits both at the firm level and at the national level remains ambiguous. For example, examining plant level data in Venezuela, Aitken and Harrison (1999) find that the net effect of FDI on productivity is quite small—FDI raises productivity within plants that receive the investment but lowers that of domestically owned plants—thus seriously putting in doubt the 'spillover' theory. At the macroeconomic level, growth regressions carried out by Borensztein et al. (1998) and Carkovic and Levine (2003) find little support that FDI has an exogenous positive effect on economic growth.

While it may seem natural to argue that FDI can convey greater knowledge spillovers, a country's capacity to take advantage of these externalities might be limited by local conditions. In an effort to further examine the effects of FDI on economic growth, our research takes its cue from the recent emphasis on the role of institutions in the growth literature. In particular, we emphasize the role of financial institutions and argue that the lack of development of local financial markets can limit the economy's ability to take advantage of potential FDI spillovers.

Schumpeter recognized the importance of well-developed financial intermediaries in enhancing technological innovation, capital accumulation, and economic growth almost a century ago. In a nutshell, the argument goes that well-functioning financial markets, by lowering costs of conducting transactions, ensure capital is allocated to the projects that yield the highest returns, and therefore, enhances growth rates. Well-known early protagonists of this view include Goldsmith (1969), McKinnon (1973) and Shaw (1973)[4].

Although most FDI by its very nature relies on capital from abroad, it is important to recognize that the spillovers for the host economy might crucially depend on the extent of the development of domestic financial markets. There are different ways in which financial markets matter. First, it is unlikely that spillovers are restricted to only costless improvements in the organization of the workforce. In particular, to take advantage of the new knowledge, local firms need to alter everyday activities and, more generally, reorganize their structure, buy new machines, and hire new managers and skilled labor. Although some local firms might be able to finance new requirements with internal financing, the greater the technological-knowledge gap between their current practices and new technologies, the greater the need for external finance. In most cases, external finance is restricted to domestic sources. Furthermore, the lack of financial markets also can constrain potential entrepreneurs. This is especially true when the arrival of an entirely new technology brings with it the potential to tap not just domestic markets but export markets. An excellent case in point is the emergence of the textile export industry in Bangladesh in the early 1980s, following the establishment of a textile plant by Daewoo in 1979. Of the 130 Bangladeshi workers who were trained in Korea to become familiar with the technology, 115 eventually left to set up their own garment export plants[5]. It is difficult to imagine that all these workers managed to finance factories with their own cash. Had loans not been forthcoming to

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[4] More recent examples include Boyd and Prescott (1986), Greenwood and Jovanovic (1990) and King and Levine (1993b). Also, Galor and Zeira (1993) show how credit market frictions can limit human capital accumulation and exacerbate income inequality.

[5] To put this in perspective, before Daewoo set up its joint venture, the size of the labor force in the garment industry in Bangladesh was only 40.

finance their enterprises and many more export industries that followed, it is unlikely that garment exports from Bangladesh would have increased from $55 000 in 1980 to $2 billion in two decades [6].

In addition, the potential of FDI to create backward linkages, in the absence of well-developed financial markets, is severely impeded. The importance of linkages that multinationals can create spawned a huge empirical literature following Albert Hirschman's (1958) seminal book on this topic [7]. Even though backward linkages may allow existing firms, which already produce inputs in the industry, to achieve economies of scale that may not have existed earlier, it also can encourage the creation of new firms.

An excellent example is the involvement of Suzuki in India. Suzuki entered into a joint venture with the Government of India in 1981 to manufacture small-sized affordable cars. Initially, all the car's parts were imported from Japan. Within 10 years, the plant had become the center of gravity of scores of ancillary parts manufacturers that did not exist earlier. Today, these suppliers provide 90% of a car's parts [8]. Without external financing, it is unlikely that these manufacturers would have emerged. In similar vein, following Intel's construction of a semiconductor assembly plant in Costa Rica in 1996, local software production in Costa Rica increased dramatically. Evidence indicates that the sector benefited from newly created training programs in higher education institutions that have become 'Intel Associates'. However, producers and potential entrepreneurs in the software sector continuously complain that lack of funds and/or the high cost of available financing hinder the growth of the sector and its ability to compete in the international arena [9].

The preceding arguments and anecdotes illustrate the significant role financial markets play in allowing spillovers and linkages associated with FDI to materialize. Furthermore, to the extent that significant FDI arrives through mergers and acquisitions, it is not just easy availability of loans but also well-functioning stock markets that matter. Well-functioning stock markets, by increasing the spectrum of sources of finance for entrepreneurs, play an important role in creating linkages between domestic and foreign investors. To summarize, one can conjecture that the extent of development of financial institutions may be a decisive factor in determining whether foreign firms operate in isolated enclaves with no links whatsoever with the domestic economy (beyond hiring labor). Or, whether they become the catalysts for technology transfers and other benefits that economists have long argued these firms should be.

Despite this rather obvious role for financial markets, the literature on FDI seems to have ignored its importance altogether. In fact, the role of not just financial markets but other factors, such as potential shortages of skills, knowledge, and infrastructure in the recipient countries, have been neglected in the development literature. Caves (1999) notes that the four volumes of *The Handbook of Development Economics* have nothing to say about the kind of constraints local firms might face to reap such spillovers. It is only recently that such issues have been addressed. For example, Borensztein et al. (1998),

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[6] See Easterly (2001) and Rhee and Belot (1990). Bangladesh, however, does not rank very well in terms of the financial market indicators that we use. At the same time, it is rather well known for micro-credit institutions.

[7] For a theoretical treatment on the ability of FDI to create linkages see Rodriguez-Clare (1996).

[8] See Parikh (1997), page 138.

[9] On Intel in Costa Rica, see Spar (1998), Hanson (2001) and Larrain et al. (2000). On the financing issues, see Perez (2000).

using a data set of FDI flows from industrialized countries to 69 developing countries show that, FDI allows for transferring technology and for higher growth. However, higher productivity is possible only when the host country has a minimum threshold stock of human capital. Likewise, Xu (2000), using data on US multinational enterprises (MNEs), finds that a country needs to reach a minimum human capital threshold in order to benefit from the technology transfer of US MNEs, and that most LDCs do not meet this threshold. The World Bank's (2001) edition of global development finance talks about the importance of 'absorptive capacities' and the success of FDI [10]. Absorptive capacities here include macroeconomic management (as captured by inflation and trade openness), infrastructure (telephone lines and paved roads), and human capital (share of labor force with secondary education and percentage of population with access to sanitation). Financial markets are not mentioned.

Although the empirical evidence on FDI and economic growth is ambiguous, the interaction between financial markets and growth itself has been studied extensively and has reached more positive conclusions—namely, that well-developed financial markets promote economic growth. The theoretical framework has been well established in the literature, with supporting evidence at the country level reported in the empirical studies such as those of King and Levine (1993a,b), Beck et al. (2000a,b) and Levine et al. (2000), suggesting that financial systems are important for productivity growth and development.

In an analysis of the roles of different types of financial institutions, Levine and Zervos (1998) show that stock markets and banks provide different services, but both stock market liquidity and banking development positively predict growth, capital accumulation, and productivity improvements. At the industry level, Rajan and Zingales (1998) find that the state of financial development reduces the cost of external finance to firms, thereby promoting growth. Combining industry and country level data, Wurgler (2000) shows that even if financial development does not lead to higher levels of investment, it seems to allocate the existing investment better and hence promotes economic growth.

Fig. 1, which shows data on FDI and financial development, provides motivation for our work. We use FDI as a share of GDP and a measure of financial development introduced by Beck et al. (2000a,b) for the period 1975–1995. As Fig. 1 suggests, there is a positive relationship between the two variables. However, it is also apparent that there is a wide variation in both variables given their interaction with one another. Indeed, if financial development plays an important role in influencing the effects of FDI on output, one can expect countries with the same levels of FDI to have very different outcomes in terms of income levels.

In this paper, we examine whether economies with better-developed financial markets are able to benefit more from FDI to promote their economic growth. To do this, we use a battery of financial market variables that exist in the literature and employ them in growth regressions to study the impact of the interaction of these variables with FDI on economic

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[10] The discussions demonstrate how some countries with low absorptive capacities, such as Morocco, Uruguay and Venezuela (the last based on Aitken and Harrison, 1999), failed to reap spillovers; whereas Malaysia and Taiwan fared well with higher absorptive capacities. See World Bank (2001), page 62.
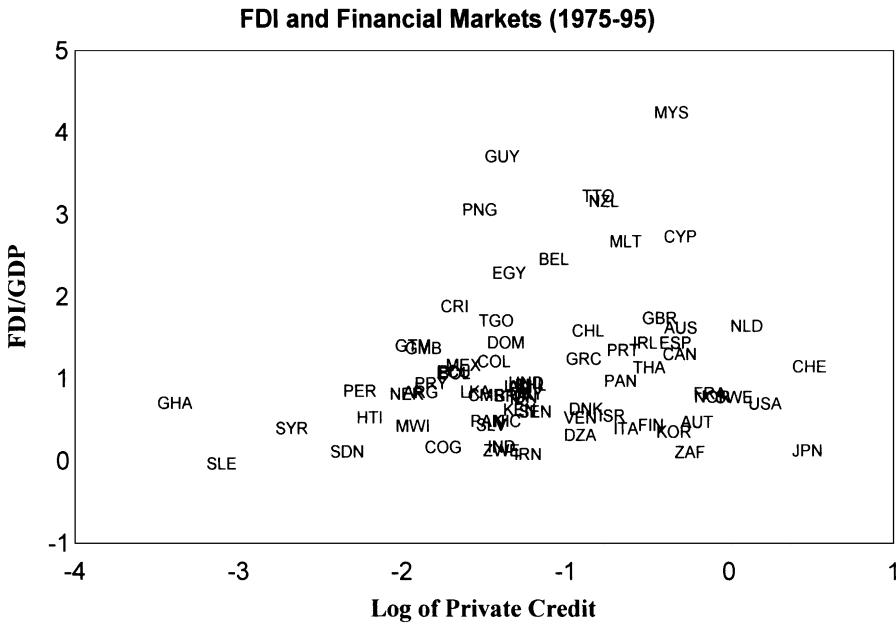
Fig. 1. Countries in this plot are the 71 countries for which all accompanying data are available and form the first sample in Table 2.

growth. We find that, although FDI alone plays an ambiguous role in contributing to economic growth, having well-developed financial markets alters the results significantly. This is consistent with the results of Carkovic and Levine (2003) and Hermes and Lensink (2000). Countries with well-developed financial markets seem to gain significantly more from FDI. We find that this result holds true even after controlling for a large number of other variables that have significant influences on economic growth and also after addressing concerns regarding endogeneity.

The rest of the paper is organized as follows: data are defined in Section 2; empirical results are discussed in Section 3; and Section 4 concludes.

2. Data

This section describes the data used in the empirical analysis, specifically the measures of FDI, financial market development, economic growth, and a number of controlling variables used in growth regressions.

There are several sources for data on FDI. An important source is the International Monetary Fund (2000) publication "International Financial Statistics" (IFS), which reports the Balance of Payments statistics on FDI. Net FDI inflows, reported in the IFS, measure the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the

investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Gross FDI figures reflect the sum of the absolute value of inflows and outflows accounted in the balance of payments financial accounts. Our model focuses on the inflows to the economy; therefore, we prefer using the net inflow measure [11].

It is very difficult to construct accurate and comparable measures of financial services data for a broad cross-section of countries over several decades. King and Levine (1993a), Levine and Zervos (1998) and Levine et al. (2000) have constructed several financial market series, spanning from the stock market to the volume of lending in an economy. These variables can be classified into two broad categories: those relating to the banking sector (or loosely, credit markets) and those relating to the stock market (or equity markets). For the first set, we draw on variables introduced by Levine et al. (2000), which in turn builds on King and Levine (1993a). The data associated with the former are available from the World Bank Financial Structure Database [12]. Four variables are included in our work. First, liquid liabilities of the financial system (henceforth, LLY): equals currency plus demand and interest-bearing liabilities of banks and non-financial intermediaries divided by GDP. It is the broadest measure of financial intermediation and includes three types of financial institutions: the central bank, deposit money banks, and other financial institutions. Hence, LLY provides a measure for the overall size of the financial sector without distinguishing between different financial institutions. Second, commercial-central bank assets (henceforth, BTOT): equals the ratio of commercial bank assets divided by commercial bank plus central bank assets. BTOT measures the degree to which commercial banks versus the central bank allocate society's savings. King and Levine (1993a) and Levine et al. (2000), as well as others, have used this measure, which provides a relative size indicator, i.e. the importance of the different financial institutions and sectors relative to each other. Third, private sector credit (henceforth, PRIVCR): equals the value of credits by financial intermediaries to the private sector divided by GDP. The two previous measures do not differentiate between the end users of the claims of financial intermediaries, i.e. whether the claims are in the public or the private sector. This measure, and the one that follows, focus solely on the claims on the private sector. Fourth, bank credit (henceforth, BANKCR): equals the credit by deposit money banks to the private sector as a share of GDP (it does not include non-BANKCR to the private sector and, therefore, may be less comprehensive than PRIVCR for some countries). The number of countries for which we have these financial market variables and FDI shares is 71 [13].

The stock market data consist of variables introduced in Levine and Zervos (1998). Stock market liquidity is measured as the value of stock trading relative to the size of the economy, labeled as 'value traded' (henceforth, SVALT). In order to capture the relative

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[11] A limitation of this definition is that it may overestimate the amount of 'new capital' in the economy, since it might simply involve a multinational enterprise buying out a local manufacturer. Carkovic and Levine (2003) use gross FDI flows instead. However, it is not clear to us that outward foreign investment should generate technological spillovers within the source economy.

[12] The URL for the database is http://www.worldbank.org/research/projects/finstructure/database.htm. We are grateful to the referee for directing us to this website.

[13] In keeping with the literature, we use the logarithm of the financial sector variables.

size of the stock market, we use the average value of listed domestic shares on domestic exchanges in a year as a share of the size of the economy (the GDP). This series is labeled 'capitalization' (henceforth, SCAPT). The stock market data series are also available from the World Bank Financial Structure Database. The restrictiveness of the availability of stock market measures, accompanied by those of FDI data, limits the sample size to approximately 50 and also the length of the period to 1980–1995. The countries included in the various regressions are listed in Appendix A [14].

Growth rate of output is measured as the growth of real per capita GDP in constant dollars, and the data are obtained from World Development Indicators (WDI) (World Bank, 2000a,b). Gross domestic investment data come from World Bank (2000a,b), which consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Inflation, measured as the percentage change in the GDP deflator, is used as a proxy for macroeconomic stability. The data are from World Bank (2000a,b). The institutional stability and quality in the economies are proxied by using data from the International Country Risk Guide (ICRG), a monthly publication of Political Risk Services that reports data on the risk of expropriation, level of corruption, the rule of law, and the bureaucratic quality in an economy. A detailed description of all the data is included in Appendix A.

To capture openness to international trade, we use the ratio of the sum of exports plus imports to total output (GDP). Human capital is measured as the 'average years of secondary schooling', obtained from Barro and Lee (1996) series [15]. The government consumption data come from the World Bank (2000a,b) and is the ratio of central government expenditures to GDP. Finally, the population growth data are also obtained from World Bank (2000a,b).

3. Empirical analysis

The first data set, relating to the 'credit market indicators' includes 20 OECD countries and 51 non-OECD countries. The second data set, concentrating on 'equity market indicators' consists of 20 OECD countries and 29 non-OECD countries [16].

Table 2 presents descriptive statistics for investment, growth, and financial development data. There is considerable variation in the share of FDI in GDP across countries, ranging from −0.15% in Sierra Leone (1975–1995) to 10% in Singapore (1980–1995). GDP growth also shows variation, ranging from −4% for Guyana to 7% for Korea (both for 1975–1995). The financial development variables also range extensively; capitalization of the stock market ranges from 1% for Uruguay to 126% for South Africa; SVALT ranges from close to 0% for Uruguay to 130% for Switzerland. Finally, the liquidity

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[14] For value traded, we have data on 53 countries; for Capitalization we have data on 49 countries. The four countries for which we do not have data for the latter variable are Costa Rica, Ireland, Honduras and Panama.

[15] We used the updated data available at http://www.cid.harvard.edu/ciddata/ciddata.html.

[16] Here OECD countries refer to those that were 'early' members and therefore exclude newer members, such as Mexico and Korea among others. For value traded, we also have Ireland in the sample, increasing the number of OECD countries to 21.

Table 2
Descriptive statistics

	Mean	Standard deviation	Minimum	Maximum
Sample 1: 71 Countries (1975–1995)				
Growth	0.01	0.02	− 0.04	0.07
FDI/GDP	0.01	0.008	− 0.001	0.041
Investment/GDP	0.23	0.06	0.11	0.41
PRIVCR	0.44	0.34	0.03	1.64
BANKCR	0.33	0.24	0.03	1.37
BTOT	0.77	0.19	0.27	0.99
LLY	0.48	0.28	0.16	1.61
Sample 2: 49 countries (1980–1995)				
Growth	0.02	0.02	− 0.02	0.07
FDI/GDP	0.012	0.015	0.00	0.10
Investment/GDP	0.23	0.05	0.12	0.39
SVALT	0.11	0.21	0.00	1.30
SCAPT	0.27	0.30	0.01	1.26

measures (M2/GDP) ranges from 16% for Argentina to 161% for Japan. The PRIVCR variable ranges from 3% for Ghana to 164% for Switzerland. Ghana and Switzerland also form the two ends of the spectrum for the BANKCR variable. Ghana also has the lowest value for the share of BTOTs; Austria records the highest.

3.1. Growth and FDI: financial markets as a channel

The purpose of our empirical analysis is to examine the financial markets channel through which FDI may be beneficial for growth. In an influential paper, Mankiw et al. (1992) (MRW) derive an empirical specification based on the assumption that countries are unlikely to be at their steady states and, therefore, transitional dynamics should be more important. We employ a specification similar to theirs [17]. As a starting exercise, we look at the direct effect of FDI on economic growth and estimate the following equation by OLS:

$$\text{GROWTH}_i = \beta_0 + \beta_1 \log(\text{INITIAL GDP}_i) + \beta_2 \text{FDI}_i + \beta_3 \text{CONTROLS}_i + v_i \quad (1)$$

Table 3 presents results based on regressions for the two samples that we have (the larger sample of 71 countries for which we have data on all four credit market variables and the smaller sample of 49 countries for which we have data on both equity market variables). Columns (1) and (3) show results for a selection of control variables that include initial income, human capital, population growth, government consumption, and a sub-Saharan Africa dummy variable. For the sample of 71 countries, it is clear that FDI is not significant at all, whereas in the smaller sample it clearly is. The results could be

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[17] Further, to ensure comparability, we include a number of controls that are present in Beck et al. (2000a,b) and Levine et al. (2000); Carkovic and Levine (2003).

Table 3
Growth and FDI. Dependent variable—average annual per capita growth rate

	(1)	(2)	(3)	(4)
Period	1975–1995	1975–1995	1980–1995	1980–1995
Observations	71	71	49	49
log (initial GDP)	− 0.009	− 0.011	− 0.007	− 0.016
	(− 2.55)	(− 3.87)	(− 2.80)	(− 3.51)
FDI/GDP	0.16	− 0.076	0.347	0.063
	(0.48)	(− 0.25)	(2.31)	(0.27)
Schooling	0.014	0.011	− 0.006	0.0001
	(3.23)	(2.62)	(− 1.41)	(0.02)
Population growth	− 0.805	− 0.192	− 0.948	− 0.265
	(− 2.51)	(− 0.61)	(− 3.59)	(− 0.91)
Government consumption	0.0001	− 0.0003	0.008	− 0.003
	(0.02)	(− 0.07)	(0.98)	(− 0.35)
Sub-Saharan Africa dummy	− 0.007	− 0.017	− 0.021	− 0.021
	(− 1.15)	(− 2.63)	(− 4.78)	(− 3.80)
Institutional quality	–	0.005	–	0.011
		(2.62)		(2.82)
Black market premium	–	− 0.006	–	0.007
		(− 1.68)		(2.00)
Inflation	–	− 0.018	–	− 0.003
		(− 1.86)		(− 0.25)
Trade volume	–	0.000005	–	0.008
		(0.000)		(1.25)
R^2	0.37	0.59	0.34	0.60

Notes: All regressions have a constant term. *t*-values are in parentheses. The first two columns refer to the sample of countries for which we have data on bank credit (BANKCR), commercial bank assets as a ratio of total bank assets (BTOT), private sector credit (PRIVCR), and liquid liabilities (LLY). The second two columns refer to the sample of countries for which we have data on stock market capitalization (SCAPT) and stock market value traded (SVALT). The schooling variable is the log of (1 + average years of secondary schooling) for the period of the regression. Population growth is the average growth rate for the period. Government consumption is log(average share of government spending/GDP) over the period. Institutional quality is measured by the average risk of expropriations. The black market premium is log (1 + average BMP) and inflation is log (1 + average inflation rate) for the period. Trade volume is log (average of exports + imports as a share of GDP) for the period.

driven by the composition of the two samples; approximately 28% of the first sample (column (1)) and 41% of the second sample (column (3)) consist of developed countries.

In columns (2) and (4), we have an expanded set of control variables that include the black market premium, institutional quality (captured by the ICRG measure called 'risk of expropriation'), rate of inflation, and trade volume. The FDI share no longer is significant in either of the samples. This nicely summarizes the problem that exists in the literature: whereas on theoretical grounds there is a strong basis for expecting FDI to have a positive role in growth, the empirical evidence is fragile, to say the least[18]. This ambiguous effect of FDI is what forms part of the motivation for this research.

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[18] We repeated these regressions by adding the financial market variables as well. Although these variables were significant and positive, they did not alter the insignificance of FDI.

The regressions in Table 4 examine the role of FDI on growth through financial markets. We interact FDI with financial markets and use this as a regressor to test for the significance of financial markets in enhancing the positive externalities associated with FDI flows. To ensure that the interaction term does not proxy for FDI or the level of development of financial markets, both of the latter variables were included in the regression independently. Thus, we run the following regression:

$$\text{GROWTH}_i = \beta_0' + \beta_1'\text{FDI}_i + \beta_2'(\text{FDI}_i \times \text{FINANCE}_i) + \beta_3'\text{FINANCE}_i$$
$$+ \beta_4'\text{CONTROLS}_i + v_i \tag{2}$$

As shown in Table 4, the interaction term turns out to be positive and significant in all columns. Each regression uses a different indicator for financial market development and hence, samples may differ from one regression to another. Column (1) uses BTOT, column (2) uses BANKCR, column (3) uses LLY, column (4) uses PRIVCR, column (5) uses SCAPT and column (6) uses SVALT[19]. The main result is that the interaction term is significant at the 10% level for the entire range of financial sector variables used. Moreover, the interactions with LLY, PRIVCR and BANKCR are significant at the 1% level. On the other hand, financial market indicators by themselves are insignificant and even negative for the non-stock market variables[20]. This may in part be due to the interaction term capturing an important allocation function that the financial sector performs—having a well-developed financial sector is a means to an end and not an end in itself. Interestingly, the coefficient of FDI displays considerable variation even within the same sample of countries as the financial sector variable changes—clearly making the case for looking at the range of financial sector variables rather than a few. Table 4 also reports (a) the joint significance test of financial markets with the interaction term and (b) the joint significance test of FDI with the interaction term. For most financial market variables, the tests confirm the importance of both financial markets and FDI. The hypothesis that the coefficients of both FDI and the interaction between FDI and financial markets are zero cannot be rejected outright at the 10% level only in the case of BTOT and SVALT. Not surprisingly the coefficients of the interaction terms in these two regressions also report the lowest *t*-statistics compared with the counterparts in the other columns. The hypothesis that the coefficients of both financial markets and the interaction between FDI and financial markets are zero is rejected in all regressions.

To get an estimate of how important the financial sector has been in enhancing the growth effects of FDI, one can ask the hypothetical question of how much a one standard deviation increase in the financial development variable would enhance the growth rate of a country receiving the mean level of FDI in the sample[21]. If we use the PRIVCR variable (i.e. column (4)), it turns out that having better financial markets would have allowed countries to

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[19] See the data section for detailed definitions.

[20] The literature that tests the effects of financial development on growth has not considered FDI and its interaction term with financial markets, thus limiting comparisons.

[21] The mean value for FDI is 1.003% in the 71-country sample. Note that the financial development variable here is the log of the financial market indicator.

Table 4
Growth and FDI: the role of financial markets. Dependent variable—average annual real per capita growth rate

	(1) BTOT	(2) BANKCR	(3) LLY	(4) PRIVCR	(5) SCAPT	(6) SVALT
Period	1975–1995	1975–1995	1975–1995	1975–1995	1980–1995	1980–1995
Observations	71	71	71	71	49	53
log (initial GDP)	−0.013	−0.012	−0.01	−0.012	−0.017	−0.017
	(−4.00)	(−3.81)	(−3.18)	(−3.76)	(−3.60)	(−4.22)
FDI/GDP	0.154	0.917	0.504	0.588	0.121	0.341
	(0.45)	(2.01)	(1.67)	(1.56)	(0.68)	(1.83)
(FDI/GDP) × financial markets	0.899	0.893	1.169	0.777	0.335	0.169
	(1.91)	(2.85)	(3.08)	(2.68)	(2.61)	(1.89)
Financial markets	−0.0003	−0.004	−0.004	−0.002	0.00007	0.0005
	(−0.00)	(−1.00)	(−0.77)	(−0.55)	(0.03)	(0.26)
Schooling	0.012	0.014	0.008	0.009	0.008	0.002
	(2.85)	(2.49)	(1.92)	(2.15)	(0.15)	(0.51)
Population growth	−0.361	−0.149	0.078	−0.146	−0.561	−0.581
	(−1.24)	(−0.57)	(0.29)	(−0.56)	(−1.70)	(−1.80)
Government consumption	0.002	0.001	−0.002	0.001	−0.001	0.0004
	(0.48)	(0.27)	(−0.37)	(0.22)	(−0.15)	(0.06)
Sub-Saharan Africa dummy	−0.016	−0.02	−0.021	−0.02	−0.025	−0.023
	(−2.42)	(−3.14)	(−3.25)	(−3.08)	(−5.08)	(−4.83)
Institutional quality	0.004	0.004	0.005	0.004	0.008	0.009
	(2.32)	(2.44)	(2.92)	(2.45)	(2.32)	(2.64)
Black market premium	−0.005	−0.007	−0.009	−0.008	0.006	0.008
	(−0.88)	(−1.80)	(−2.24)	(−1.72)	(2.15)	(2.81)
Inflation	−0.016	−0.014	−0.011	−0.013	−0.003	−0.003
	(−1.54)	(−1.36)	(−1.11)	(−1.15)	(−0.33)	(−0.39)
Trade volume	0.0002	0.006	−0.0002	0.001	0.008	0.085
	(0.06)	(0.12)	(−0.06)	(0.20)	(1.27)	(1.56)
R^2	0.62	0.64	0.66	0.64	0.67	0.68
F-statistic for financial markets (Prob>F)	2.35	4.31	6.31	3.94	3.67	3.17
	(0.10)	(0.018)	(0.003)	(0.024)	(0.035)	(0.052)
F-statistic for FDI (Prob>F)	2.29	4.37	4.82	3.88	4.08	2.32
	(0.11)	(0.017)	(0.011)	(0.026)	(0.025)	(0.11)

Notes: All regressions have a constant term. Heteroscedastic consistent t-values are in parentheses. The financial market variable changes with each column. The financial market variables are all logarithms of the actual values. See notes to Table 3 for the definitions of remaining variables. The F-statistics test the joint significance of coefficients. The F-statistic for financial markets tests the null hypothesis that the coefficient for financial markets and the interaction terms are jointly zero. The F-statistic for FDI tests that the coefficient for FDI and the interaction term are jointly zero. The numbers in parentheses below the test statistics indicate the P-values.

experience an annual growth rate increase of 0.60% points during the 20-year-period, where the net effect being measured is $(\beta_2 \times \text{meanFDI}_i \times \sigma_{\log(\text{PRIVCR})}) + \beta_3 \sigma_{\log(\text{PRIVCR})}$[22].

An alternative way to see how countries performed is to simply use the estimated coefficients for the sample of countries and calculate the net effect of FDI on growth for each country. It turns out that most countries actually had a negative effect from FDI. The net effect of FDI on growth is equal to $\beta_1 \times \text{FDI}_i + (\beta_2 \times \text{FDI}_i \times \log(\text{FINANCE}_i))$[23]. Table 5a lists the distribution of the sample in terms of number of countries that benefited and number of countries that actually experienced negative growth because of FDI. As can be observed, there is considerable variation depending on which financial market variable we look at. The stock market variables are particularly disturbing since they suggest that most countries experienced a negative effect due to FDI. Of course this might partly be due to the fact that most countries' stock markets are even less developed compared with banks and thereby exaggerating the problem. However, irrespective of which financial market variable we use, there remains the concern that an unusually large number of countries seem to experience negative effects. One explanation could be that we have forced a linear relationship on what is essentially a non-linear interaction between FDI and financial markets[24]. Other than this problem, the results confirm our conjecture that insufficiently developed financial institutions can choke the positive effects of FDI.

Table 5b reports the results of the significance tests of linear combinations of coefficients at different levels of financial development. The null hypothesis is that $\beta_1 + (\beta_2 \times \text{FINANCE}) = 0$ at different levels of 'FINANCE'. Therefore, here we report the significance of FDI for different values of the financial market variables. As a crude guide, we present the results at the minimum, mean and maximum values for each of the six financial market variables. As expected, at the lowest levels of financial development, FDI registers strong negative effects. This reconfirms the results of Table 5a. From Table 5b, it is also apparent that even countries with levels of financial development equal to the sample average did not derive significant positive effects from FDI. In fact, though not significant, the effect of FDI at the average level of financial development also remains negative for most of the variables. It is only at the maximum level of financial development that the effects of FDI seem to be positive and significant. However, here too the effects are not strong for at least two financial market variables: BTOT and SCAPT. The results for BTOT are in keeping with the failure of the F-test for joint significance of variables involving FDI in Table 4. The findings for SCAPT reinforce the results for the same variable in Table 5a.

The strong positive correlation between the domestic investment ratio and the growth rate of an economy is one of the few consistent results to have emerged from the multitude of cross-country growth regressions that have appeared in the past decade. One could

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[22] Here mean FDI is 1.003% as mentioned in the earlier footnote. The standard deviation of log (PRIVCR) is equal to 0.78.

[23] Again, note that the financial market variable is a logarithm of the actual indicator and hence is negative for any country with a value less than 1 (i.e. less than 100% of GDP). Therefore, even if the estimated coefficients are positive, the net effect may still be negative if log(FINANCE$_i$) is sufficiently negative.

[24] Borensztein et al. (1998) suggest a similar possibility for the interaction with human capital. Such non-linearities seem to provide support to theories of 'poverty traps' (see Galor, 1996).

Table 5

	(1) BTOT	(2) BANKCR	(3) LLY	(4) PRIVCR	(5) SCAPT	(6) SVALT
(a) Net effects of FDI						
Period	1975–1995	1975–1995	1975–1995	1975–1995	1980–1995	1980–1995
Observations	71	71	71	71	49	53
Number of countries that had a net positive effect	34	29	19	27	5	13
Number of countries that had a net negative effect	37	42	52	44	44	40
Maximum	0.6% Malaysia	1.4% Malaysia	2.1% Malta	1.3% Malaysia	1.9% Singapore	2.0% Singapore
Minimum	− 4.0% Guyana	− 2.1% Guyana	− 2.4% Papua New Guinea	− 1.7% Papua New Guinea	− 2.0% Egypt	− 1.5% Costa Rica
(b) Significance of FDI at different levels of financial development						
Period	1975–1995	1975–1995	1975–1995	1975–1995	1980–1995	1980–1995
Observations	71	71	71	71	49	53
Minimum	− 2.12	1.35	− 2.98	− 2.78	− 2.23	− 1.55
Mean	− 0.43	1.65	− 1.99	− 1.11	− 1.54	− 0.86
Maximum	0.43	1.96	2.41	1.97	1.14	1.94

Note: See notes to Table 3 for the definitions of variables. The columns report the *t*-statistics for the Null Hypothesis that $\beta_1+(\beta_2 \times Finance=0)$ at different values (minimum, mean and maximum) for each financial market variable where β_1 and β_2 are the coefficients of FDI and the interaction term, respectively.

argue that the reason FDI appears significant in the above analysis is because the domestic investment ratio was not controlled for. Therefore, for further robustness checks, we add domestic investment to the list of independent variables, and the results are reported in Table 6. Including domestic investment leads to a couple of interesting results. First, the significance of the interaction term increases, particularly for BANKCR, BTOT, PRIVCR and LLY. Only for stock market capitalization does the coefficient become less significant. Second, the *t*-ratio of the FDI term also increases across all the columns, though still not always significant. This suggests that FDI may have positive effects over and above its direct role in capital accumulation. In particular, the so-called 'positive externality' effect may be what is reflected here, though one would need more convincing results to come to a firm conclusion. As expected, domestic investment enters significantly in all the regressions [25]. A final issue of robustness concerns the interaction between FDI and human capital since this was shown to have a significant positive effect on economic growth in earlier research [26]. Column (7) reports the results for this regression. While FDI and schooling both register significant effects, the interaction between the two does not. To the contrary of previous findings, the interaction term is negative. However, we are using a different human capital variable for a slightly different time period and, therefore, our result may not be completely comparable with previous findings. The interaction between FDI and financial markets (PRIVCR) remains robust.

3.2. Endogeneity issues

So far there has been no discussion of the endogeneity problem. Theoretically it is plausible, and also very likely, that both the magnitude of FDI and the efficiency of financial markets increase with higher growth rates. This would lead to an overstatement of the effects of each of the two variables and their interaction on growth, since we use the average values of these variables to estimate the coefficients in Table 4. Thus, we need to construct instruments for both. For financial markets, we use variables that are not subject to reverse causality, such as origins of a country's legal systems and creditor rights. La Porta et al. (1998) examine the laws governing investor protection, the enforcement of these laws, and the extent of concentration of ownership of shares in firms across countries (more popularly known as LLSV variables). They find that countries with different legal histories offer different types of legal protection to their investors. Most countries' legal rules, either through colonialism, conquest, or outright borrowing, can be traced to one of four distinct European legal systems: English common-law, French civil law, German civil law, and Scandinavian civil law. They show that countries whose legal rules originate in the common law tradition offer the greatest protection to investors. As far as law

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[25] In initial stages of our research, we found that the introduction of domestic investment made FDI insignificant. We further found that this could be explained by the fact that both types of investment were highly correlated, and FDI seemed to be a significant determinant of domestic investment. However, with the current expanded sample, as noted above, we find that FDI can have significant positive effects on growth even when controlling for domestic investment. Furthermore, there is little evidence that the two types of investment are correlated any longer.

[26] See Borensztein et al. (1998) and Xu (2000).

Table 6
Growth and FDI—robustness: domestic investment and human capital. Dependent variable—average annual per capita growth rate

	(1) BTOT	(2) BANKCR	(3) LLY	(4) PRIVCR	(5) SCAPT	(6) SVALT	(7) Schooling and PRIVCR
Observations	71	71	71	71	49	53	71
log (initial GDP)	− 0.011	− 0.01	− 0.009	− 0.01	− 0.017	− 0.017	− 0.01
	(− 4.15)	(− 3.55)	(− 3.10)	(− 3.42)	(− 4.36)	(− 4.87)	(− 3.40)
Investment/GDP	0.119	0.096	0.069	0.096	0.143	0.128	0.99
	(4.18)	(3.35)	(1.86)	(3.32)	(3.17)	(3.11)	(3.54)
FDI/GDP	0.311	1.066	0.501	0.672	0.194	0.352	1.59
	(1.13)	(2.70)	(1.67)	(2.04)	(1.26)	(2.11)	(2.28)
(FDI/GDP) × financial markets	1.684	1.059	1.158	0.912	0.241	0.161	1.167
	(3.74)	(3.49)	(3.22)	(3.19)	(1.86)	(1.94)	(3.75)
Financial markets	− 0.013	− 0.007	− 0.007	− 0.007	− 0.001	− 0.0009	− 0.009
	(− 1.24)	(− 1.96)	(− 1.55)	(− 1.72)	(− 0.51)	(− 0.52)	(− 2.24)
(FDI/GDP) × schooling	–	–	–	–	–	–	− 0.429
							(− 1.31)
Schooling	0.01	0.007	0.006	0.007	0.008	0.008	0.012
	(2.40)	(1.95)	(1.69)	(1.71)	(1.22)	(1.43)	(1.93)
Population growth	− 0.454	− 0.262	− 0.045	− 0.237	− 0.673	− 0.681	− 0.304
	(− 1.71)	(− 0.98)	(− 0.14)	(− 0.87)	(− 2.06)	(− 2.23)	(− 1.16)
Government consumption	0.002	0.0002	− 0.002	0.0002	0.004	0.004	− 0.0006
	(0.47)	(0.04)	(− 0.46)	(0.04)	(0.59)	(0.58)	(− 0.11)
Sub-Saharan Africa dummy	− 0.014	− 0.018	− 0.019	− 0.018	− 0.019	− 0.020	− 0.015
	(− 2.04)	(− 2.81)	(− 2.94)	(− 2.80)	(− 2.82)	(− 3.57)	(− 2.27)
Institutional quality	0.004	0.004	0.005	0.005	0.008	0.008	0.004
	(2.49)	(2.65)	(3.07)	(2.73)	(2.61)	(2.89)	(2.64)
Black market premium	− 0.007	− 0.008	− 0.009	− 0.009	0.012	0.012	− 0.008
	(− 2.08)	(− 2.63)	(− 2.24)	(− 2.65)	(2.73)	(3.33)	(− 2.39)
Inflation	− 0.009	− 0.011	− 0.012	− 0.011	− 0.003	− 0.003	− 0.014
	(− 1.30)	(− 1.37)	(− 1.45)	(− 1.33)	(− 0.29)	(− 0.37)	(− 1.60)
Trade volume	− 0.0007	− 0.0007	− 0.001	− 0.0006	0.002	0.004	− 0.001
	(− 0.17)	(− 0.15)	(− 0.31)	(− 0.13)	(0.46)	(0.089)	(− 0.35)
R^2	0.70	0.70	0.68	0.69	0.75	0.75	0.70

Notes: All regressions have a constant term. t-values are in parentheses. See notes to Table 3 for definitions of the variables.

enforcement is concerned, German civil law and Scandinavian civil law countries emerge superior. The French civil law countries offer both the weakest legal protection, and the worst enforcement. These legal origin variables have been increasingly adopted as exogenous determinants of institutional quality in the economic growth literature. In particular, given their usefulness in predicting various indicators of investor rights and protection, they have been used as instrumental variables for financial market development in La Porta et al. (1997), Beck et al. (2000a,b) and Levine et al. (2000).

In addition to using the legal origin variables, we also use a measure of creditor rights (a LLSV variable) as instrument for financial development. We will focus primarily on the legal origin variables for two reasons: first, compared with creditor rights, these are less controversial in terms of exogeneity—they are functions of colonization and occupation usually before the second half of the 20th century. Second, as noted by La Porta et al. (1997), the chain of links begins with legal origins, which, in turn influence the shareholder and creditor rights, providing a basis for financial development. Shareholder rights, creditor rights, and enforcement of legal–political rights variables also have been used to instrument capital market integration in Kalemli-Ozcan et al. (2003). They provide strong empirical evidence for an important mechanism through which a developed and reliable financial system, backed by a legal environment that protects investor rights, enhances specialization in industrial production. Hence, in addition to the legal origin variables, their study provides a basis for additional instruments for financial development such as creditor rights.

Table 7 reports the results of the IV regressions using legal origin variables and creditor rights as instruments for some of the financial sector variables. In columns (1)–(3), the financial sector variables PRIVCR, BANKCR and SCAPT are instrumented by the English and Scandinavian legal origin dummy variables. In column (4), the French legal origin variable is added to the list of instruments for SCAPT. In column (5), the creditor rights variable also is added to the list of instruments (note that it significantly reduces the sample size). All columns show that the interaction term is still positive and significant and results are very similar to the OLS results in column (1). All of the columns also report the test statistic for no overidentifying restrictions to confirm the validity of the instruments [27].

Among the few consistently significant determinants of FDI are real exchange rates and lagged FDI. Real exchange rates, either through altering relative costs or relative wealth, impact the foreign investment decisions of multinational firms. In a model with imperfect capital markets, Froot and Stein (1991) link FDI decisions with real exchange rate variations where, for example, a depreciation of the domestic currency increases the relative wealth of foreign firms, which leads them to increase their investment abroad. Similarly, Blonigen (1997), assuming imperfections in the goods market, shows that the real exchange rate influences the relative wealth of firms, thereby generating foreign investment flows. In the empirical literature, Klein and Rosengren (1994) find supporting

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[27] We experimented with using at least three legal origin variables as instruments for each of the financial market variables. It was only in the case of SCAPT that the null hypothesis of no overidentifying restrictions was not rejected. Further, the sample correlation between English and the French legal origins was approximately −0.8 making it difficult to enter both simultaneously as instruments. In addition the first stage regressions where we use French and English dummies in the same regression with another dummy do not provide a good fit.

Table 7
Growth and FDI: the role of financial markets—endogeneity (IV). Dependent variable—average annual per capita growth rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Period	1975–1995	1975–1995	1980–1995	1980–1995	1980–1995	1980–1995	1980–1995
Observations	73	73	50	50	36	48	32
log (initial GDP)	− 0.01	− 0.013	− 0.011	− 0.012	− 0.013	− 0.01	− 0.006
	(− 2.58)	(− 2.15)	(− 1.90)	(− 2.16)	(− 2.57)	(− 2.17)	(− 0.82)
FDI/GDP	2.75	1.585	0.213	0.148	− 0.178	0.243	1.525
	(1.92)	(1.60)	(0.89)	(0.62)	(− 0.75)	(0.79)	(1.84)
(FDI/GDP) × financial markets	2.51 (2.04)	1.918	0.552	0.514	0.441	0.68	1.221
		(1.85)	(2.47)	(2.41)	(1.77)	(1.69)	(1.89)
Financial markets	− 0.014	− 0.009	− 0.0009	0.002	0.011	− 0.003	0.001
	(− 0.92)	(− 0.50)	(− 0.09)	(0.24)	(1.67)	(− 0.37)	(0.13)
Schooling	0.014	0.012	− 0.007	− 0.002	− 0.007	0.001	− 0.016
	(2.66)	(1.99)	(− 0.08)	(− 0.28)	(− 0.71)	(0.10)	(− 1.46)
Population Growth	− 0.225	− 0.228	− 1.108	− 1.28	− 1.43	− 1.00	− 1.50
	(− 0.85)	(− 0.93)	(− 1.55)	(− 1.85)	(− 1.83)	(− 1.69)	(− 2.06)
Government consumption	0.009U	0.007	− 0.001	− 0.001	0.004	− 0.003	0.006
	(0.85)	(0.73)	(− 0.17)	(− 0.10)	(0.35)	(− 0.31)	(0.52)
Sub-Saharan Africa dummy	− 0.021	− 0.019	− 0.02	− 0.021	− 0.031	− 0.02	− 0.025
	(− 2.51)	(− 2.41)	(− 1.88)	(− 1.98)	(− 4.02)	(− 2.13)	(− 1.48)
Black market premium	− 0.012	− 0.013	0.001	0.002	0.01	0.0004	0.005
	(− 2.88)	(− 2.63)	(0.26)	(0.51)	(1.30)	(0.09)	(0.49)
Inflation	− 0.011	− 0.009	− 0.020	− 0.014	0.003	− 0.025	0.047
	(− 0.60)	(− 0.55)	(− 0.80)	(− 0.57)	(0.15)	(− 1.15)	(1.20)
Trade volume	0.002	0.003	0.007	0.007	0.011	0.007	− 0.005
	(0.53)	(0.66)	(1.18)	(1.19)	(1.80)	(1.16)	(− 0.76)
OIR test (Prob>χ^2)	0.175	0.028	0.311	0.291	7.22	3.477	1.42
	(0.915)	(0.989)	(0.855)	(0.571)	(0.30)	(0.481)	(0.83)

Notes: All regressions have a constant term. t-values are in parentheses. See notes to Table 1 for the definitions of other variables. In columns (1)–(3), the financial sector variables PRIVCR, BANKCR and SCAPT are instrumented by the English and Scandinavian legal origin dummy variables. In column (4), the French legal origin variable is added to the list of instruments for SCAPT. In column (5), the creditor rights variable is also added to the list of instruments. Columns (6) and (7) control for both the endogeneity problem in FDI and in financial market indicators by instrumenting FDI with one-period lagged FDI (FDI in 1979) and real exchange rate levels, respectively, and financial markets with the LLSV variables used in column (4). The OIR Test reports the χ^2-test statistic for overidentifying restrictions. The null hypothesis is that there are no overidentifying restrictions. The terms in parentheses represent the P-value.

evidence that the real exchange rate is a significant determinant of FDI. Along these lines, real exchange rate is used as an instrument for FDI in the following analysis, where the real effective exchange rate is calculated as the ratio of the local price index to the US price index converted to the local currency. Likewise, following the evidence provided by Wheeler and Mody (1992) that FDI is self-reinforcing, i.e. existing stock of foreign investment is a significant determinant of current investment decisions, lagged FDI is used as an additional instrument for FDI in the following analysis. This result is further reinforced in several country level studies in the literature[28]. Columns (6) and (7) control for both the endogeneity of FDI and financial market indicators by instrumenting FDI with one-period lagged FDI and real exchange rate levels, respectively, and financial markets with the legal origin variables used in column (4). The results continue to support the finding that FDI promotes growth through financial markets. The coefficients, however, increase considerably in values compared with the earlier OLS results in Table 5. Instrumental variable estimation here corrects for classical measurement error, which biases the OLS coefficients to zero. The higher values of the coefficients also alter the balance between countries that lose and those that benefit from FDI. For example, if we repeat the earlier exercise of figuring out how many countries in the sample benefited from FDI but now use the coefficients from column (7) for our original sample of 49 countries, we find that as many as 20 countries benefited. This is a much higher figure compared with our earlier finding that only five benefited.

4. Conclusion

Following the debt crisis in the 1980s and the recent turmoil in emerging markets in the late 1990s, developing countries have changed their attitude towards FDI because it is believed that FDI can contribute to the development efforts of a country. In general, a multinational firm's decision to extend production to another country is driven by lower costs and higher efficiency considerations. From the host country's perspective though, the benefits of FDI are not restricted to improved use of its resources, but also stem from the introduction of new processes to the domestic market, learning-by-observing, networks, training of the labor force, and other spillovers and externalities. Due to the 'growth-development' benefits FDI seems to convey, different countries and regions have pursued active policies to attract FDI. Most countries, including both developed and emerging nations, have established investment agencies, and have policies that include both fiscal and financial incentives to attract FDI as well as others that seek to improve the local regulatory environment and the cost of doing business.

Even though such policies can be very effective in attracting foreign investment, local conditions can limit the potential benefits FDI can provide to the host country by not generating benefits that go beyond the 'capital' FDI brings and the wages it generates. In

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[28] Markusen and Maskus (1999) use different FDI determinants, such as lagged FDI, to discriminate among alternative FDI theories. Borensztein et al. (1998) used these variables as instruments for FDI in their work.

this paper, we focused, in particular, on the role of local financial markets and the link between FDI and growth. We believe that the lack of development of local financial markets, in particular, can adversely limit an economy's ability to take advantage of such potential FDI benefits. Whereas bad financial markets may mean that a country is not in a position to cope with unregulated short-term capital flows, our work suggests that the full benefits of long-term stable flows also may not be realized in the absence of well-functioning financial markets.

Our empirical evidence suggests that FDI plays an important role in contributing to economic growth. However, the level of development of local financial markets is crucial for these positive effects to be realized, and to the best of our knowledge this has not been shown before. We also provide evidence that the link between FDI and growth is causal, where FDI promotes growth through financial markets. The result of this paper suggests that countries should weigh the cost of policies aimed at attracting FDI versus those that seek to improve local conditions. These two policies need not be incompatible. Better local conditions not only attract foreign companies but also allow host economies to maximize the benefits of foreign investments.

Acknowledgements

Appendix A

A1. Countries in the samples

1. Sample of 71 countries for which data on credit markets are available (BANKCR, BTOT, PRIVCR, LLY).
2. Sample of 49 countries for which data on SCAPT and SVALT are available.
3. Sample of 53 countries for which SVALT was available but SCAPT was not: Sample of 49 plus Costa Rica, Honduras, Ireland, and Panama.

List: Algeria (1), Argentina (1, 2), Australia (1, 2), Austria (1, 2), Bangladesh (2), Belgium (1, 2), Bolivia (1), Brazil (1, 2), Cameroon (1), Canada (1, 2), Chile (1, 2), Colombia (1, 2), Congo (1), Costa Rica (1), Cyprus (1, 2), Denmark (1, 2), Dominican Republic (1), Ecuador (1), Egypt (1, 2), El Salvador (1), Finland (1, 2), France (1, 2),

Gambia (1), Germany (1, 2), Ghana (1, 2), Greece (1, 2), Guatemala (1), Guyana (1), Haiti (1), Honduras (1), India (1, 2), Indonesia (1, 2), Iran (1), Ireland (1), Israel (1, 2), Italy (1, 2), Jamaica (1, 2), Japan (1, 2), Jordan (2), Kenya (1, 2), Korea (1, 2), Malta (1), Malawi(1), Malaysia (1, 2), Mexico (1, 2), Netherlands (1, 2), New Zealand (1, 2), Nicaragua (1), Niger (1), Norway (1, 2), Pakistan (1, 2), Panama (1), Papua New Guinea (1), Paraguay (1), Peru (1, 2), Philippines (1, 2), Portugal (1, 2), Senegal (1), Sierra Leone (1), Singapore (2), South Africa (1, 2), Spain (1, 2), Sri Lanka (1, 2), Sudan (1), Sweden (1, 2), Switzerland (1, 2), Syria (1), Thailand (1, 2), Togo (1), Trinidad Tobago (1, 2), Turkey (2), United Kingdom (1, 2), United States (1, 2), Uruguay (1, 2), Venezuela (1, 2), Zimbabwe (1, 2).

A2. Data sources and descriptions

Foreign direct investment: The net FDI inflows measure the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Source: IMF "International Financial Statistics".

Output levels and growth: Output level and growth data is the growth of real per capita GDP, constant dollars. Source: WDI, World Bank (2000a,b).

Value traded: Value of stock trading relative to the size of the economy. Source: World Bank Financial Structure Database. (http://www.worldbank.org/research/projects/finstructure /database.htm).

Capitalization: Captures the size of the stock market, measures the average value of listed domestic shares on domestic exchanges in a year as a share of the size of the economy (the GDP). Source: World Bank Financial Structure Database.

Liquidity (LLY): Liquid liabilities of the financial system (currency plus demand and interest bearing liabilities of the financial intermediaries and non-blank financial intermediaries) divided by GDP. Source: World Bank Financial Structure Database.

Private sector credit (PRIVCR): The value of credits by financial intermediaries to the private sector divided by GDP. It excludes credits issued by central and development banks. Furthermore, it excludes credit to the public sector and cross claims of one group of intermediaries on another. Source: World Bank Financial Structure Database.

Bank credit (BANKCR): Credit by deposit money banks to the private sector as a share of GDP. Source: World Bank Financial Structure Database.

Commercial-central bank (BTOT): Ratio of commercial bank domestic assets divided by central bank plus commercial bank domestic assets. Source: World Bank Financial Structure Database.

Creditor rights: An index aggregating different creditor rights. The index is formed by adding 1 when: (1) the country imposes restrictions, such as creditor's consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possessions of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceed that result form the disposition of the assets of a bankrupt firm; and (4) the debtor does not

retain the administration of its property pending the resolution of the reorganization. The index ranges from 0 to 4. Source: La Porta et al. (1997, 1998).

Domestic investment: 'Gross domestic investment' measuring the outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Source: World Bank (2000a,b).

Inflation: Percentage changes in the GDP deflator. Source: World Bank (2000a,b).

Government consumption: Total expenditure of the central government as a share of GDP. It includes both current and capital (development) expenditures and excludes lending minus repayments. Sources: World Bank (2000a,b).

Trade volume: Exports plus imports as a share of GDP. Source: World Bank (2000a,b).

Schooling: Human capital measured as the average years of secondary schooling in total population. Source: Barro and Lee (1996). Updated version downloadable from: http://www.cid.harvard.edu/ciddata/ciddata.html.

Bureaucratic quality: The institutional strength of the economy. High levels of quality imply that the bureaucracy has the strength and expertise to govern without drastic changes in policy, or interruption to public services. Source: ICRG.

Risk of expropriation: The probability that the government may expropriate private property. Source: ICRG.

Black market premium: It is calculated as the premium in the parallel exchange market relative to the official market (i.e. the formula is (parallel exchange rate/official exchange rate$-1)\times100$). The values for industrial countries are added as zero. Source: World Bank. (http://www.worldbank.org/research/growth/GDNdata.htm).

Real effective exchange rate: Calculated as the ratio of local price index to the multiplication of the US price index and the official exchange rate. Source: World Bank. (http://www.worldbank.org/research/growth/GDNdata.htm).

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