Working Paper Series

Department of Economics

Exports, Foreign Investment and Growth in Latin America

Scepticism by Way of Simulation

John Weeks
Department of Economics
School of Oriental and African Studies
London

Working paper series No. 117
July 2001
ISBN No: 07286 0335 7

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Abstract

Common sense and economic theory indicate one can have too much even of good things. This paper investigates two fundamental relationships: that export growth may stimulate or reduce growth of non-export sectors; and that foreign direct investment may 'crowd-in' or 'crowd out' domestic investors. These relationships are first considered by analysing descriptive statistics. Then, these descriptive statistics are used in a growth model. The conclusion is reached that the stimulant effect of exports and foreign direct investment varies considerably across Latin American countries. This suggests that purposeful policy can increase the benefits of both export growth and foreign investment inflows.

Introduction

The prevailing development strategy places emphasis upon the 'outward orientation' of countries, with particular emphasis on export growth and attracting direct foreign investment. If 'outward-oriented economies really do grow faster' (Dollar 1992), one would expect this to be transmitted through exports imparting a dynamism to the economy as a whole, and by direct foreign investment stimulating increased total investment in an economy or, at least, not reducing it. This paper investigates the role of exports and foreign investment in the economic growth of the Latin American countries over the last four decades. The purpose is to evaluate the extent to which export growth, on the one hand, and direct foreign investment, on the other, have contributed to overall economic growth.

All decisions involving the allocation of resources have an opportunity cost, and this applies as much to export growth and foreign investment as to other economic variables. Rational policy involves maximisation of both subject to relevant constraints. To foster export growth unconstrained by any objective function is merchantilism, discredited by Adam Smith over two centuries ago. Similarly, a policy regime that seeks to maximise foreign direct investment flows as if these were costless is non-rational. The basic strategy issue is what policy framework is likely to maximise the benefits of each.

Policy Considerations

Recent literature on growth of developing countries has stressed the importance of exports and foreign direct investment for stimulating growth. For developing countries both exports and foreign investment grew faster in the 1980s and 1990s than previously (on FDI see Brewer & Young 1995, Greene & Villanueva 1991, and Mallampally & Sauvant 1999),[1] but it does not necessarily follow that the faster growth of these implies faster GDP growth. Whether faster economic growth results depends on a number of factors, the two most important of which are: 1) whether, on the one hand, export growth substitutes for or enhances non-export growth, and, on the other, whether foreign investment crowds-out or crowds-in domestic investors; and 2) if either relationship is negative, whether the growth-inducing effect of exports (foreign investments) is greater than for the non-exports (domestic investments) they replace.

The two questions are closely related, and much of the discussion of these issues has focussed on the role of foreign investment, both in its investment-enhancing role and its function as a vehicle for export growth. Professional opinion shifted on this issue in the 1990s. For example, the 1992 *World Investment Report* of UNCTAD expressed some scepticism. After pointing out that FDI as a share of domestic investment in development countries was typically low, below five percent, it went on to observe,

> …[T]here may be circumstances in which transnational corporation activities may not contribute to sustained long-term growth…For example, transfer pricing may reduce the potential for growth through trade. Similarly, abuse of market power by transnational corporations can stifle the growth of local entrepreneurs. (UNCTAD 1992, p. 14)

In the abstract, a government can either pursue a neutral policy towards foreign direct investment and international trade or an interventionist one. In practice, all governments intervene to some degree. With regard to FDI, the dichotomy between policy neutrality and intervention became an anachronism in the 1990s. Prior to the debt crisis of the 1980s, most Latin American countries had varying degrees of capital

[1] Net flows of foreign direct investment to Latin America continued to increase at the end of the 1990s, even though total capital flows declined (ECLAC 1999, p. 11-12).

controls, restrictions on external participation in domestic asset and bond markets (which were relatively underdeveloped), and regulations on foreign corporations acquiring domestic firms. In this context, direct foreign investment tended to result in the creation of new assets; indeed, a major motivation for the package of regulations was to ensure this. As a result, until 1980, the balance of payments entry 'foreign direct investment' could, for practical purposes, be interpreted as resulting in subsequent capital formation.

With the liberalisation of capital accounts and privatisation associated with the so-called Washington Consensus, the nature of FDI underwent substantial change. To varying degrees in all countries privatisation took the form of debt-equity 'swaps', in which public assets were sold to foreign firms. This is demonstrated in Table 1 for the first, second, third, and sixth largest economies in the region in 1990. For the four countries together, well over forty percent of foreign direct investment involved acquisition of domestic assets through privatisation. Acquisition by international corporations of domestic private sector firms represented a second major change in the form of FDI in Latin America after 1980, though its extent was more difficult to quantify.[2]

Table 1: Debt-equity Swaps in Four Latin American Countries, 1985-1989
(millions of current US dollars)

Country	Total FDI	FDI by debt-equity	DE/FDI (%)
Brazil	7687	4529	59
Mexico	10,098	3052	30
Argentina	3464	731	20
Chile	3947	3160	80
Totals	25,196	11,472	46%

Source: UCTC 1991.

[2] For a detailed discussion, see UNCTAD (1998). The report observes, 'The increasing importance of [mergers and acquisitions] as a mode of entry [of FDI] give[s] rise to concerns over the loss of national control over enterprises…' (UNCTAD 1998, p. 21).

These changes in mode of entry of FDI had important consequences. With regard to statistics, after 1980 FDI balance of payments flows must be read differently than before: was no longer valid to infer that the FDI balance of payments entry in a given year would result in capital formation in a subsequent year. Specifically, it could no longer be assumed that all or even most FDI resulted in net creation of assets (see Brazil in Table 1). It follows that the interpretation of Figure 1 is not straightforward. The chart shows a dramatic increase in the share of FDI in regional GDP from the end of the 1980s (also showing the percentages excluding Brazil and excluding Brazil, Mexico and Venezuela). There are at least two reasons that the raw percentages overstate the growth of FDI. First, after 1980 the meaning of the percentage is different, due to asset acquisitions. Second, GDP grew slower in the 1990s than in the 1970s, while the growth rate of FDI was much the same.[3]

From the perspective of neoclassical theory, to find that FDI was not net asset creating would not be interpreted as a problem requiring action. If an economy is in full employment general equilibrium, the typical starting point of neoclassical 'stories', then an ex-post inflow of capital to construct physical capital would necessarily reduce some form of expenditure by an equal amount. If government expenditure and exports were constant in real terms, the capital inflow would result in 100 percent 'crowding out' of domestic private investment or domestic consumption. If the capital inflow prompted a rise in the real interest rate, the crowding out could be greater than 100 percent (total investment could fall).

This analysis is not consistent with the empirical evidence, which indicates that for most countries and decades the relationship between FDI and domestic investment was non-significant, and significantly positive almost as frequently as it was negative. In practice the empirical evidence supports the primary motivation of Latin American governments for their FDI policies in during 1960-1980: to ensure that foreign investment would bring a net addition to domestic investment, either by entering into sectors domestic capital was incapable of efficiently developing, or by creating complementary linkages to domestic capital.

[3] In other words, if GDP had grown in the 1990s at the rate of the 1970s, the ratio FDI/GDP in the 1990s would have been on the4 trend line implied by 1970-1981.

With capital account deregulation and its associated domestic asset acquisition by international firms, the emphasis on the advantages of FDI shifted from the straightforward contribution to capital accumulation to more speculative outcomes. These include the possibility that FDI: 1) might provide technologies and skills not otherwise available; 2) access to new export markets; and 3) generate spread affects within an industry that raises the managerial or technical efficiency of domestic firms (UNCTAD 1999, pp. 34-35). Empirical evidence suggests that now general conclusion could be drawn about these outcomes, which seemed to depend on the specifics of each country.[4] An argument sometimes encountered is that the inflow of FDI resulting deregulation of capital flows can substitute for policy interventions to generate more competition in domestic markets. This is an empirical assertion about which no general conclusion can be drawn, and expert opinion is mixed.[5]

One can conclude that the most general argument in favour of FDI, both analytically and empirically, is that it fosters economic growth in as far as it increases total investment, and, slightly weaker, that its total effect is more likely to be positive if it does not reduce domestic investment. It is this issue, the possible crowding out of domestic investment by foreign investment, that is the empirical focus on FDI in this paper. Along with this, the closely related issue of the interaction between export growth and non-export GDP is considered. Together, these two interactive relationships, FDI and domestic investment, and exports and non-exports, represent the principal modes of transferring the dynamism of world markets to the domestic economy.

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[4] In a summary of the literature, a paper commissioned by the World Bank presents a generally favourable review of the impact of FDI, but comes to no general conclusion about specific benefits (Blomstrum & Kokko 1999). Hanson concludes that 'there is weak evidence that FDI generates positive spillovers for host countries' (Hanson 2001, p. 1). Even this minimalst statement might not apply in all cases. In a study of Morocco for the second half of the 1980s, Haddad '…reject[s] the hypothesis that foreign presences accelerated productivity growth in domestic firms' (Haddad 1992, p. 51).

[5] For example,

> It remains an unanswered question whether the transnational corporations' presence is a force for reducing competition, and therefore efficiency…or whether transnational corporations bring more efficient practices to industries that are already concentrated… (UNCTA D 1992, p. 8)

Six years later, the World Investment Report was more definitive:

> Worldwide cross-border [mergers and acquisitions]…were aimed at the global restructuring or strategic positioning of firms…One outcome is a greater industrial concentration in the hands of a few firms in each industry, usually [transnational corporations].' (UNCTAD 1998, p. 10)

Analytical Framework

Any serious treatment of the issue of complementarity versus substitutability of external and internal variables must be placed in an analytical context. To do this, a formal model is developed below. If an economy is characterised by full employment, then the relationships are straightforward in comparative statics, as noted above. Any increase in exports can occur only if resources dedicated to non-exports are reduced. Similarly, any inflow of foreign investment, other things equal, must replace some form of domestic expenditure. Implying as it does one hundred percent crowding-out in both cases, the static full employment framework lacks interest analytically and for policy. More interesting and realistic is to consider a growing economy, in which the actual rate of growth fluctuates cyclically below a full employment ceiling.

To initiate the analysis, we define the overall rate of growth of GDP as the weighted product of the growth rates of export and non-export value added.

(1) $y_t = [y_{x_t}]^{\alpha}[y_{nx_t}]^{1-\alpha}$

If y_{xt} is not equal to y_{nxt}, α changes from one period to the next. It is, by definition, $[Y_{x_{t-1}}]/[Y_{x_{t-1}} + Y_{nx_{t-1}}]$. For simplicity, we assume that the growth rate of exports is exogenously given in the short run ($y_{x_t} = y_x^*$),[6] and the value added share of export production is constant. Let non-export GDP be determined by two factors: 1) the growth of domestic demand (a_t), and 2) and spread effects from the export sector. We assume in the short run that the growth of demand is given ($a_t = a^*$). Therefore,

(1a) $y_{x_t} = y_x^*$

(2) $y_{nx_t} = [y_{x_t}]^{\lambda 1}[a_t]^{\lambda 2}$

[6] Since actual export growth varies across countries, the implicit assumption is that it is determined by domestic supply conditions. This, in turn, rules out 'fallacy of competition' effects, which may be too optimistic. Faini found 'that for a representative LDC a large share, almost 60%, of the benefits of devaluation on export revenues vanish when other LDC competitors pursue similar policies' (Faini 1990, p. 1).

(3) $y_t = [y_X^*]^{\alpha}\{[y_{X_t}]^{\lambda 1}[\,a^*]^{\lambda 2}\}^{1-\alpha}$

(3a) $y_t = [y_X^*]^{[\alpha + \lambda(1-\alpha)]}[a^*]^{\lambda 2(1-\alpha)}$

The last equation is more easily interpreted in logarithmic form.

(3b) $\ln(y_t) = [\alpha + \lambda_1(1-\alpha)]\ln[y_X^*] + \lambda_2(1-\alpha)\ln[a^*]$

This expression indicates the possible complexity of the relationship between the growth rate of the export sector and the overall rate of growth. The parameter λ_1 shows the effect of export growth on the non-export sector. We call this *the coefficient of export dynamism*, because it summarises the transmission of export growth to the non-export sector. Inspecting the coefficient $[\alpha + \lambda_1(1-\alpha)]$, one can identify three cases:

a) if $\lambda_1 = 0$, export growth has a neutral impact on non-export growth, non-export growth is determined by the growth of domestic demand, and equation (3b) reduces to the original growth expression (1);

b) if $\lambda_1 > 0$, export growth increases the rate of growth of the non-export sector above the rate implied by domestic demand; and

c) if $\lambda_1 < 0$, export growth decreases the rate of growth of the non-export sector below the rate implied by domestic demand.

There would be an unambiguously positive *complementary effect* ($\lambda_1 > 0$) via the demand for inputs and consumption demand by producers of exports for the non-export sector. A trade-off effect, $\lambda_1 < 0$, would most obviously result when the expansion of export production drew resources out of the non-export sector. This would be strong when the economy was close to full employment, but could also occur if idle resources were less appropriate for export production than the resources employed in the non-export sector. A trade-off effect might also increase or decrease if the composition of exports changed over time, such that the demand for intermediate products from the non-export sector increased or decreased.

Mexico in the 1990s was an apparent example of exports involving fewer input linkages to the non-export sector. Declining linkages was pointed out by an ECLAC report, in a discussion of foreign investment in the export sector, '…these [foreign] firms, which make intensive use of capital and intra-industry trade [ie, outside Mexico],

generally create few jobs for skilled works, and their linkages with the rest of the economy are still minimal' (ECLAC 2000a, p. 37).[7] In such a situation it is possible that the parameter λ_1 might be negative; ie., that an increase in the growth rate of exports would be associated with a decline in the growth rate of the non-export sector.

A negative λ_1 implies a lower overall growth rate, but this need not be the case in a dynamic context. One could imagine an exogenous rate of growth of exports so high that it generated a substantial trade-off effect. However, the resultant rate of growth of GDP might be unachievable in the absence of that trade-off. This would be the case if the export sector were characterised by higher productivity change than the non-export sector. Consider, for example, an 'Asian Miracle' rate of growth of exports of ten percent, in an economy with an initial division of the two sectors of 50 percent of GDP each. Assume further than the non-export sector's maximum growth rate, constrained by internal demand growth and productivity change, were five percent. In this case, the economy would initially grow at 7.5 percent, and could achieve a higher rate of growth only by a relative and perhaps absolute decrease in the production of the non-export sector.

Similar algebra is use to formulate a test for the growth effect of direct foreign investment. By definition, total investment is equal to investment by domestic agents plus investment by external agents. If i_d and i_f are the shares of these in GDP, the overall investment rate in GDP is:

(4) $i_t = [i_{d_t}]^{\sigma}[i_{f_t}]^{1-\sigma}$

Assume that foreign investment inflows are exogenous, and domestic investment is determined by a range of economic factors summarised in the term 'b', and foreign investment itself.

(5) $i_{d_t} = \{[i_{f_t}]^{\rho 1}][b_t]^{\rho 2}\}^{\sigma}$

And total investment becomes,

[7] Along the same line, Skott and Larudee conclude, '…liberalisation is likely to bring long-run industrialisation in the Mexican case, but…this strategy implies substantial costs to a large segment of the population in the short and medium term' (Skott & Larudee 1998, p. 277). Theory suggests that in the absence of policy intervention, domestic linkages would we minor in Mexico (see Rodriquez-Clare 1996, p. 867).

(6) $i_t = \{[i_{f_t}^{\rho 1}][b_t]^{\rho 2}\}^{\sigma}[i_{f_t}]^{1-\sigma}$

Which simplifies to the following,

(6a) $i_t = [i_{f_t}]^{(\sigma\{\rho 1 - 1\} + 1)}[b_t]^{\sigma\rho 2}$

Again, expressed in logarithmic form,

(6b) $\ln[i_t] = [1 + \sigma(\rho_1 - 1)](\ln[i_{f_t}]) + \sigma\rho_2(\ln[b_t])$

Here the key parameter is ρ_1, the 'crowding' coefficient. As for exports, there are three possibilities:

a) $\rho_1 = 0$, foreign investment has no impact on domestic investment;

b) $\rho_1 > 0$, foreign investment 'crowds-in' domestic investment, and

c) $\rho_1 < 0$, foreign investment 'crowds out' domestic investment.

There are strong *a priori* arguments for crowding out (see UNCTAD 1999, pp. 37-43). For a given rate of growth, the range of investment opportunities should be finite, and if foreign investors exploit these, fewer are left for domestic investors. However, it is also possible that some investments would only be exploited by foreign capital, because of greater access to or patent-based control of the relevant technology. As for the relationship between the export and non-export sectors, whether crowding-out or crowding-in of domestic by foreign investment characterises an economy over a given time period is an empirical question. As before, our method is to estimate the parameter ρ_1 for each Latin America country for various time periods, then to use the estimated parameters in a growth model. This procedure differs from that used by Agosin and Mayer to test for crowding-in and crowding-out (Agosin and Mayer 2000), but our results for Latin America support their conclusion that crowding-in is an important phenomenon in the region.

Parameters by Country: Exports and Non-Exports

The model identifies two key parameters that affect a country's growth rate in an 'outwardly-oriented' development strategy, 1) the relationship between export growth

and non-export growth, and 2) the relationship between foreign and domestic investment. The central hypothesis is that one cannot generalise about these parameters across countries. Rather, they are determined by the structure of economies, world market conditions at any moment, and policies pursued by governments. For example, one would not expect the same parameter for foreign investment and domestic investment in a petroleum-based economy as in one in which exports were of manufactures. The petroleum economy would tend to generate relatively few linkages between oil and the other sectors, compared to a country exporting manufactures based on the processing of primary products.

Monetary and fiscal policies would have a major impact on both parameters. If a government follows a purposeful demand-compression programme, as many Latin American governments did in the 1980s, one would expect the stimulating effect of exports on non-export production to be quite low. Similarly, high interest rate credit rationing associated with monetary restrain would tend to foster the crowding-out of domestic investment by foreign investment. Therefore, our estimations are made over three different time periods. The first is 1960-1981, when most of the Latin American countries enjoyed high growth rates, within an import substitution strategy. This was followed a period during which growth for most countries was near zero, due to demand compression associated with the debt crisis (1981-1989). To a great extent, the purpose of the demand compression was to reduce import levels, thus forcing a trade surplus (see De Pinies 1989). The subsequent decade was one of moderate, if unstable, recovery.

In order to move from our theoretical categories to empirical ones, simplifying assumptions are made. In the case of export and non-export production, it is assumed that the proportion of value added in exports remained constant over the entire period treated for each country. Thus, if Y_{x_t} is export production in constant prices, and X_t is exports, we assume for each country that $Y_{x_t} = \mu X_t$, where μ is a constant. This allows non-export production to be estimated as $(Y_t - X_t)$, where Y_t is GDP. For foreign direct investment, the empirical problem is that the reported flows do not immediately become investments in the concrete, because FDI is a balance of payments category and domestic

investment from the national accounts.[8] Our procedure is to assume that foreign investment flows in one year translate into actual investments with a one-year time lag. This allows investment by domestic agents, as a portion of GDP, to be calculated as ($I_t - I_{f_{t-1}}$). While both of these assumptions are oversimplifications, they allow for proxy estimates of the key parameters.

Table 2 provides the estimates of the elasticity between real exports and calculated non-export GDP.[9] For each time period, these elasticities are calculated by a simple logarithmic regression, $\ln[Y_{nx_t}] = a_0 + a_1[\ln]X_t$. If the elasticity was not significant at .10 or less probability, it is entered as zero. The seventeen countries fall into clear categories. First, there are the *export-dynamic* countries: those for which estimated non-export GDP was consistently and positively related to exports in all periods (Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, and Uruguay). Two other countries, Argentina and El Salvador, should probably be added to this category. For these, the relationship was negative (Argentina) or non-significant (El Salvador) only in the 1980s. The negative elasticity for Argentina could be explained by demand compression, which restricted growth of domestically-consumed output. In the case of El Salvador, the performance of domestic output is probably explained by the civil war that raged during the decade. For all these countries, except Uruguay, the elasticity was considerably greater during 1960-1981 than during the 1990s.

Second, there are three countries with *lost export dynamism*, strongly positive elasticities in the first period, positive, but lower elasticities in the 1980s, then negative (Costa Rica) or non-significant (Dominican Republic and Paraguay) elasticities in the 1990s. It would appear for these three countries that structural changes, perhaps associated with policy changes, generated a declining tendency for exports to impart a growth dynamic to the rest of the economy. Three countries qualify as *export non-dynamic* after 1980, in which export growth was either neutral with respect to non-export growth, or negatively related (Mexico, Nicaragua, and Peru). There remain two

[8] Though defined as direct investment in national statistics, capital inflows may not represent asset accumulation rather than investment as such. For a discussion of problems of measurement, see Agonsin and Mayer (2000).

[9] The elasticity of non-export GDP with respect to exports is not calculated for Panama, because of the high proportion of re-exports in that country's trade statistics.

anomalous cases, Bolivia and Venezuela,[10] which show negative elasticities during 1960-81. Bolivia is the only one of the seventeen in which there was a change from a negative to a positive elasticity over the three periods. Venezuela is the only country in which there is no significant positive relationship between exports and non-export GDP for any time period, perhaps due to the particular character of its petroleum-dominated export sector.

The review of countries over time periods confirms the hypothesis that one cannot generalise about the dynamism imparted by exports to the non-export economy. For some countries during some periods, the transmission of export dynamism was strikingly high (eg., Colombia, the Dominican Republic, El Salvador, and Mexico for 1960-1981, and Honduras in the 1990s, all with elasticities near or above unity). For a few, it appears to have been negative to an equally striking degree (Bolivia and Venezuela, 1960-1981). Even more surprising, there were countries for which the relationship changed dramatically, and cannot be easily explained by demand compression (Costa Rica and Mexico, 1960-81 compared to the 1990s). Finally, one can note that differences in elasticities cannot be explained by the size of economy (eg, Costa Rica and Mexico), nor by the importance of petroleum in exports (again, Ecuador and Venezuela). The variation in outcomes is shown graphically for three major countries of the region in Figures 1-3: Brazil, for which the relationship was strongly positive throughout the forty years; Mexico, positive for the 1960s and 1970s, then non-significant and negative; and, Venezuela, non-significant for the entire period.

The variations suggest that policies may matter; ie., that there may be policies which foster and undermine the dynamic transmission of growth from exports to the rest of the economy. During the 1960-81 period when import substitution dominated the Latin American policy agenda, fifteen of the countries displayed a positive link between exports and the non-export sector, while for the 1990s, when an 'outward-oriented' policy framework reigned, the number fell to ten. The average value of the elasticity in

[10] These are the only two countries for which there are no consistent data for the 1960s. If the elasticities for the other two countries are calculated for the 1970s only, none show negative elasticities.

the 1990s was only marginally higher than during the 1980s,[11] when a lack of transmission dynamism might be explained by demand compression.

Parameters by Country: Foreign and Domestic Investment

As for exports and non-exports, the elasticity between foreign and domestic investment shares are calculated in a simple regression, reported in Table 3 for eighteen countries. For these elasticities,[12] the first period covers the 1970s only, because reliable statistics are not available for the previously. Recall that 'domestic' investment was estimated as total investment in the current year, minus foreign investment in the previous year.

These calculated elasticities do not in themselves indicate direction of causality, though causality follows formally from our assumption that foreign direct investment is exogenous and domestic investment endogenous. There are strong reasons to believe that foreign investment crowds out or crowds in domestic investment and not the reverse. First, the cost of capital in the Latin American countries was higher over most of the thirty-year period than in the developed countries, especially in the 1980s and 1990s, in some years due to restrictive monetary policies. While in principle domestic agents could borrow in developed country money markets once capital accounts were liberalised, in practice there were formidable barriers and high risk premiums. Second, foreign firms typically enjoyed competitive advantages over national firms, through brand recognition and scale-economies in marketing. Mexico represented an example of the second effect in the 1990s, when foreign firms took over large shares of consumer markets (ECLAC 2000).

Turning to the statistics in Table 3, the most common outcome is a non-significant elasticity (34 out of 52, or 65 percent). The eighteen statistically significant elasticities show strong evidence that foreign investment crowds out domestic investment, for ten are

[11] This refers to the average when non-significant values are treated as zero.

negative. This result supports the conclusion of Agosin and Mayer (2000) that crowding-out was a substantial phenomenon during the last three decades of the twentieth century (their data end in 1997).[13] For all years, 1970-1997, seven countries show significant crowding-out coefficients, while for only two is there significant crowding-in. We are less interested in the statistics for all years, because, again, our hypothesis is that the internal-external interaction, of investment in this case, varies over countries, and for countries over time. The elasticities by country and period support this view. Again, the variety of outcomes is shown graphically for three major countries in Figures 4-6. For Brazil the relationship is non-significant overall, and negative for Colombia. For Mexico, shown in Figure 6, the time pattern for exports and non-exports is repeated for foreign investment. During 1970-1981, the relationship is strongly positive, non-significant in the 1980s, then negative in the 1990s.[14] Inspection of Table 3 shows that several other countries made a shift from positive to negative interaction.

External Effects in a Harrod-Domar Growth Model

In the two previous sections, it was shown that there is considerable variation in the interaction of external and internal variables with regard to exports and investment. In this section, we investigate the impact of that variation on the growth of GDP, by use of a modified Harrod-Domar model.[15] As before, if the growth rate of export value is y_x and non-export value y_{nx}, by definition,

(1) $\quad y_t = [y_{x_t}]^{\alpha}[y_{nx_t}]^{(1-\alpha)}$

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[12] Note that these elasticities are between *shares*, not (for example) dollar for dollar. This accounts for the rather high numbers for some countries in some periods.

[13] Agosin and Mayer apply their model across all Latin American countries, and find that crowding out dominates in the long run (as specified in their model).

[14] For a detailed discussion of Mexico, see Weeks and Dagdeviren (2000). See also Ibarra (1995), who argues that the 'credibility' of government trade reforms affected investment inflows to Mexico. De Mello also comes to a 'crowding-out' conclusion about FDI in Mexico: 'In the case of Mexico, the positive rend in FDI may be offsetting the negative trend in capital formation' (De Mello 1999, p. 148).

We assume, as above, that export growth is exogenously given, and the ratio of value added to gross output for exports is constant. Therefore, the rate of growth of export value added equals the rate of growth of exports (x).

(2) $y_{x_t} = x_t$

The growth rate of non-export GDP is determined by the growth of effective demand. The two elements that determine the demand for the non-export sector are internal demand, approximated by aggregate investment, and the demand generated by the export sector.[16] Thus, if $(I/Y)_t = i_t$, then

(3a) $y_{nx_t} = [i_t]^{\beta 1}[x_t]^{\beta 2}$

This differs from expression (1), above, in that it uses export growth instead of the growth rate of export value added. Following the previous discussion, the coefficient $\beta 2$ incorporates two components, as discussed above. First, there is a demand effect by incomes generated in the export sector that are spent on non-export products, and the direct demand for intermediate products. This is always positive. Second, the growth of exports may shift resources out of the non-export sector and wipe out domestic input suppliers. The combination of these effects is the overall elasticity of non-export output with respect to export output, discussed above. This elasticity, $Expt_t$, is assumed to be a structural parameter for each decade and country. Investment itself is assumed to conform to a mechanism in which any period's actual investment rate reflects a partial adjustment to a desired rate. If the desired rate of investment is i*,

(3b) $i_t = i_{t-1}[i^*/i_{t-1}]^{\varphi}$; if $\varphi = 1$, $i_t = i^*$.

Desired investment is assumed to be import constrained and affected by the mix between lays by foreign and domestic investors. Whether the latter influence is positive (crowding-in) or negative (crowding-out) is treated as an empirical question. Whether the one or the other is dominant depends on the structure of the economy and policies towards foreign investment, as discussed above.

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[15] This is similar to the model used in Weeks (2000).

[16] The inclusion of export growth follows Kaldor's concept of the 'super-multiplier' (Kaldor 1979).

If $Efdi_t$ is the elasticity of the share of foreign investment in GDP to the share for domestic investors (treated as a structural parameter by decade and country), and m_t is the growth rate of imports, one can write,

(3c) $i^* = \{[m_t]^{\sigma 1}[Efdi_t]^{\sigma 2}\}$

Import growth is assumed to be proportional to export growth in the long run.

$m_t = [x_t]^{\delta}$

Substituting, collecting terms, and expressing the result in logarithms, one obtains,

(4) $\ln[y] = a_o + a_1\ln[i_{t-1}] + a_2\ln[x_{t-1}] + a_3\ln[Efdi_t] + a_4\ln[Expt_t]$

The equation is estimated over three decades, with the data being averages by decade. Since the 1980s was a decade of severe demand compression that lowered growth rates in the region for any level of investment or export growth, a dummy variable is introduced for this sub period. Coefficients a_1 and a_2 are predicted to be positive. If crowding out predominates, as Table 2 suggests, and the benefits of a unit of foreign investment do (do not) out-weigh the benefits of a unit of domestic investment, then a_3 will be positive or non-significant (negative). The same holds for coefficient a_3, with respect to exports and non-exports. The complete form taken by the estimating equation is as follows.

(5) $\ln[y] = a_o + a_1\ln[i_{t-1}] + a_2\ln[x_t] + a_3\ln[Efdi_t] + a_4\ln[Expt_t] + a_5 D80s + \varepsilon$

The statistical results are presented in Table 4. The predicted coefficients variables of the model are significant at .10 probability or less, and of the expected sign. The coefficient on the investment variable indicates that the adjustment to the desired level is almost complete for the model's lag structure (the adjustment coefficient is .975). Export growth is highly correlated with the GDP growth rate, and its coefficient implies that a ten percent increase in export growth (say, from five to 5.5 percent) increases overall growth by slightly less than two percent. These results were expected, and the point of the growth model is to assess the impact of possible complementarities or trade-offs between external and internal variables. Both of the elasticities are statistically significant and positive. They indicate that, for any level of investment and rate of export

growth, crowding-in and the transmission of export dynamism to non-exports raises the overall growth rate.

Positive and significant coefficients for the elasticities are not an obvious outcome. Indeed, it contradicts the simple outward-orientation story. With regard to exports, that story places emphasis upon export growth as such. A positive coefficient for inter-sectoral transmission indicates that the export growth rate is subject to diminishing returns with respect to the overall growth rate. Exports in real terms cannot grow without limit. As the rate of growth rises, aggregate capacity utilisation limits the extent to which the non-export sector can grow. The positive coefficient on $Expt_t$ indicates there to be an optimal rate of export growth, given the structure of an economy, in which the overall growth rate is maximised.

The statistical results tell a similar story for foreign direct investment. They indicate that stimulating foreign investment inflows will increase aggregate growth more, by increasing total investment, if there is some degree of crowding-in. In other words, the oft-listed advantages of foreign investment are not sufficient, in the Latin American case, to overcome the depressing effect of crowding-out on aggregate investment. To indicate the relative importance of the transmission of export dynamism and crowding-in, the regression model can be used to simulate counterfactuals. In Figure 7, we assume the aggregate investment rate and the export growth rate to be equal to the Latin American average for the thirty years (19.2 percent of GDP and 6.1 percent, respectively), and let the two elasticities vary over their observed ranges for the three decades (see Table 1). For convenience, the intercept term is adjusted so that the two simulations intersect when both elasticities are zero. The simulation lines indicate the gains in economic growth derivative from positive interaction between internal and external variables.

Table 5 provides a more specific simulation, in which the $Expt_t$ and $Efdi_t$ parameters for the 1970s are applied to the 1990s. The 1980s are excluded from the simulation because of the crisis nature of that decade. The exercise simulates the following counterfactual: what would have been the rate of growth of the Latin American countries in the 1990s, given the actual investment rate and export growth, if the elasticities of the 1970s had still applied between exports and non-export GDP, and between foreign and domestic investment? The first row of the table gives the cross-

country average growth rate for the 1970s, when import substitution policies set the framework for development policy, and the 1990s, when 'outward-orientation' was the agenda. In the subsequent rows are calculations of the difference in growth rates between the two decades attributed to the different variables in the model.[17] The relationship between exports and non-export GDP was .51 in the 1970s and .22 in the 1990s; the corresponding numbers for the interaction of foreign and domestic investment were .89 and -.17, respectively. We can note that the model generates a very slight increase in growth, .06 percentage points, as a result of the margin rise in the growth rate of exports, and a decline in growth of .12 percentage points due to the fall in investment. However, because of a substantial fall in the transmission of export growth to the non-export sector, the net effect of the slightly higher export performance of the 1990s was to reduce the overall rate of growth by .55 percentage points. Put another way, because of the decline in the transmission of export dynamism, the same growth stimulus provided by export growth of 7.5 percent in the 1970s would have required a growth rate of 10.7 percent in the 1990s.

The aggregate investment rate was lower in the 1990s than the 1970s, and the model associated a small, .14 percentage point decline in growth as a result. Because of the shift from crowding-in to crowding-out, the net fall in growth associated with investment performance was .26 percentage points. This is the equivalent of a one percentage point 'discounting' of the aggregate investment rate; that is, an investment rate of 21.2 percent of GDP would have been required in the 1990s to achieve the same growth stimulus that the 20.2 percent rate achieved in the 1970s. In an important sense, investment in Latin America was less efficient in terms of stimulating growth in the 1990s than in the 1970s.

The model implies that taken together the lost of export dynamism and the shift from crowding-in to crowding-out reduced growth across Latin American countries by three-quarters of a percentage point, forty percent of the difference in the growth rates between the 1970s and 1990s. Overall export and investment performance in the 1990s compared to the 1970s reduced growth by slightly more, by .81 percentage points (last

[17] The investment rate during the 1970s was 20.2 percent of GDP, compared to 19.2 percent in the 1990s, while the rate of growth of exports rose from 7.5 to 7.8.

row of Table 4). These simulations have important policy implications, which are pursued in the concluding section.

Policy and Outward Orientation

It has become an article of faith that 'opening' a country to international trade and investment flows will improve growth performance.[18] Any change in a trade or capital account regime involves policy decisions to minimise the cost and maximise the benefits of the outcome sought, which in this case is an increase in economic growth. The conventional wisdom holds that the growth outcome will be optimised by the reduction of government regulations. This policy prescription is applied to all countries, with rare exceptions, and, by the nature of its general application it is implied that all countries should take the same path to openness. There is little theoretical justification for this generalised approach. For example, Pritchett has demonstrated that 'openness' has a variety of meanings, each measured differently, and the various measures are not, in general, correlated (Pritchett 1996).

This paper has treated the issue of openness and growth from an empirical perspective. We defined 'export dynamism' as the transmission of export growth to the non-export economy, and viewed foreign investment in terms of whether it crowds-in or crowds-out domestic investment. Using these concepts, the principal results are the following:

1. among the Latin American countries, and for individual countries over time, there appears great differences in the degree of export dynamism, and whether crowding-in or crowding-out dominates the capital market;

[18] See discussion by Kozul-Wright and Rowthorn:

> Economists have, by and large…suggested that a failure to attract FDI will mean losing out on the potential benefits of globalization. Faith in these benefits has underpinned support for…liberalizing investment. (Kozul-Wright & Rowthorn 1998, p. 74)

2. simulation exercises indicate that the impact on growth of the degree of export dynamism and the predominance of crowding-in or crowding-out is considerable; and

3. these empirical differences do not seem explained by size of country or simple structural characteristics such as whether exports are dominated by petroleum;

therefore, we conclude that the differences across countries and over time are, to a substantial degree, policy-driven.

Most Latin American countries in the 1990s had substantially reduced government regulations with respect to exporting and capital flows. The outcomes with regard to export dynamism and investment 'crowding' varied greatly across countries. Indeed, for only one country (Bolivia) did export dynamism improve in the 1990s compared to the 1970s, and for the region on average there was a shift toward crowding-out. An analysis of why this shift occurred is beyond the scope of this paper, though it may have in part resulted from the heavy debt burden inflicting many of the countries of the region (Borensztein 1990).

The empirical results suggest that policies matter for stimulating growth, and the deregulation path to openness was not appropriate for all countries. For some countries of the region, the structure of the economy and institutions may imply that trade and capital account deregulation would facilitate export dynamism and complementarity between domestic and foreign investments. However, it would appear that for a substantial number of the countries, this is not the case, and a range of policies, consistent with multilateral rules, could be used to achieve a more growth-oriented outcome. The central issue is not whether governments should foster openness, but what policy best achieves does so given the circumstances of each country. Equating openness with a particular policy to achieve it (deregulation) is to confuse instruments with outcomes. It would seem appropriate to look back at a literature on 'openness', when critical views could be

found, that stressed costs as well as benefits.[19] The general thrust of expert opinion before the political shift that brought on the Washington Consensus was that policies toward FDI and the export sector should be part of a government's general development strategy,[20] rather than derivative from abstract, *a priori* principles.

[19] For example, Hymer (1976) and Hymer and Rowthorn (1970). In the same vein is the more recent article by Kozul-Wright and Rowthorn (1998, pp. 87-89).
[20] This approach is taken in Kosacoff and Ramos (1999), and Held and Szalachman (1998).

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Figure 1

Foreign Direct Investment in 18 Latin American Countries,
Percentage of GDP, 1970-1999

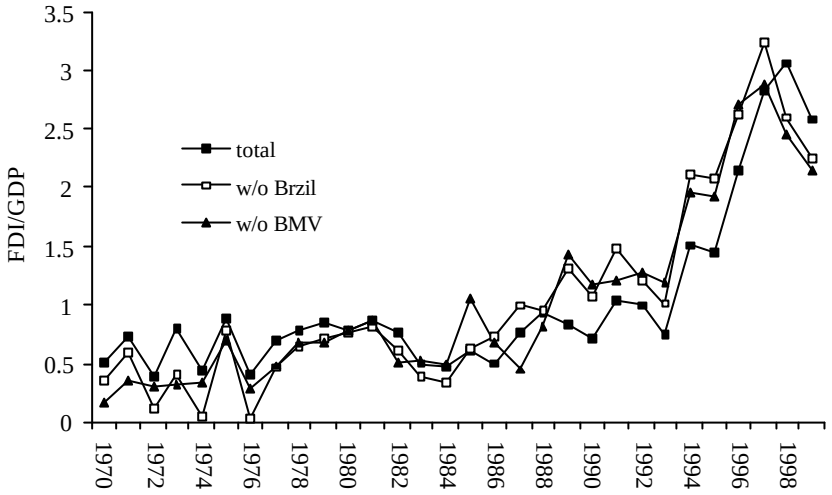


Figure 2

Brazil: Constant Price Exports
& Non-Export GDP, 1960-1999
(positive entire period)

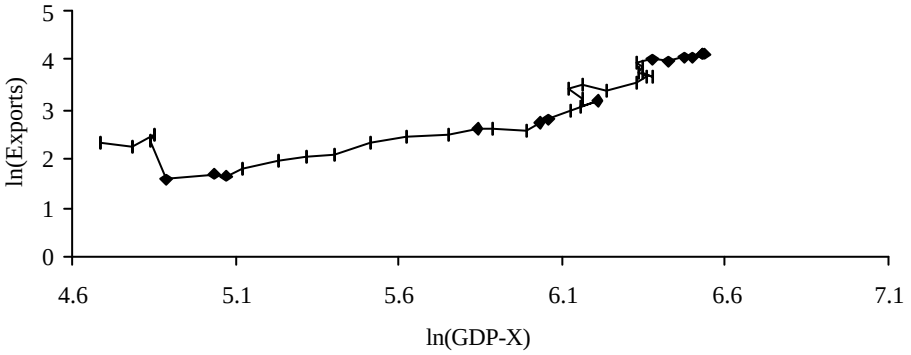


Figure 3

Mexico: Constant Price Exports
& Non-Export GDP, 1960-1999
(positive until 1980s, then negative)

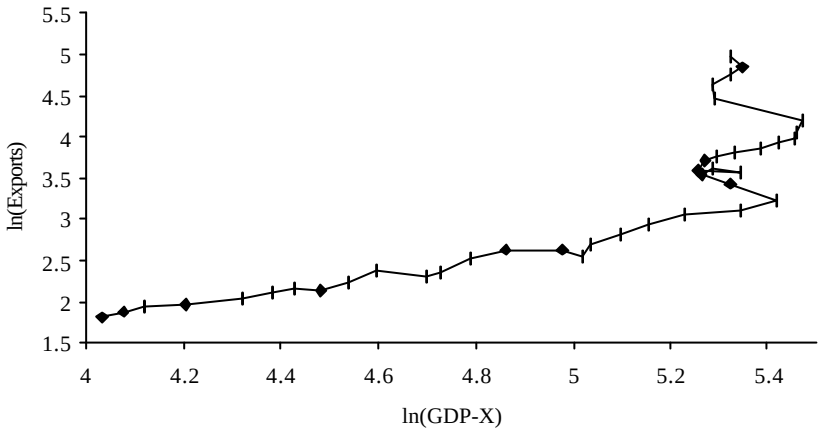


Figure 4

Venezuela: Constant Price Exports
& Non-Export GDP, 1973-1999
(negative entire period)

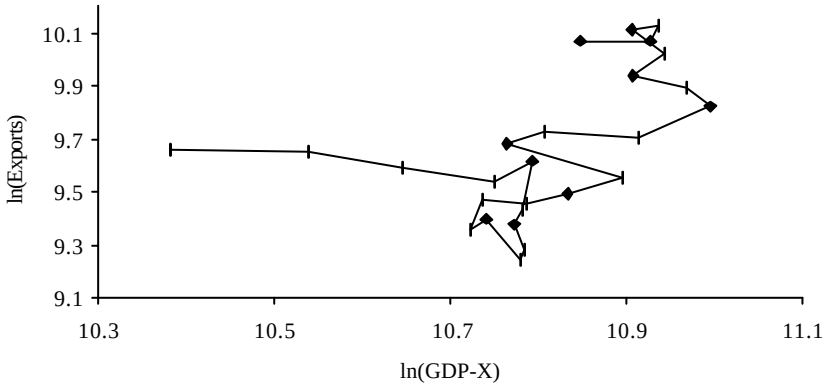


Figure 5

Brazil: FDI and 'Domestic' Fixed Investment as Percentages of GDP, 1970-1997
(non-significant)

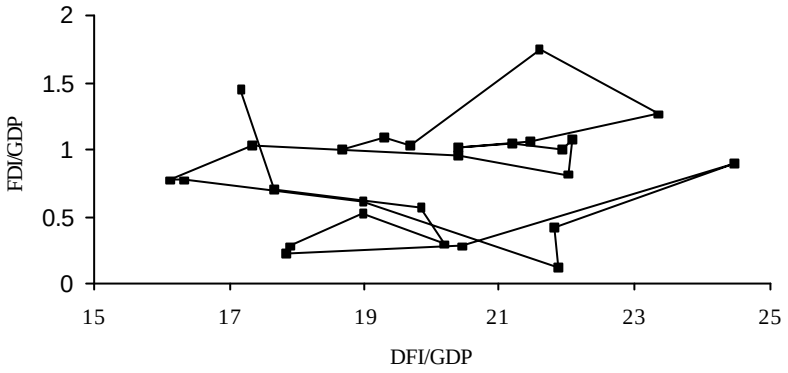


Figure 6

Colombia: FDI and 'Domestic' Fixed Investment as Percentages of GDP, 1970-1997
(negative overall)

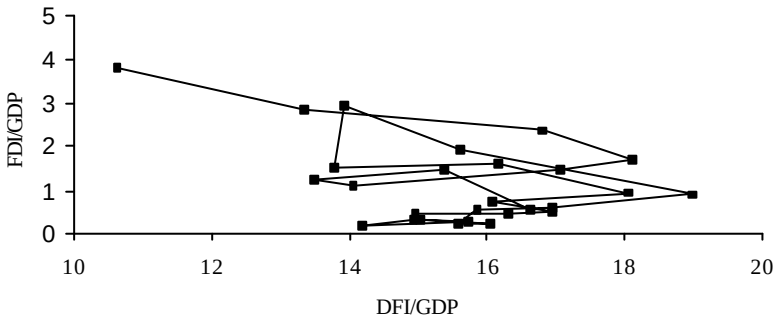


Figure 7

Mexico: FDI and 'Domestic' Fixed Investment as Percentages of GDP, 1970-1997
(positive until 1980s, then negative)

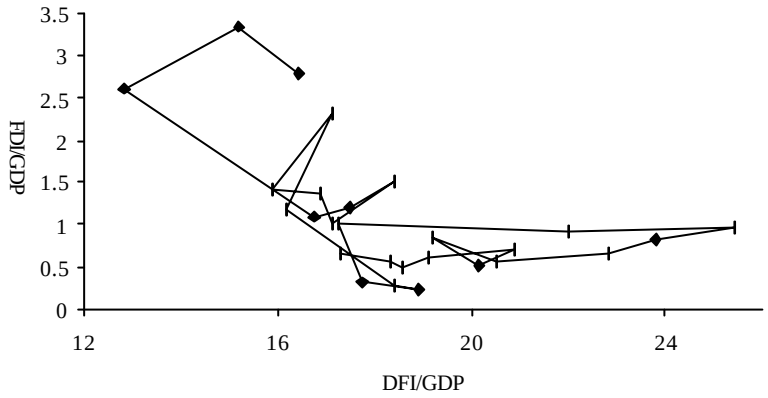
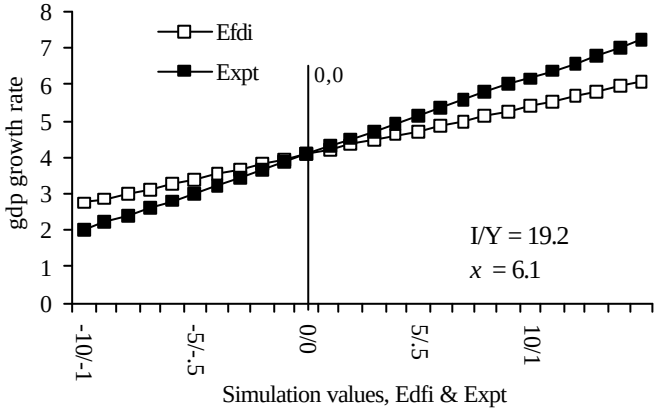


Figure 8

Simulated Growth Rates over the Calculated Range of Elasticities between FDI & DFI, and Exports & Non-export GDP, Latin America, 1970-1997



Note: The range of Edfi is -10.4 to 8.7; for Expt it is -1.8 to 1.8.
The effect of the dummy for the 1980s is not included in the simulation.

Table 2: Elasticity of Non-export GDP with Regard to Exports, 1960-1999

Countries	All years	1960-81	1981-90	1990-99
Argentina	.39	.56	-.27	.39
Bolivia*	nsgn	-1.81	-.09	.31
Brazil	.65	.87	.45	.58
Chile	.40	.25	.56	.65
Colombia	.71	1.21	.31	.45
Costa Rica	.38	.59	.29	-.24
Dom Rep	.43	1.15	.45	nsgn
Ecuador	.59	.57	.13	.40
El Salvador	.65	1.01	nsgn	.24
Guatemala	.91	.74	.38	.42
Honduras	.96	.51	1.79	.32
Mexico	.41	1.02	nsgn	-.12
Nicaragua	.27	.71	-.46	nsgn
Panama	**not applicable**			
Paraguay	.61	.93	.15	nsgn
Peru	.81	.80	-.68	nsgn
Uruguay	.24	.31	.31	.44
Venezeula	nsgn	-.72	nsgn	nsgn
Average (nsgn =0)	.49	.51	.20	.22
pos/neg/nsgn	15/0/2	15/2/0	10/4/3	10/2/5

*1970-1999

Table 3: Elasticities between Foreign Direct Investment and Domestic Fixed Investment (Estimated), Latin America, 1970-1997

	elasticities			
	all years	1970s	1980s	1990s
Argentina	-4.7	nsgn	nsgn	nsgn
Bolivia	**na**	**na**	nsgn	-.6
Brazil	nsgn	nsgn	nsgn	nsgn
Chile	nsgn	nsgn	nsgn	nsgn
Colombia	-.7	3.2	-1.3	-1.3
Costa Rica	nsgn	-1.1	nsgn	nsgn
Dom Rep	-.4	-1.4	2.8	nsgn
Ecuador	-.8	-1.1	nsgn	-.8
El Salvador	3.7	6.1	nsgn	nsgn
Guatemala	nsgn	nsgn	nsgn	nsgn
Honduras	nsgn	nsgn	nsgn	nsgn
Mexico	-1.6	8.7	nsgn	-1.1
Nicaragua	nsgn	nsgn	nsgn	.9
Panama	**na**	**na**	nsgn	3.2
Paraguay	nsgn	nsgn	nsgn	nsgn
Peru	nsgn	nsgn	nsgn	1.0
Uruguay	1.3	nsgn	3.0	-1.0
Venezuela	-2.0	nsgn	-10.4	nsgn
Average (nsgn=0)	-.33	.89	-.32	-.17
(excluding Venez)			(.27)	
pos/neg/nsgn	2/6/8	3/3/10	2/2/14	3/5/10

Table 4:

Regression Model for Latin American GDP Growth,

Data by Decades, 1970-1999

Variable	Coeff't	Std. Error	T-stat	Signif:
(Constant)	.070	.021	3.259	.002
LN[INVGDPt2]	.025	.012	1.974	.055
LN[XPTGRWt]	.188	.050	3.753	.001
D80S	-.022	.005	-4.226	.000
EFDI	.001	.001	1.710	.094
EXPT	.021	.009	2.202	.033

R^2(adj) =.583 F=14.675 @ .000

DF =44

Implied reaction coefficient for DFI = .975

Notes:

LN[GDI/GDP]is the natural log of estimated domestic investment in GDP, lagged two years

LNXPTGRW is the natural log of real export growth,

D80S is a dummy vairable for the 1980s

EFDI is the calculated elasticity between FDI and GDI

EXPT is the calculated elasticity between exports and non-export GDP

Table 5

Decomposing Difference in Growth Rates for Latin America, 1970s and 1990s

Growth rates:		1970s		1990s
Actual		5.34		3.49
	Change:			-1.84
Difference due to:				
1. Export growth			.06	
2. Xpt/Nxpt elasticity			-.61	
	net expt effect			**-.55**
3. Investment/GDP			-.12	
4. Fdi/Dfi elasticity			-.14	
	net I/Y effect			**-.26**
Total:				**-.81**