

FDI IN OLD vs NEW ASSETS: DOES THE DISTINCTION MATTER ?*

César Calderón
Central Bank of Chile

Norman Loayza
The World Bank

Luis Servén
The World Bank

This version: April 29, 2002

Abstract

FDI flows to developing countries surged in the 1990s, to become their leading source of external financing. This rise in FDI volume was accompanied by a marked change in its composition: investment taking the form of acquisition of existing assets (M&A) grew much more rapidly than investment in new assets ('greenfield' FDI), particularly in countries undertaking extensive privatization of public enterprises. This raises two issues. First, is the M&A boom a one-time effect of privatization, or is it likely to be followed by a rise in greenfield investment? Second, do these two types of FDI have different macroeconomic consequences – in terms of aggregate investment and growth? This paper focuses on establishing the stylized facts in terms of time precedence between both types of FDI, investment and growth using data for a large sample of industrial and developing countries. We find that in developing and industrial countries higher M&A is typically followed by higher greenfield investment, while the reverse is true only for industrial countries. In developing economies domestic investment leads both types of FDI, but not the reverse; while in industrial countries, domestic investment leads M&A FDI but is led by greenfield FDI. Neither type of FDI appears to precede economic growth in either developing or industrial countries, but FDI does respond positively to increases in the growth rate.

JEL classification codes: F43, F37, O16

* This research was supported by the World Bank's Latin American Regional Studies program. The views expressed here are the authors' and do not necessarily reflect those of the World Bank, its Executive Directors or the countries they represent.

1. Introduction

The 1990s witnessed a dramatic surge in foreign direct investment (henceforth FDI) to developing countries. Net FDI inflows to LDCs rose from 0.65 percent of their overall GDP in the late 1980s to over 2 percent in the late 1990s. The FDI increase was particularly marked in Latin America. In the context of a steep decline in other private external flows, FDI became the leading source of external financing to the developing world in those years.

The causes of the boom have attracted considerable attention, and several authors¹ have attempted to disentangle the role played by ‘push’ and ‘pull’ factors in the process – i.e., declining real interest rates in industrial economies, and the improved investment environment in developing countries following liberalization and reform of their economies, including the decision to privatize state enterprises.

Along with their rising volume, FDI inflows also showed a major change in composition. Specifically, foreign investment into LDCs related to the acquisition of existing assets – i.e., mergers and acquisitions, henceforth denoted M&A – saw its share in total FDI inflows rise from virtually nothing in the late 1980s to one-third of the total in the late 1990s. The rise was again especially significant in Latin America, where in 1995-99 M&A accounted for close to 50 percent of total FDI inflows. The other component of FDI, foreign investment related to the acquisition of new assets – commonly referred to as ‘greenfield’ FDI -- rose as well, but its share in total FDI inflows to LDCs experienced a decline. In a number of developing economies, especially Latin American ones, the rise in M&A foreign investment was largely driven by privatization of state-owned enterprises, especially in the utilities and financial services industries.

¹ See for example Calvo and Reinhart (1996), Fernández-Arias and Montiel (1996) and Fernández-Arias (2000).

However, the FDI boom has also raised two major concerns. The first one involves the uncertain future prospects of FDI to developing countries, following the near completion of the privatization drive in major economies (most notably in Latin America). As just noted, a considerable portion of the FDI inflows received by these economies over the last decade reflected M&A transactions related to the acquisition of public enterprise assets, and hence the end of privatization might be followed by a sharp decline in FDI inflows which, given the predominant role acquired by investment flows in overall external financing during the late 1990s, could generate major external difficulties in these countries.

Whether this concern is warranted, however, depends to a large extent on the relationship between M&A and greenfield FDI. Specifically, if the former tends to set the stage for the latter, then stagnating M&A need not cause undue worries, because the surge in mergers in the 1990s is likely to be followed by rising greenfield investment, thus ensuring the continuation of external financing in the coming years.

The second concern relates to the growth impact of FDI flows, which has attracted renewed interest in the wake of the FDI boom. While the theoretical literature has pointed out that FDI may boost growth, both by raising aggregate investment and through technological spillovers – i.e., technology transfers that go beyond those firms directly receiving foreign capital -- the empirical literature shows considerable disagreement about the relevance of these impacts. On the one hand, firm-level studies often find no significant productivity effects of FDI.² On the other hand, macroeconomic studies tend to conclude that FDI boosts growth via higher productivity and/or physical investment,³ although some papers argue that this requires the

² See e.g., Aitken and Harrison (1999) or Kokko, Tansini and Zejan (1996).

³ See World Bank (2001) and the references listed therein.

destination economy to satisfy certain conditions⁴ and yet others find no significant impact of FDI on investment nor growth.⁵

There are two major difficulties with the interpretation of many of these results, however. First, both micro and macro studies face problems of bi-directional causality: high-productivity and high-growth firms and countries are more likely to attract FDI than the rest, so that the empirical association between growth and FDI could well reflect reverse causation from the former to the latter. To the extent that high investment itself also reflects high anticipated returns, the same argument would apply to its close association with FDI often found in empirical studies (e.g., Bosworth and Collins 1999).⁶

The other difficulty concerns the lack of distinction between greenfield FDI and M&A. Since the former involves mainly new capital assets, while the latter is just a transfer of existing ones, greenfield FDI would seem more likely to affect growth -- if at all -- via increased physical investment, while M&A FDI would be more likely to do so via enhanced productivity growth. In fact, the increased importance of M&A in total FDI flows in recent years has been singled out as the likely cause of an observed weakening in the empirical FDI-investment link in the 1990s (World Bank 2001). Thus, failure to distinguish between the two types of FDI flows in the face of large changes in their relative magnitude – such as those witnessed over the last decade – could bias the inferences on their relationship with investment and growth.

⁴ For example, Borensztein, de Gregorio and Lee (1998) find that the investment and growth impact of FDI is significant only when the recipient economy possesses high levels of human capital. A similar argument in relation to the importance of financial development is made by Alfaro *et al.* (2001). In turn, Blomstrom, Lipsey and Zejan (1996) conclude that FDI has a stronger positive impact on growth in high-income destination economies.

⁵ See for example Carkovic and Levine (2000).

⁶ Some micro and macro studies do control for simultaneity; see e.g., Aitken and Harrison (1999) and Carkovic and Levine (2000). Both studies find no significant growth effects of FDI, so that the association between the two variables would mainly reflect causation from growth to FDI. Indeed, as shown by Rangvid (2001) using a sample of industrial and developing countries, growth and investment returns are very closely associated. Thus anticipations of

The purpose of this paper is to address these concerns⁷ by examining the link between the two components of FDI flows – Greenfield and M&A -- and their respective relationship with aggregate investment and growth in a large cross-country time-series data set. The main objective of the analysis is to identify the stylized facts present in the data, rather than exploring the ability of a particular model to explain the empirical regularities. Specifically, the paper focuses on establishing the patterns of time precedence between FDI, investment and growth. Thus, it follows an approach similar to those adopted by recent influential studies that have attempted to determine the patterns of causation between saving, investment and growth (Carroll and Weil 1995; Lipsey, Blomstrom and Zejan 1996; Attanasio, Picci and Scorcu 2000).

The paper extends the existing literature along two dimensions. First, it provides what to the best of our knowledge is the first exploration of the dynamic relation between greenfield and M&A foreign investment. Second, it uncovers systematic differences between these two components of FDI flows regarding their respective relationship with investment and growth in the destination economies. The paper performs extensive robustness checks, by employing a variety of econometric specifications and working with various country subsamples in order to allow for possible heterogeneity across country groups – industrial economies, where FDI is characterized by large inflows and outflows and a large share of M&A in total investment flows; developing countries, where the M&A share of total FDI is much lower, and outflows are dwarfed by inflows; and Latin America, where the FDI boom of the 1990s has been most closely associated with privatization of public enterprises.

higher growth should attract increased domestic and foreign investment. This line of argument is empirically pursued by Calderón, Loayza and Servén (2001) to explain international capital flows.

⁷ Although we will not pursue it here, we should also mention a third concern recently raised by Fernández-Arias and Hausmann (2000), according to which the boom in FDI to developing countries would reflect the sorry state of their markets and institutions which forces domestic investors to sell off their local assets, rather than providing proof of sound economic management, as had been argued in the past.

The paper is organized as follows. Section 2 introduces the main concepts and data issues regarding the composition of FDI. Section 3 offers a brief overview of recent trends in the volume and structure of FDI for a large number of industrial and developing countries. Section 4 reports the results of causality tests between the M&A and greenfield components of FDI, and between each of them, domestic investment and GDP growth. Section 5 concludes.

2. Concepts and data

Direct investment undertaken by foreign firms in a host country (i.e., the country of the target firm whose assets are being acquired) can take the form of either *greenfield investment* or *mergers and acquisitions* (M&As), depending on whether the transaction involves newly-created assets coming under control of the foreign firms, or just a transfer of existing assets from local firms, respectively. In the latter case, one can draw a further distinction between *cross-border mergers*, which occur when the assets and operation of firms from different countries are combined to establish a new legal identity, and *cross-border acquisitions*, which occur when the control of assets and operations is transferred from a local to a foreign company (with the former becoming an affiliate of the latter).

Data on worldwide cross-border M&As is summarized by the World Investment Report (2000), drawing from UNCTAD's database.⁸ The individual M&A transactions around the world

⁸ At present, the information on M&A is compiled in Thomson Financial Securities Data's Worldwide Merger & Acquisitions database, which covers information for more than 273,000 transactions from 1979 on for the United States and from 1985 on for non-U.S. firms. The database offers detailed information on the target and acquiror profiles, deal terms, deal value and stock premium, and deal status (see more information at <http://www.tfsd.com/products/financial/default.asp>).

are compiled and reported by various investment banks and consulting firms, which may result in some methodological variations regarding the nature and type of the data gathered.⁹

In practice, world M&As have been predominantly driven by acquisitions. Cross-border mergers represented only 3 percent of cross-border M&As in 1999.¹⁰ Also, over 50 percent of cross-border M&As in 1999 took the form of full (or outright) acquisitions. Minority acquisitions by foreign firms (10-49 percent) represented one third of acquisitions in developing countries and less than 20 percent in developed countries (see UNCTAD 2000).

Direct comparison of FDI data from the balance of payments with M&A figures from these sources is subject to a number of caveats regarding the timing of transactions, their coverage, and the definition of the foreign and target countries. First, while FDI is measured on an accruals basis, M&As are recorded at the time of announcement or closure of each specific deal. Second, these deals may include transactions involving a sequence of payments over several years. Third, unlike FDI flows, which are reported on a net basis -- outward FDI from a given country is adjusted by the amount of dis-investment abroad undertaken by firms from that country -- cross-border M&A purchases report only the total value of purchases abroad, without subtracting the amount received from any possible sales of foreign affiliates. Fourth, data on cross-border M&As may include funds raised in local and international financial markets, which would not qualify as FDI. And fifth, there may be methodological differences between M&A and FDI regarding the countries of origin and destination: FDI flows are usually compiled on the basis of *immediate* host and *immediate* home countries, whereas data on cross-border M&As (as

⁹ For example, data may be compiled on an *announcement basis* (recorded when deals are announced) or a *completion basis* (when definite agreement is reached between parties). Some sources may include different forms of M&As that others do not, for example, management buyouts, acquisition of properties, and acquisition of convertible stocks that do not involve voting control. Also, the treatment of additional acquisitions (i.e. further increases in stock holdings by firms that already own more than 50 percent) may differ.

reported by UNCTAD) uses different combinations of *immediate* and *ultimate* country. All these facts suggest caution when comparing cross-border M&As and total FDI for a given country.

Our information on FDI is taken from the World Bank's Global Development Finance. We construct Greenfield FDI by subtracting cross-border M&As from gross FDI inflows. This procedure implies that the resulting greenfield flows are subject to the same caveats listed above.¹¹

3. Trends in FDI

Keeping these data caveats in mind, we turn to a brief overview of the major trends in the volume and composition of FDI. Table 1 documents the changing patterns of external financing to industrial and developing countries since the mid-1980s. Between 1987-89 and 1995-99, net financing to developing countries rose from a negative 0.5% to over 2% of the recipient economies' GDP. The bulk of this increase was made up by rising net FDI inflows, which over the same period went up from 0.65% to 2%. Net portfolio equity flows also rose, although by more modest amounts. The rise in private capital flows to developing countries occurred while official flows and short-term debt dropped significantly (see World Bank 2001). As a result of these trends, by the late 1990s net FDI represented almost the full amount of net flows to LDCs.

Table 1 also shows the figures for Latin American countries, which were the primary destination of the FDI boom of the 1990s. For these countries, total net flows rose from -2.2% to 3.4% of GDP between the late 1980s and late 1990s. Close to half of this increase took the form of higher net FDI, so that at the end of the 1990s FDI flows provided 80% of Latin America's

¹⁰ In reality, even when mergers are supposedly between relatively equal partners, most are in fact acquisitions with one company controlling the other.

external financing. In fact, increasing FDI between the first and the second half of the 1990s more than made up for the collapse in official flows over the same period.

Table 2 offers a detailed breakdown of FDI flows over a similar time period. As in Table 1, for reference we also show the evolution of FDI to industrial countries. Unlike with developing countries, net FDI flows to industrial economies showed a slight decline over the period under consideration. Closer inspection reveals that both inflows and outflows rose during the 1990s, leaving the net difference mostly unchanged. Almost all of the increase in gross inflows took the form of higher cross-border M&A, and a small portion of the latter was due to privatization of public enterprises. As a result, in industrial countries in the late 1990s M&A transactions were close to 5 times larger than greenfield FDI.

As for developing countries, three stylized facts emerge. First, FDI outflows remain relatively modest. Although they have risen over the last decade, in the late 1990s outflows amount to about a third of gross inflows in developing countries as a whole, and even less (some 10 percent) in Latin America. Thus, for developing countries gross and net FDI inflows have moved in close tandem, in contrast with industrial economies, where large increases in gross inflows have translated into little change in net inflows.

Second, a considerable portion of the rise in gross FDI inflows to developing countries over the last decade took the form of increased cross-border M&A. By the late 1990s, these had grown to account for one-third (even more in the case of Latin America) of gross FDI inflows, up from about 10 percent in the late 1980s. Unlike in industrial countries, however, in developing economies Greenfield FDI still accounts for the majority of gross FDI inflows.

¹¹ Only a few countries (e.g., Japan and the U.S.) provide FDI data that distinguish between greenfield investment and M&As.

Third, the bulk of this M&A increase was due to privatization of public assets. The latter accounted for nearly 50 percent of the increase in M&A inflows to developing countries in general, as well as Latin America in particular, over the last decade.

4. Econometric analysis

Objective. Our empirical objective is to analyze the dynamic relationship between foreign direct investment, domestic investment, and GDP growth. Specifically, we want to examine how the behavior of a given variable –greenfield FDI, mergers & acquisitions FDI, domestic investment, and GDP growth— is related to the future behavior of the rest. There are two aspects to this analysis. The first deals with whether changes in a given variable have a lasting impact on another. The second aspect is related to time precedence and deals with whether the behavior of a given variable helps predict the future behavior of the rest.

Methodology. Our methodology consists in the estimation of bivariate vector autoregressions (VAR) in a panel setting (that is, combining cross-country and time-series observations). The VAR equations have the following form,

$$y_{i,t} = A(L)y_{i,t} + B(L)x_{i,t} + \eta_t + \mu_i + \varepsilon_{i,t}$$

$$x_{i,t} = C(L)y_{i,t} + D(L)x_{i,t} + \phi_t + \psi_i + v_{i,t}$$

where y and x represent the two variables of interest; L is the lag operator; A , B , C , and D are vectors of coefficients; η_t and ϕ_t are unobserved time effects; μ_i and ψ_i are unobserved country effects, and $\varepsilon_{i,t}$ and $v_{i,t}$ are regression residuals. The subscripts i and t denote country and time, respectively.

In actual estimation of the VAR we consider two lags for each variable. The short sample size along the time dimension (13 years, as discussed below) does not allow longer lag

specifications. To assess the robustness of our results, we present the estimation without country- and time-specific effects, with only country effects, and with both country and time effects.

As stated above, we have two empirical objectives. First, we are interested in the impact of changes in a variable, say x , on the other, say y . The total impact of x on y , given the past history of y , is given by the sum of the coefficients on all lagged x . Using the properties of the lag operator, this impact is equal to $B(1)$. From estimation of the VAR, we can obtain the point estimate of this impact and, for the purpose of statistical inference, its associated standard deviation. From the estimated coefficients we can also obtain the long-run effect of, say, x on y . The long-run effect takes into account both the impact of x on, y given the past history of y , and the autoregressive properties of y . Provided that y follows a stable process, the long-run effect of x on y is given by $B(1)/[1-A(1)]$.

Second, we want to examine whether a variable, say x , helps forecast the other variable in the system, say y , beyond what the past history of y predicts. This is a test of Granger-causality, and, in the example above, it amounts to testing if the coefficients of the lag polynomial B are statistically significantly different from zero.

The two issues of interest --namely, impact and Granger-causality-- are related but not identical. There may be cases when a variable has predictive power for another, yet its impact is zero because coefficients on different lags cancel each other. However, in the relationships we consider it is usually the case that when the impact is statistically zero, there is also no indication of Granger causality.

Sample. Our full sample consists of annual information for 82 countries during the period 1987-99. The sample is divided into 21 industrial and 61 developing countries. We do not attempt to pool all 82 countries for estimation of a single set of coefficients because, as we

discuss below, industrial and developing countries exhibit different relationships among the variables of interest. Given the increasing importance of Latin America as a recipient of FDI flows, we consider separate estimation for the countries in this region.

Definitions. In the empirical analysis, we use the following definitions for the variables of interest. Economic growth is the log difference of real GDP in consecutive years. Domestic investment is equal to gross fixed capital formation, expressed as a ratio to current GDP. Cross-border mergers & acquisitions FDI is the amount of foreign capital destined to obtain at least 10 percent of a domestic firm's equity, given as a ratio to current GDP. Greenfield FDI is equal to gross FDI inflows minus the value of mergers & acquisitions, also expressed as a ratio to current GDP.¹²

Results. The estimation and inference results are summarized in Tables 3-7. For each vector auto-regression, we report the sum of the coefficients on the lagged terms of each variable, together with the p-value for the hypothesis that the effect is not statistically significant. We also report the p-value of the associated causality test, where the null hypothesis is that there is no Granger causality.

Table 3 examines the relationship between the two types of FDI, that is, greenfield investment and mergers & acquisitions (M&A). Tables 4 and 5 examine the link between domestic investment and, respectively, greenfield FDI and M&A FDI. Finally, Tables 6 and 7 study the relationship between GDP growth and the two types of FDI, respectively.

¹² Note that we are using gross FDI inflows as our preferred measure of foreign investment. We use gross inflows (instead of net inflows) because we are interested in assessing the impact of foreign investment on capital formation and growth. In any case, for developing countries the distinction between gross and net FDI inflows is largely inconsequential. The same does not apply to industrial countries, however.

According to Table 3, there is a close relationship between greenfield and M&A FDI. For industrial countries, this link is bi-directional –higher M&A leads to more greenfield investment and vice versa. This result is robust to the inclusion of country- and time-specific effects. For developing countries, and Latin America in particular, the relationship seems to go from M&A to greenfield FDI, with no significant feedback from the latter. To be sure, greenfield FDI appears to have an effect on M&A, but this goes away once we account for country-specific effects.

From Table 3, we also learn that in industrial countries both greenfield and M&A FDI follow inertial processes. In developing countries, this is the case only for greenfield FDI, while M&A appears to follow a memory-free process. Latin America presents results similar to those of all developing countries.

Using the point estimates of the regression that controls for country- and time-specific effects, the long-run effect of a unit change in M&A FDI on greenfield FDI is 0.42 for industrial countries, 0.58 for developing countries, and 0.69 for Latin America. Thus, this effect is larger in developing than industrial countries. However, this is compensated by the fact that in industrial countries there is feedback from greenfield FDI to M&A FDI, with a long-run elasticity of 0.38.¹³

In Table 4, we study the relationship between domestic investment and greenfield FDI. There is an interesting contrast between the results for industrial and developing countries. Whereas in industrial countries greenfield FDI appears to precede domestic investment, in developing countries, domestic investment leads greenfield FDI. In Latin America, the dynamic relationship between greenfield and domestic investment seems to be bi-directional – greenfield FDI also appears to lead domestic investment. These results are basically unchanged whether we account for country- and time-specific effects or not. In any sample, both greenfield FDI and

domestic investment exhibit a significant degree of inertia, but to a larger extent in the case of domestic investment. The long-run elasticity of greenfield FDI on domestic investment is more than twice larger in Latin America (0.67) than in industrial countries (0.27). The feedback effect from domestic investment to greenfield FDI is a lot weaker, with elasticities of 0.04 and 0.06 for developing countries and Latin America, respectively.¹⁴

Table 5 presents the results of the link between domestic investment and M&A FDI. The basic result here is that in both industrial and developing countries, domestic investment appears to precede and produce a positive effect on M&A. The magnitude of the short-run impact (i.e., the sum of coefficients) of domestic investment on M&A appears to be larger in industrial than in developing countries, and so is the long-run effect, with elasticities of 0.12 (industrial) and 0.04 (developing). Surprisingly in the sample of Latin American countries, there is no indication of a significant dynamic relationship –in any direction— between domestic investment and M&A. This might be interpreted as implying that the process of public enterprise privatization – which, as noted before, accounts for the bulk of M&A to Latin America – did not lead to a significant increase in total investment. Finally, domestic investment shows significant inertia, and so does M&A but to a smaller degree.

In Table 6 we examine the relationship between economic growth and greenfield FDI. The results are similar for industrial and developing countries. In both samples, economic growth appears to precede and produce a positive impact on greenfield FDI. The impact of growth on greenfield investment is larger for industrial than developing countries, with long-run elasticities of 0.16 and 0.07, respectively. In Latin America the effect of growth on greenfield

¹³ In what follows in the text, we label “long-run elasticity” the magnitude of the long-run effect of a unit change in a given variable on another.

investment is not statistically significant. In all samples considered, there appears to be no feedback effect from greenfield FDI to economic growth. Both economic growth and greenfield FDI exhibit significant inertial properties.

Finally, Table 7 presents the results on the links between economic growth and M&A FDI. Only in the case of industrial countries do we find a statistically significant relationship between the two variables. In this sample, economic growth precedes and exerts a positive impact on M&A FDI, with a long-run elasticity of 0.09. There appears to be no feedback effect from M&A. In the cases of developing and Latin American countries, there is no significant dynamic relationship between economic growth and M&A FDI. In all samples growth shows a significant degree of inertia. M&A exhibits statistically significant inertia in the industrial and developing country samples, but not in Latin America – a distinction that might reflect the one-shot nature of much of the region’s privatization process, which accounts for most of its M&A FDI.

In appendix tables A1-A2, we consider the relationship between domestic investment, growth, and total FDI (the sum of greenfield and M&A), using the same time span as in the preceding tables for ease of comparison. From these experiments, we find that in industrial countries, economic growth and domestic investment precede and have a positive effect on total FDI. This is consistent with the relationship we found between economic growth and the components of FDI –greenfield and M&A. There appears to be no feedback from total FDI on growth or domestic investment.

In developing countries in general, we find no significant or robust relationship between total FDI and economic growth or domestic investment. However, in Latin America in

¹⁴ In these and other calculations of long-run effects, we use the point estimates obtained in the regressions that

particular, we do find some interesting relationships. Although there is no evidence that growth or domestic investment lead to FDI in Latin America, we find that FDI precedes positively domestic investment.

Summary and discussion.

- Greenfield and M&A FDI have a strong, bi-directional causality in industrial countries. In developing countries, greenfield FDI does not precede M&A FDI, but a rise in mergers and acquisitions does lead to higher greenfield investment. In other words, FDI initially driven by the purchase of existing companies results in fresh investment in the following years. Thus, for instance, the end of the privatization process in Latin America need not dry up FDI but may instead give way to rising greenfield investment.
- The relationship between domestic investment and the two types of FDI is rather complex. In industrial countries, domestic investment leads M&A FDI but is led by greenfield investment. In developing countries, domestic investment leads both types of FDI, but not the reverse (except LAC). It appears that in the case of emerging economies foreign investors prefer to hold their capital until they perceive signals of profitable opportunities through a rise of domestic investment. In the case of industrial countries, their high degree of capital market integration and widespread availability of enterprise-related information may make the relationship between foreign and domestic investment more likely to be bi-directional.¹⁵
- Finally, regarding the relationship between economic growth and FDI, in industrial countries growth leads both greenfield and M&A FDI. In developing countries, growth only precedes greenfield FDI. In any sample, either type of FDI has no significant impact on economic

control for country and time specific effects.

¹⁵ See Lipsey (2000) for a similar perspective on the links between foreign and domestic investment in industrial countries.

growth, nor do they help predict it. This may indicate that given that economic growth is determined by a multitude of factors, FDI simply cannot account for the majority or the most important of them.¹⁶ Furthermore, it is likely that the relationship between FDI and growth depend largely on third factors driving both variables. For instance, in countries where FDI rises as result of higher import tariffs, we should expect a negative relationship between FDI and economic growth. The opposite would occur when FDI rises because of an improvement in public infrastructure and government institutions.¹⁷ On the other hand, GDP growth can capture FDI's most relevant determinants. Given that economic growth is arguably the most important sign of profitable investment opportunities in a country, it can serve as a strong pull factor for FDI.¹⁸

5. Concluding remarks

In the last 15 years, FDI has become the predominant form of external financing in developing countries, far surpassing traditional sovereign borrowing. To be sure, the growth of FDI is part of a more general trend in developing countries consisting of a rapid expansion of private capital flows and contraction of official ones. In industrial countries, FDI has grown more than any other type of capital flow, although it still ranks second to foreign borrowing.

Not only has total FDI grown in importance, but also its composition has experienced a remarkable change over the last 15 years. In developing countries, the share of cross-border mergers and acquisitions in FDI was about 10% in the mid 1980s and increased to about a third at the end of the 1990s. The lion's share of the increase in cross-border M&A is explained by the

¹⁶ See Carkovic and Levine 2001 for similar results.

¹⁷ See Stein and Daude (2001), and Alfaro et al. (2001) for related discussions.

¹⁸ See Calderón, Loayza, and Servén (2001).

privatization of state enterprises that took place during the 1990s in many developing countries. The share of cross-border M&A in FDI also increased markedly in industrial countries.

In this context, we set out to answer two questions in this paper. The first one is about the continuation of the FDI boom to developing countries; specifically, would it continue after the privatization process and the ensuing expansion of cross-border M&A had dried up? Our approach to this question consisted of evaluating to what extent greenfield FDI (that is, investment in new assets) would follow an increase in cross-border M&A. For this purpose, we estimated bivariate vector autoregressions in a pooled cross-country, time-series setting. We worked with annual data for the period 1987-99 for samples of 21 industrial and 61 developing countries. Among other results, we found that an expansion of M&A is indeed followed by an increase in greenfield FDI. According to our estimates, a unit-point increase in M&A leads to a rise in greenfield FDI by about 0.4 and 0.6 points in industrial and developing countries, respectively. Therefore, if the experience of the 1990s and late 1980s is a good predictor for the future, an expansion of greenfield FDI will ensure that the FDI boom will partially continue in the future even after the privatization process has stopped.

The second question we wanted to address concerns the causality (in the sense of time precedence) between the two forms of FDI and domestic investment and economic growth. Using the afore-mentioned bivariate VAR methodology on the same panel of countries and time-series observations, we find that in general domestic conditions represented by capital investment and GDP growth precede M&A and greenfield FDI. One way to interpret this result is that domestic conditions serve as effective “pull” factors for foreign investment. There are some interesting nuances to this general finding. In industrial and developing countries, domestic output growth leads to one or both types of FDI but is not, in turn, “caused” (or preceded) by

either M&A or greenfield FDI. This suggests that given that the process of economic growth depends on a large variety of factors, it cannot be fully captured by developments in FDI. Regarding the relationship with domestic investment, in developing countries neither M&A nor greenfield FDI help predict domestic investment, which emulates the result regarding economic growth. However, in the case of industrial countries, greenfield FDI does precede domestic investment, and this in turn leads to cross-border M&A. This entails certain bi-directional relationship between foreign and domestic investment, a fact consistent with the high capital market integration that characterizes developed economies.

References

- Aitken, Brian J. and Harrison, Ann E. June 1999. "Do Domestic Firms Benefit from Direct Foreign Investment?" *American Economic Review* 89(3).
- Alfaro, Laura, Chanda, Areendam, Kalemli-Ozcan, Sebnem and Sayek, Selin. April 2002. "FDI and Economic Growth: The Role of Local Finance Markets". Manuscript, Harvard Business School.
- Attanasio, Orazio, Lucio Picci, and Antonello Scorcu. May 2000. "Saving, Growth and Investment: A Macroeconomic Analysis Using a Panel of Countries". *Review of Economics and Statistics* 82(2).
- Blomström, Magnus, Robert E. Lipsey, and Mario Zejan. February 1996. "Is Fixed Investment the Key to Economic Growth?" *Quarterly Journal of Economics* 111(1): 269-276.
- Borenztein, Eduardo, José De Gregorio, and Jong-Wha Lee. 1998. "How does Foreign Direct Investment Affect Growth?" *Journal of International Economics* 45(1).
- Bosworth, Barry P. and Susan M. Collins. 1999. "Capital Flows to Developing Economies: Implications for Saving and Investment". *Brookings Papers on Economic Activity* (1), Brookings Institution, Washington, D.C.
- Calderón, César, Norman Loayza, and Luis Servén. September 2001. "Do Capital Flows Respond to Risk and Return?" Manuscript, World Bank.
- Calvo, Sara and Carmen Reinhart. 1996. "Capital Flows to Latin America: Is There Evidence of Contagion Effects?" In *Private Capital Flows Markets After the Mexican Crisis*, edited by Guillermo Calvo, Morris Goldstein, and Eduard Hochreiter. Institute for International Economics – Washington- and Austrian National Bank – Vienna-.
- Carkovic, Maria and Ross Levine. 2001. "Does Foreign Direct Investment Accelerate Economic Growth?" Manuscript. University of Minnesota.
- Carroll, Christopher D. and David N. Weil. 1995. "Saving and Growth: A Reinterpretation". Carnegie-Rochester Conference Series on Public Policy 40.
- Fernández-Arias, Eduardo and Ricardo Hausmann. March 2000. "FDI: Good Cholesterol?" Paper prepared for the seminar "The New Wave of Capital Inflows: Sea Change or Just Another Tide". Annual Meeting of the Board of Governors, Inter-American Development Bank and Inter-American Investment Corporation.
- Fernández-Arias, Eduardo and Peter J. Montiel. 1996. "The Surge in Capital Inflows to Developing Countries: An Analytical Overview". *World Bank Economic Review*. 10.

- Fernández-Arias, Eduardo. March 2000. "The New Wave of Capital Inflows: Sea Change or Tide?" Inter-American Development Bank, Working Paper # 415.
- Kokko, Ari, Ruben Tansini, and Mario Zejan. April 1996. Local Technological Capability Spillovers from FDI in the Uruguayan Manufacturing Sector". *Journal of Development Studies* 32(4).
- Lipsey, Robert E. July 2000. "Interpreting Developing Countries' Foreign Direct Investment." National Bureau of Economic Research. Working Paper 7810.
- Rangvid, Jesper. March 2001. "Predicting Returns and Changes in Real Activity In Emerging and Developed Economies". Manuscript, Copenhagen Business School.
- Stein, Ernesto and Christian Duade. 2001. "Institutions, Integration, and the Location of Foreign Direct Investment". Annual Meeting of the Board of Governors, Inter-American Development Bank and Inter-American Investment Corporation, Santiago de Chile.
- United Nations Conference on Trade and Development (UNCTAD). 1999. "World Investment Report: Foreign Direct Investment and the Challenge of Development".
- United Nations Conference on Trade and Development (UNCTAD). 2000. "World Investment Report: Cross-border Mergers and Acquisitions".
- World Bank. 2001. "Global Development Finance 2001". Washington, D. C.