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THE EFFECTS OF TRADE POLICY  
REFORM: WHAT DO WE REALLY KNOW?

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ABSTRACT

The magnitude of existing research on the effects of trade reform is impressive. Yet economists have not reached a clear consensus on a number of important questions such as the labor market impact of trade reform, the linkages between trade and foreign direct investment, and the relationship between trade and growth. In this paper we attempt to clarify what we know about the relationship between trade reform, factor markets, and growth.

Although many studies have shown a positive relationship between various measures of openness and growth, many nagging problems remain. Trade policy is almost never measured using the most obvious indicators -- such as tariffs. In addition, many studies are plagued by serious econometric problems. The evidence on labor markets and trade reform is less extensive. Based on the studies to date, it appears that the unemployment and wage effects of trade reforms have generally been small. In the paper, we discuss the possibility that small wage and employment responses are due to labor market regulations. The paper concludes with an analysis of the linkages between trade policies and foreign investment flows. Our evidence suggests that trade reform has been accompanied by significant increases in investment inflows.

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In a reorganization of the World Bank's research department last year, one senior executive expressed the view that our knowledge of trade policy issues was essentially complete. From his perspective, we already knew so much about the effects of trade reform that research efforts should be reallocated to address other, more pressing policy issues. Is this true? It is certainly the case that dozens of countries have embarked on trade reforms in the last two decades, providing a wealth of country experience. This accumulated body of knowledge should enable researchers to answer the most basic questions about trade. In particular, by now we should have reached a consensus on three fundamental issues. First, what are the short-run costs to employment and wages of opening up to trade? Second, what about foreign investment? Is it attracted to or repelled by more open economies? And finally, what is the relationship between trade policy and long run growth?

The role of labor markets in trade reform is important for two reasons. First, painful spells of unemployment, rising poverty, and rapid real wage declines cannot be ignored, particularly if they threaten the very sustainability of the reforms. Second, changes in labor market institutions or regulations may be critical to the success of a proposed reform. Nowhere is this more evident than in the transitional economies of Eastern Europe and the Former Soviet Union, where the lack of labor mobility and the large size of the public sector is a significant impediment to trade reform.

One partial solution to help alleviate the short-run costs of adjustment has been to encourage foreign direct investment. The issues in this regard are two-fold. First, what is the impact of trade reform on foreign investment? In particular, do less protected markets lead to investment outflows, or does liberalization actually attract new investment? Second, can policy makers help ease the transition process

by liberalizing regulations regarding foreign investment? And how should policies be designed to maximize the gains from incoming foreign investment?

Ultimately, our most pressing concern is to establish a linkage between trade policies and long run performance, measured in terms of either productivity or per capita growth. Based on the dozens of studies which have been completed on the linkages between trade and growth, can we now say something definitive about what kinds of policies lead to the best country performance?

The topics addressed by academic researchers are frequently never entirely resolved. What is unusual about trade policy, however, is that it continues to generate debate despite an enormous volume of both theoretical and empirical work. Take, for example, the issue of trade policy and long run growth. Theoretical models of strategic trade policy suggest that nations will gain by intervening in oligopolistic markets to shift profits towards home firms. A recent paper by Berry, Levinsohn, and Pakes (1995) quantifies these models to show that if US protection of the auto industry had been implemented through tariffs instead of VERs, we could have generated six billion dollars in extra profits for US automakers. Yet Paul Krugman, a creator of these models, denies their applicability. On trade and growth, Grossman and Helpman's (1991) book points to the theoretical possibility that intervention in trade could raise growth if protection encourages investment in research-intensive sectors for countries with a comparative advantage in these goods. Yet recent empirical efforts to quantify this relationship (for example, Levine and Renelt (1992), or Harrison (forthcoming)) yield mixed results.

Does this imply that the orthodox wisdom on the benefits of trade reform should be reversed? Not necessarily. But an assessment of what we do know--and what we do not know--about the effects of trade policy should at least prevent us from making sweeping statements about a clear consensus on the subject. In this paper, we set out to review the evidence on the relationship between trade reform, factor markets, and growth. Where there are few previous studies--in particular, on the linkages between

foreign investment flows and trade reform—we supplement anecdotal evidence with new empirical research. On the linkages between trade and growth, however, we focus in large part on previous work.

The remainder of the paper is organized as follows. Section I examines the evidence on the relationship between trade policies, productivity and long run growth. Section II examines the wage and employment responses to trade reform. Focusing in particular on Mexico and Morocco, we explore several explanations for the small employment and output response to large changes in tariffs and quotas. Section III discusses the foreign investment response to liberalizing trade and investment codes. Section IV concludes and sets forth an agenda for further research.

## **I. Trade Policies and Long Run Growth**

### *Measuring Trade Policy.*

The concept of openness, applied to trade policy, could be synonymous with the idea of neutrality. Neutrality means that incentives are neutral between saving a unit of foreign exchange through import substitution and earning a unit of foreign exchange through exports. Clearly, a highly export oriented economy may not be neutral in this sense, particularly if it shifts incentives in favor of export production through instruments such as export subsidies. It is also possible for a regime to be neutral on average, and yet intervene in specific sectors. A good measure of trade policy would capture differences between neutral, inward oriented, and export-promoting regimes.

Price comparisons between goods sold in domestic and international markets could provide an ideal measure of the impact of trade policy, particularly in the absence of domestic policy distortions. Direct price comparisons would incorporate the impact of the various policies that affect domestic prices: tariffs, quotas, different exchange rates for imports and exports, and subsidies. Since information on relative prices is often not available, however, many other proxies are often used instead.

The simplest measures of trade orientation are based on actual trade flows, such as imports plus exports as a share of GDP or the growth rates of imports and exports. Most of these measures show a positive association with GDP growth, even after controlling for other factors such as capital or labor.<sup>1</sup> One problem with this approach, however, is that trade flows are at best an imperfect proxy for trade policy. Other factors, such as country size or foreign capital inflows, also affect trade: large countries, for example, generally have smaller trade shares. One improvement over this approach is to use the deviation of actual from predicted trade flows (as in Syrquin and Chenery (1989)), based on variables such as country size.

Another approach, introduced by Leamer (1988), uses a theoretical model to predict the pattern and volume of trade in the absence of protection. Leamer then measures "openness" as a function of the extent to which actual trade deviates from the pattern of trade predicted by the model. Edwards (1992) has used Leamer's measure to show a positive and statistically significant impact of openness on growth. Although this approach is quite promising, Pritchett (forthcoming) shows that Leamer's openness measure is inversely related to other measures of openness, such as import penetration, quotas, and tariffs. In other words, if Leamer's measure suggests that a country is relatively open, this country is also likely to have high tariffs and quotas, or low import penetration. In his original paper, Leamer (1988) acknowledges that "in the absence of direct measures of barriers, it will be impossible to determine the degree of openness for most countries with much subjective confidence."

Why not use these direct measures, such as tariffs or quotas? One reason is that the only cross-country source of quota and tariff information is an UNCTAD dataset which collected data at one point in time--1985--after many countries had already embarked on comprehensive trade reforms. The

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<sup>1</sup> See, for example, Balassa (1985).

International Monetary Fund (IMF) collects information on tariff revenues, which can be combined with data on import or export flows to calculate an effective tariff. However, several researchers have shown that the relationship between these measures and the actual levels set by policy makers is weak. This is due to a combination of factors, including legislated exemptions and corruption. Brazil, for example, had average legislated tariffs of 50 percent in the mid-1980s, but tariff collections divided by imports averaged around 6 percent.

For industrial countries, the problem is slightly different. In most cases, non-tariff barriers have essentially replaced tariffs as the most popular instrument of protection. Although aggregation of tariffs into an overall index is problematic, aggregating measures of quota protection is even more difficult. Typically, coverage ratios are typically used to measure the effects of nontariff barriers. These measures are calculated in one of two different ways. The first approach is to calculate the coverage ratio as the percentage of imports covered by trade barriers, which means that effective barriers that exclude most imports receive little weight. The second approach is to compute the percentage of product categories that are subject to import licenses. This approach, however, gives no information on the extent to which quotas are binding, nor can we measure the impact of relaxing quotas on trade flows. The coverage ratio only suggests that barriers to trade exist, but cannot measure their effect.<sup>2</sup>

Research on trade and growth using price-based measures, facilitated by the work of Summers and Heston (1988), has increased in the last several years. Studies based on these types of measures have generally found a positive relationship between trade and growth.<sup>3</sup> Yet these more recent efforts to identify the impact of openness on economic growth have several major shortcomings. The Summers and

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<sup>2</sup> For a discussion of the relationship between these administrative measures and other indicators of openness, see Pritchett (*forthcoming*).

<sup>3</sup> See Barro (1991), Bhalla and Lau (1992), and Dollar (1991).

Heston data is plagued by small sample size--the data have not been collected for the same set of benchmark countries over many years. This may be one factor which has led to an emphasis on the use of cross-section estimation. However, these cross-section studies make it impossible to control for unobserved country-specific differences and also ignore the important changes which have occurred over time for the same country. In addition, international price comparisons cannot disentangle the impact of domestic market imperfections (such as oligopolistic marketing channels for imported goods) from trade policy interventions.

*The Evidence on Trade, Productivity, and Growth.*

Based on this brief review, it should be evident that no independent measure of so-called "openness" is free of methodological problems. Trade policy is never measured using the most obvious indicators--such as tariffs and non-tariff barriers. Of course, it might be possible to overlook the flaws in existing trade policy measures if most studies found the same, robust positive relationship between opening up to trade and long run growth. But although most of the earlier studies did find a consistently positive relationship, many of the more recent studies do not. This includes both cross-country comparisons of trade policies and GDP growth, as well as individual country case studies that examine intersectoral productivity growth and the nature of international competition.

One of the most frequently cited recent studies of trade policies and GDP growth is Levine and Renelt (1992). Using half a dozen different measures of trade policies, the authors find no robust or even consistent positive relationship between opening up to trade and long run growth. Their measures of trade include the black market premium, Dollar's real exchange rate index of protection, trade volumes, and two indices compiled by Leamer. Yet they do find a robust, positive relationship between investment and trade shares, as well as between investment and the Leamer index. The correlation between investment and trade leads them to conclude that the beneficial effects of trade reform may operate through enhanced



resource accumulation instead of through a more efficient allocation of resources. Yet as we discussed above, the Leamer indices are difficult to interpret in light of Pritchett's critique, and trade shares are not always the best measure of trade policy.

The evidence is not any more conclusive for country studies which use detailed micro data to examine the relationship between productivity and openness to trade. Pack (1988) points out that "comparisons of total factor productivity growth among countries pursuing different international trade orientations do not reveal systematic differences in productivity growth in manufacturing..." Bhagwati (1988) writes that:

"Although the arguments for the success of the EP [Export Promotion] strategy based on economies of scale and X efficiency are plausible, empirical support for them is not available. The arguments on savings and innovation provide a less than compelling case for showing that EP is necessarily better on their account than IS [Import Substitution]"

Even the most recent efforts to examine the linkages between trade regimes and productivity growth, using more sophisticated econometric techniques and much better data than previous work, yield ambiguous results. Tybout (1992) reviews a number of his own and other studies for half a dozen developing countries, and concludes the following:

"In view of the diverse, ambiguous theoretical literature on the link between trade and productivity, it is not surprising that stable, predictable correlations have not emerged."

The problems associated with identifying robust relationships between opening up to trade and productivity growth across sectors can be illustrated using US data. It is somewhat puzzling that the types of studies which examine linkages between trade and productivity for developing countries have not been reproduced for US data. In the industrial countries, research on the determinants of productivity (as reviewed by Nelson (1981) and more recently, Griliches (1994)), typically ignores any potential role for trade policy. One exception is Scherer (1992), who examines the relationship between research and development activity and international competition in the US manufacturing sector. Yet Scherer finds that in the short run, increased import competition led to a fall in research and development expenditures. Since almost all studies find a strong link between research and development and productivity growth, this suggests that more import competition led to a productivity decline. Over the longer run, he does find a weak positive link between imports and research and development activity, but the correlation is statistically insignificant.

Scherer does not explore direct linkages between trade policy and productivity growth. Import competition could affect productivity directly, instead of indirectly through its impact on the level of expenditures on research and development. In theory, opening up to trade could enhance productivity by raising competition and by increasing access to products which embody new technology. We explore the possibility of a direct link between trade and productivity in the United States using an approach described in Harrison (1994). A modified production function for each four digit manufacturing subsector  $j$  at time  $t$  is given by:

$$\begin{aligned}
 (1) \quad dy = & B_0 + B_1 \{ \alpha_l(dl-dk) + \alpha_m(dm-dk) \} + B_2 dk + B_3 MPEN + B_4 \{ \alpha_l(dl-dk) + \alpha_m(dm-dk) \} * MPEN \\
 & + B_5 RND + B_6 XPT + B_7 \{ \alpha_l(dl-dk) + \alpha_m(dm-dk) \} * XPT + B_8 UNION1 + B_9 UNION2 \\
 & + B_{10} IMMTRAT
 \end{aligned}$$

Lower case variables  $y$ ,  $l$ ,  $m$ , and  $k$  are equal to  $\ln(Y)$ ,  $\ln(L)$ ,  $\ln(M)$ , and  $\ln(E*K)$ ;  $Y$ ,  $L$ ,  $M$ ,  $E$  and  $K$  are sector-specific real output, labor, material inputs, energy consumption, and capital stock. Labor inputs are measured here in hours; additional specifications using numbers of workers as the measure of labor input did not affect any of the results. All the variables except RND (research and development expenditures) are taken from the NBER database, augmented to include trade and labor market variables by Abowd (1991). The RND variable is taken from the US Census Bureau, as modified by Kortum (1993).

The extent to which the coefficient  $B_1$  exceeds unity is a measure of market power, while  $B_2$  measures returns to scale (a value of one would indicate constant returns to scale). The coefficients on  $MPEN$  ( $B_3$ ),  $XPT$  ( $B_6$ ), and  $RND$  ( $B_5$ ) measure the extent to which import competition, export shares, and research and development expenditures as a share of sales are linked to productivity increases. The interaction terms,  $B_4$  and  $B_7$ , measure the extent to which import competition and export orientation are associated with lower mark-ups. Two controls are included for union activity; UNION1 measures the rate of unionization for all workers, while UNION2 gives the unionization rate for production workers only. Finally, IMMRAT is defined as the share of the sector's labor force which is composed of immigrants.

If opening up to trade is associated with higher productivity growth, then the coefficients on  $B_3$  and  $B_6$  should be positive. The estimation results are reported in Table 1. The first two columns present estimates which do not adjust for capacity utilization or employ material-specific price deflators for material inputs (four-digit sectoral producer prices are used instead). Column one reports the annual data, while in column two, only 1958 and 1984 are included in the estimation--allowing us to examine long run changes. The results in column one suggest that greater import and export activity within a sector are associated with lower productivity growth. The results also show that sectors exposed to international

competition experienced significantly lower markups of price over marginal cost. The only factors positively and significantly associated with higher productivity growth are research and development expenditures and a higher share of immigrants in the labor force.

Yet if we turn to column two, we find that greater import competition is associated with productivity increases over the long run. Export activity is also positively associated with productivity growth, although the coefficient is not significant at the 5 percent level. From the evidence in columns one and two, we could conclude that international competition leads to short run productivity declines, but is associated with increasing productivity growth over the long run. These results are similar to Scherer's (1992) findings on the linkages between R and D expenditures and import competition. However, the fragile nature of these results is clearly illustrated by the estimates reported in columns three and four. If we adjust for capacity utilization and use the appropriate deflator for material inputs, there is no significant association between import competition and productivity growth in either the short or the long run. The only factor which is positively and consistently associated with productivity growth is expenditure on research and development. We also experimented with other specifications--such as excluding research and development expenditures (which could be correlated with trade shares), defining trade variables in differences instead of levels, and using number of workers instead of hours worked. All of these alternative approaches yield similar results.

Some might argue that the fragile nature of the association between trade and productivity growth in the US data can be attributed to the fact that trade shares are an imperfect measure of trade policy. However, several recent studies on Mexico--which use both trade shares as well as tariffs and quotas as measures of policy--provide yet another illustration of the elusive nature of the relationship between productivity and trade reform. Venables and Wijnbergen (1993) use plant-level data for 1984 through 1990 to calculate total factor productivity growth (TFPG) for Mexico prior to the trade reform (1984-87)

and post-reform (1987-1990). They find a significant acceleration of TFP growth for 38 out of 47 manufacturing subsectors after the reform. Using exactly the same dataset and time period for analysis, Tybout and Westbrook (1994) analyze the relationship between productivity growth and various measures of openness, including tariffs, quotas, imports and exports. According to their approach, "the productivity decompositions confirm that there was little association between changes in openness and changes in performance". They also find essentially no correlation between the various measures of openness used in their sample, echoing the results in Pritchett (forthcoming).

Apart from the conflicting nature of empirical evidence to date, many studies also exhibit serious statistical flaws. Probably the most serious of these is the issue of causality. This is an issue which has been relatively neglected in the current research on cross-country growth. Does openness cause growth? Or is it the other way around? Historical evidence seems to suggest that causality runs in both directions. Some countries, including Korea and Singapore, experienced an import substitution phase in conjunction with respectable rates of GDP growth. It is possible that such policies helped spur exports, which in turn generated long run growth. In the United States, protectionist tariffs which average 40 percent were not dismantled until the middle of the 1930s. Calls for protection re-emerged after growth declined and imports rose, beginning with the steel and textile industries in the 1960s and culminating in the protectionism of the 1990s.

One way to explore this issue is to apply standard causality tests. Studies that have tried to identify the causal relationship between GDP growth and growth in exports or imports have had mixed results.<sup>4</sup> The evidence to date appears to suggest that causality runs in both directions: high rates of growth encourage countries to open up to trade, while more open economies are also more likely to grow

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<sup>4</sup> See, for example, Harrison (forthcoming), Hsiao (1987), Jung and Marshall (1985), and Kunst and Marin (1989).

faster. Bhagwati (1988) makes a similar point, concluding that "while these cross-country regressions are certainly interesting, valuable and suggestive, they cannot be considered compelling on the issue in question..." Instead, Bhagwati points to the more compelling evidence on the positive relationship between trade strategy and economic performance presented in detailed country studies sponsored by the NBER in the late 1970s.<sup>5</sup>

*Trade Policies and Growth: A Research Agenda.*

The problems associated with identifying the linkages between policies and performance could be addressed through two different avenues. First, much better data on measuring trade policies should be made available. Detailed data on tariffs and quotas are in fact collected by both the World Bank and the International Monetary Fund (IMF). At the World Bank, however, such data are often discarded after a trade policy loan is disbursed or appraised. A systematic effort to retain these data would allow researchers much greater scope for policy analysis. The IMF also collects data on trade policies annually, in part for its publication on *Exchange Arrangements and Exchange Restrictions*. Yet no effort is made to systematically report summary statistics--such as tariff means or standard deviations. Additional efforts would also have to be devoted to computerizing the information. Since significant resources are devoted to collecting information on trade policies at both institutions, the marginal costs of systematically recording and storing such data should be low.

In addition to data collection efforts, research efforts need to focus on solving the endogeneity problems associated with the relationship between trade policies and growth. One promising avenue of empirical research would be to apply the emerging literature on the political economy of trade policy. Political economy models of protection could help to determine what instruments to use for trade policy,

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<sup>5</sup> See Bhagwati (1978) and Krueger (1978).

which is clearly not exogenous. Trefler (1993), for example, shows that the impact of US trade restrictions on import flows are ten times larger than previously believed, in part because researchers neglected to account for the simultaneity of policy determination and import volumes. This same approach could be applied to the literature on productivity and long run growth.

## **II. Trade Policies and Labor Market Adjustment**

### *Previous Evidence on Trade Policy and Labor Market Adjustment*

In a general equilibrium framework provided by the trade models of Ricardo and Heckscher-Ohlin, moving towards international prices via trade reform should have no impact on employment since full employment is generally assumed. In a world where labor mobility is not perfect, however, trade reform could lead to short-run adjustment costs. Heckscher-Ohlin models provide more explicit predictions regarding the impact of changes in international prices on wages; to the extent that developing countries have a comparative advantage in labor-intensive goods, trade reform will lead to more production of those goods. The shift towards greater production of labor-intensive goods will in turn increase the demand for labor and raise wages. Although higher wages will lead to a reduction in the capital-labor ratio across all sectors, there will be a reallocation of output towards labor-intensive goods. This implies that trade reform would lead to higher wages, a reduction in the relative returns to capital, and demand shifts to more labor intensive sectors.

To our knowledge, there are no cross-country studies which link changes in the trade regime with employment or wage effects at the aggregate economy-wide level. However, quite a few studies have attempted to measure the differential impact of trade reforms across subsectors within a country. This so-called partial equilibrium approach is possible because changes in the trade regime typically are uneven across goods. In a well-functioning labor market, one would expect small wage changes and larger

employment shifts between sectors, since wages for similar occupations should equalize across sectors but changes in output prices should lead to reallocation of labor towards the higher priced goods. The United States, for example, which by most standards has a very flexible labor market, clearly shows small wage responses to changes in relative prices across sectors and big employment effects.

Some of the first attempts to measure the partial equilibrium effects of import competition were carried out by Grossman (1986, 1987). Grossman analyzed the impact of tariff protection in the United States, finding that wages are fairly unresponsive to (tariff-inclusive) import prices but that employment responses in some sectors have been quite significant. Grossman concludes from the low wage elasticities and higher employment elasticities that there is fairly high intersectoral labor mobility within the United States. Other cross-industry studies of the United States and Canada include Freeman and Katz (1991), Revenga (1992), and Gaston and Trefler (1993). These studies also find significant effects of changes in import competition on inter-sectoral changes in employment, but smaller effects on wages. In the United States and Canada, it appears that trade policy changes lead to employment reallocation across industries, with very little effects on wages.

Evidence on trade and employment linkages is much weaker for developing countries. Although Anne Krueger's book on trade and employment in developing countries appeared in the early 1980s, we actually know very little about the short-run impact of trade policy reforms on the labor market. Krueger (1983) summarizes a project sponsored by the National Bureau of Economic Research (NBER) to analyze the linkages between trade policies and employment in ten developing economies. The NBER studies focused on (1) measuring the relative labor intensity of exportables versus import-substituting production and (2) measuring the extent to which greater protection encourages a shift towards more capital-intensive means of production. Krueger and her colleagues hypothesized that moving towards a more neutral trade regime led to greater labor intensity in production. However, none of the case studies directly measured



the actual impact of trade reforms on the labor market--the book merely hypothesizes that trade reform should lead to employment increases as the labor force shifts towards labor-intensive tradeables.

Partial equilibrium approaches, similar in spirit to the US studies, have recently been completed for Uruguay, Mexico, and Morocco. For Uruguay, which introduced trade reforms in 1979 and again in 1985, Rama (1994) used four-digit industry data between 1978 and 1986 to measure the impact of trade liberalization on employment reallocation and real wages in the manufacturing sector. The results show that trade reforms had a significant impact on the level of employment across manufacturing subsectors, but almost no impact on real wages. Reducing the protection rate within a sector by 1 % led to an employment reduction of between .4 and .5 percent within the same year. These results suggest that during those years the labor market in Uruguay was fairly competitive, with significant employment reallocation between sectors after the reforms.

For Mexico and Morocco, however, employment and wage effects of the trade reforms during the 1980s were relatively modest. Revenga (1994), using plant-level data for Mexico, finds no discernable effect on wages and a moderate reduction in firm-level employment following reductions in tariff levels and quota coverage. According to her estimates, a 10 point reduction in tariff levels, such as that experienced by Mexico between 1985 and 1990, was associated with a 2 to 3 percent decline in employment levels. Currie and Harrison (1994) find an even smaller impact on employment of trade reform in Morocco. Using plant-level data for Morocco between 1984 (when the trade reform began) and 1990, they find that employment in most manufacturing firms was unaffected by tariff reductions and the elimination of quotas. There was a significant employment response for firms only in some specific sectors--such as textiles and beverages. The 21 point decline in tariff protection for firms in the textiles, beverages, and apparel sectors was associated with a 6 percent decline in employment. Why was the

extent of employment reallocation so low? We explore several possible explanations for the sluggish employment response, including rigidities in the labor market, below.

*Why were Labor Market Responses to Trade Reforms in Mexico and Morocco so Low?*

By industrial country standards, the trade reforms initiated in both Mexico and Morocco during the 1980s were enormous. In Morocco, the trade reform initiated in 1984 reduced the coverage of import licenses (quotas) from 41 percent to only 11 percent of all imports by 1990. The maximum tariff fell from 165 % to 45 % during this period. In Mexico, the trade reforms initiated in 1985 led to a reduction in the average tariff from 23.5 % to 12.5 % in 1990, and the maximum tariff was reduced from 100 % to 20 %. Import licensing, which covered 92.2 % of all imports in 1985, covered less than 20 % of all imports by 1990. In contrast, the Canada-United States Free Trade Agreement (CUSTA) resulted in an overall reduction in Canadian tariffs of 2.5 % between 1988 and 1991, and the maximum tariff reduction was under 9 %.

One puzzling aspect of trade reform in Mexico and Morocco is that it had essentially no impact on wages and a very small effect on the reallocation of employment. One possible explanation is that labor market policies such as hiring and firing costs, or minimum wages, preventing firms from responding to the reforms. Inability to fire may have prevented employers from reallocating production to more profitable areas of production: evidence for other countries such as India and Venezuela suggests that this may be the case. Minimum wage laws may also have inhibited wage flexibility and undermined international competitiveness, leading to the observed lack of a wage response.

One simple way to test whether sticky labor markets are responsible for the low adjustment response is to examine changes in output, employment, and trade policies. If labor markets in both countries are flexible, variations in employment should be highly correlated with variations in output. Lack of employment adjustment could then be explained by lack of output adjustment to changes in

policies. If output levels only responded sluggishly to tariff and quota changes, then it would not be surprising if employment failed to respond as well.

Tables 2 and 3 report correlations between changes in output, employment, and trade policies for Mexico and Morocco. Particularly in Morocco, but also to a lesser extent in Mexico, the results confirm that employment responded significantly to output changes, but that both output and employment were not highly correlated with changes in trade policies. In Table 2, which reports the correlations for Morocco, the correlation coefficient between changes in output and employment is .31 for annual data and .48 for long period (from 1984 to 1990) changes. However, the correlations between changes in output and trade policies are small in magnitude and inconsistent. While tariff increases were positively associated with output changes, changes quotas were negatively associated with output changes--although the correlation coefficient in both cases is very small. Consequently, it is not surprising that employment changes are only weakly correlated with changes in trade policies.

The results in Table 3, which reports correlations for Mexico, are similar but less dramatic. The correlation coefficient between output and employment changes is .09 in in the short run and .13 in the long run. However, there is no consistent positive or negative correlation between changes in output or employment and our two measures of trade policy changes--quota coverage and tariff levels. The lower correlation coefficient between output and employment for Mexico than for Morocco suggests there is some basis for the assertion that labor mobility in Mexico is sticky. However, the primary issue highlighted by both Tables 2 and 3 is the lack of a large, consistent output response to trade policy changes over the short and long run.

In Morocco, other evidence confirms the hypothesis of a fairly fluid labor market. In principle, hiring and firing laws are quite severe. Private firms must first obtain permission from government bodies to fire permanent employees, and must then pay a severance payment to dismissed employees ranging

from five weeks (for 5 years of service) up to 38 weeks (for 15 years of service). Yet in practice, it is unclear how important a role restrictions on dismissals actually play in allowing private sector enterprises to respond to trade reform. Restrictions on dismissals typically only apply to the largest, formal sector enterprises. In addition, many enterprises have responded to restrictions on firing permanent workers by hiring temporary employees, who can be easily dismissed. The share of temporary workers in manufacturing rose nearly by nearly twenty percentage points between 1984 and 1990.

Currie and Harrison (1994) examined the extent to which a sluggish adjustment of the labor force could explain the low elasticities of employment and wage responses to trade reform in Morocco. Using a lagged adjustment model of labor demand to test the speed of adjustment in Morocco, they found that with the exception of parastatals, employment adjustment takes place within the year. Their econometric estimates are in the same range as most of the industrial country estimates surveyed by Hammermesh (1993). In terms of the speed of adjustment, private sector firms in Morocco are more like North American firms than European firms--the latter typically adjust employment more slowly. These comparisons support the contention that in Morocco, despite legislation which on paper appears to be quite restrictive, labor mobility is comparable to the United States--where there are essentially no restrictions on hiring or firing. Revenga (1994) employed a similar approach to test for the extent of labor mobility in Mexico. In contrast to Currie and Harrison (1994), Revenga finds a large coefficient on lagged employment, suggesting a more sluggish pattern of labor market adjustment in Mexico. These results are consistent with the correlations presented in Tables 2 and 3, which suggest that the labor market in Morocco is highly flexible in responding to output changes, while the Mexican labor market is less so.

Another possible impediment to labor market adjustment are minimum wage laws. In both Mexico and Morocco, minimum wage laws were in place when the trade reforms were introduced. To

the extent that minimum wages were binding, they could in principle act as a barrier to downward wage adjustment, explaining the lack of any wage response to tariff and quota changes. In Morocco, the real value of the minimum wage rose by 4.4 percent annually during the 1980s, which suggests that it could have played an important role in the adjustment process.

In practice, however, the evidence suggests that the minimum wage was not a factor in preventing adjustment in either Mexico or Morocco. Bell (1994) analyzed both plant-level and household data for Mexico to measure compliance with minimum wages. In Mexico, the evidence suggests that a large fraction of individuals received earnings below the statutory minimum wage. Further evidence for Mexico also suggests that the minimum wage had no impact on overall labor demand. This reflects both poor compliance as well as the fact that the real value of the minimum wage fell by 30 percent between 1984 and 1990.

In Morocco, evidence on compliance with the minimum wage is only available for 1986, two years after the trade reforms were introduced. For that year, the manufacturing census can be used to calculate an average firm-specific wage. Average wages were calculated for both skilled and unskilled workers. Figures 1 and 2 present histograms of the wage distribution for both sets of workers. The vertical axis indicates the share of total firms which paid a given wage level, while the horizontal axis indicates the nominal annual wage. A vertical line, drawn at 9,810 dirhams, indicates the (annual) minimum wage in 1986.

The evidence in Figure 1 suggests that the majority of firms did pay at least the minimum wage to skilled employees. In addition, the clustering of wages at exactly the minimum does appear to suggest that for skilled wages, the minimum was a binding constraint. For unskilled workers, however, the evidence in Figure 2 suggests significant noncompliance with the legal minimum. The combined evidence from Figures 1 and 2 suggests that the minimum wage may have been used as a general guideline for

skilled wages, but was not a binding constraint. This conclusion is reinforced by the evidence presented in Currie and Harrison (1994), who show that demand for skilled labor increased dramatically during the 1980s. If in fact minimum wages had been a binding constraint for skilled labor, we would have expected to see a relative decline in the share of skilled to unskilled labor during that period. Instead, the share of skilled to unskilled labor increased dramatically.

In the Moroccan case, lack of compliance with the minimum wage has been legitimized by recent laws allowing firms to legally ignore labor legislation when hiring new entrants into the labor force. This law, which was passed in an effort to address the high rates of unemployment for youth, suggests that in the cases where minimum wages do inhibit employment growth, the government is likely to find politically acceptable means to remove the minimum wage constraint.

#### *Explanations for the Lack of an Output Response*

The correlations presented in Tables 2 and 3 suggest that the sluggish employment response can be attributed to lack of an output response to quota and tariff changes in the two countries. How do we explain the fact that output did not seem to adjust to reductions in quotas and tariffs? One way to assess the impact of the trade reform is to examine changes in import competition. Although many economists would argue that the appropriate measures of trade policy changes are quotas and tariffs, changes in import volumes provide some insights into the actual impact of those policy changes.

Between 1984 and 1990, import penetration essentially remained unchanged in Morocco. Import penetration in the Moroccan manufacturing sector fluctuated from 37.6 % in 1984, to 36.7 % in 1987, and finally increased slightly to 39 percent in 1990. In other words, there was almost no change in actual imports as a share of domestic sales. The trend in Mexico during the 1980s is the same. In 1984, import penetration in Mexican manufacturing was 12.7 percent. That share declined to 8.7 percent in 1987, and

then recovered, doubling to 16.2 percent in 1990. In light of these small changes in import competition, it is not surprising that output failed to respond.

Why did import penetration in manufacturing, which was certainly the most protected sector in Morocco prior to trade reform, remain more or less constant throughout the 1980s? We argue here that the answer is due to a combination of several factors. Although trade reforms in both countries were far-reaching, protection levels still remained high in comparison to the industrial countries. In Morocco, despite the elimination of quotas and tariff reduction, average tariffs remained above 30 percent throughout the 1980s. In both Morocco and Mexico, a real exchange rate depreciation cushioned the impact of the trade reforms. Figure 3 (using the IMF's real exchange rate series) shows that compared to other developing countries during this period, the real exchange rate in Mexico and Morocco depreciated significantly in the mid-1980s, when trade reforms were introduced in both countries. In Mexico, however, the real exchange rate began to appreciate beginning in 1988.

In part, the real exchange rate depreciation in both countries cushioned firms against the trade reforms. However, there is also evidence that firms responded to the threat of more imports by cutting profits. For Mexico, Venables and Wijnbergen (1993) show that trade reforms led to significant reductions in price-cost margins. For Morocco, de Melo, Haddad and Horton (forthcoming) also show that greater import competition led to lower margins. One remaining puzzle is why the reduction in profit margins was not shared (at least partially) by labor in the form of lower wages. Anecdotal evidence for Morocco suggests that profits were very high prior to the reform--possibly allowing manufacturers to sustain comfortable margins even after lowering prices to compete with the threat of imports.

Finally, there is also evidence that firms responded to greater international competition by raising productivity, allowing them to achieve efficiency gains without shedding labor. Using many different measures of productivity and several different approaches, Haddad (1993) shows an increase in firm-level

productivity in Morocco following the trade reforms. Although the evidence for Mexico is somewhat inconclusive (see our previous discussion), there is also some evidence of an increase in productivity during the latter part of the 1980s.

### *The Labor Market Impact of Trade Reform: Some Research Priorities*

Despite the increasing attention paid to the conjunction of labor and trade issues in the last several years, many questions remain unanswered. There is a paucity of research on the linkages between trade reform and employment, especially across countries. Anne Krueger's original hypothesis that trade reforms in developing countries should be accompanied by employment and wage increases due to a reallocation of output towards low-skill, labor-intensive products, still has not been adequately tested. Recent research, if anything, casts doubt on that hypothesis. Both Revenga (1994) and Hansen and Harrison (1995) show that in Mexico wage and employment changes after trade reform have led to greater inequality between skilled and unskilled labor—which is at odds with Mexico's supposed comparative advantage in unskilled labor. In the transitional economies, many labor market issues are unresolved, including the thorny problem of how to cope with the reallocation of labor from the public to the private sector.

Industry-level studies that measure the labor market impact of trade reforms have found very little reallocation of labor and essentially no wage response. Further research is necessary to analyze the extent to which our assessment of Mexico and Morocco—which shows that employment was largely unaffected because output failed to respond—can be applied to other countries or regions.

### **III. Trade and Exchange Restrictions and Foreign Direct Investment**

Foreign direct investment (FDI) is becoming an important source of capital for developing countries, capable of helping reforming economies acquire valuable technology and easing the



transition to a more open economy. Until recently, the bulk of FDI flowed mainly to countries with large and rich domestic markets, primarily among the industrialized world. However, these patterns are changing, as new FDI increasingly flows to developing countries. During 1992-94, developing countries accounted for about 40 percent of FDI inflows, up dramatically from 23 percent in the mid-1980s (World Bank, 1995).

Investment by multinational corporations has been one vehicle for this shift in FDI flows. The expansion of multinational corporations into developing countries has yielded, among other benefits, important increases in employment: nearly 5 million of the 8 million jobs created by multinationals between 1985 and 1992 occurred in developing countries (World Bank, forthcoming). These trends suggest that there are large benefits to be reaped in developing economies from attracting foreign investment.

However, as many analysts have pointed out, the total volume of resources available through FDI flows is bound to remain limited.<sup>6</sup> This raises a key question for developing countries, namely, how to attract a large share of those resources. In this section we focus on one aspect of this issue: Are FDI flows attracted or repelled by trade reform and liberalization?

Previous empirical work in this area is fairly scarce. A recent paper by Edwards (1990) investigated the determinants of the distribution of FDI flows across developing countries, and concluded that countries with larger internal markets, higher domestic investment ratios and a smaller government were more attractive for FDI. Edwards also found that increases in openness were *positively* associated with FDI flows. However, the paper did not explicitly look at the impact of trade reform or of liberalization. In another recent paper, Fry, Claessens, Burridge and Blanchet (1995) examined the relationship between FDI, the current account and other capital flows. They concluded

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<sup>6</sup> See, for example, Cardoso and Dornbusch (1989); Edwards (1990), or World Bank (1995 and forthcoming).

that more liberal foreign exchange systems increase the likelihood that FDI flows are autonomous vis-a-vis the current account, and hence associated with larger increases in domestic capital formation. They did not, however, analyze the relationship between trade and exchange restrictions and the level of FDI inflows.

In this section we use data on FDI inflows for 74 countries over the 1970-92 period to examine the linkages between trade and exchange restrictions and FDI.<sup>7</sup> We begin by analyzing trends in foreign investment in a sub-sample of countries before and after trade reforms. We then carry out some simple econometric analyses to investigate more carefully whether changes in trade and foreign exchange restrictions have an impact on the level of FDI flows. Finally, we use data from the World Bank's *Adjustment Lending Conditionality and Implementation Database* (ALCID) to examine whether conditional, policy-based multilateral lending has an impact on private FDI flows. All data sources for this section are described in detail in the data appendix.

*FDI flows to developing countries: recent trends.*

Figure 4 plots FDI flows to developing countries over the 1970-1992 period. FDI inflows are expressed as percent of recipient country GDP. The figure indicates that FDI flows fell significantly during the first half of the 1980s, but increased rapidly after 1986. The graph also shows that FDI inflows are, on average, small relative to recipient country GDP. What the graph does not show, however, is that there is great variance among countries in the size of FDI inflows, and that these flows are remarkably concentrated in a few recipient countries.

The degree to which FDI flows are concentrated among a few recipients is evident from Table 4, which lists the top ten developing country recipients of FDI inflows for the 1990-92 period. It is apparent from Table 4 that FDI flows favor larger economies, and that regionally they favor East Asia

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<sup>7</sup> The sample periods vary for different countries, but for the majority correspond to the full 1970-1992 period. Data are annual. See data appendix for details.

and Latin America, two regions that at present have gone furthest in reforming their macro environments and opening up to trade. This could be a first indication of a linkage between reforms and FDI.

Figure 5 plots the annual share of net foreign investment in GDP for a sub-sample of developing countries that have undergone trade reform and were recently the subject of study by the World Bank.<sup>8</sup> The time series, available before and after each trade reform episode, allows us to quickly summarize the apparent relationship between foreign investment inflows and trade reform. In most countries, net foreign investment inflows increased substantially following trade reforms. In some countries, the magnitudes are quite large: in Costa Rica, foreign investment nearly tripled, amounting to an inflow of over 3 percent of GNP by 1992. In the two transitional economies, former Czechoslovakia and Poland, foreign investment surged in 1990, although as a share of GNP it was quite small. Other countries, like Madagascar and Mauritius, also show significant upward trends in FDI following trade reform. But some countries—for example, Peru or Ghana—did not experience sizable increases in foreign investment. Yet others, like Zimbabwe, show an erratic and highly-fluctuating pattern for FDI flows. And in some, for example Kenya (not shown), foreign investment inflows actually declined following trade reforms in both 1980 and 1987. One reason for the decline in Kenya may be that foreign investment was traditionally been attracted to the protected manufacturing sector. According to a recent World Bank report on Kenya, most of this investment was actually welfare-worsening, since the after-tax repatriable earnings to foreign investment actually exceeded the value added of these investments when measured using world prices.<sup>9</sup>

One important policy question is the extent to which these post-reform surges in foreign investment in these countries reflect the impact of the trade reforms, more liberal foreign investment regulations, or an improved macro-economic environment. Since all three aspects of policy reform are

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<sup>8</sup> See World Bank, Trade Expansion Program Reports (various), and Harrison and Revenga (1995).

<sup>9</sup> World Bank, TEP report on Kenya, Annex 4, pp. 35-36.

often tackled simultaneously, it is difficult to identify the separate role of trade policy. Case studies of the individual countries suggest that more liberal foreign investment codes, as well as an improved macro climate, were important factors, and that trade reform per se may not have played a major role (Harrison and Revenga, 1995). The econometric analysis below attempts to distinguish more systematically between the effects of the different types of reforms.

*The impact of trade reform on foreign investment*

Our theoretical understanding of the determinants of foreign direct investment has increased significantly over the last few years thanks to new developments in both trade theory and the industrial organization literature. Empirical analysis of the determinants of FDI, however, has lagged behind these theoretical developments, and has mostly adopted a pragmatic, sometimes *ad hoc* approach. Following Edwards (1990), we specify a simple empirical model in which FDI inflows are a function of real GDP per capita (GDPPC), lagged growth in GDP per capita (dGDPPC), domestic investment (as a share of GDP (IR)), the size of government (also as a share of GDP (GC)), the real exchange rate (RER), the trade policy stance (TP), changes in the trade policy stance (dTP) and the extent of restrictions on balance of payments transactions (BOPRES):

$$(2) \quad \frac{FDI}{GDP} = c_0 + c_1 GDPPC + c_2 dGDPPC(-1) + c_3 IR + c_4 GC + c_5 RER(-1) + c_6 TP + c_7 dTP(-1) + c_8 BOPRES + \varepsilon$$

The investment ratio, the size of government and the real exchange rate are included to proxy for broad macroeconomic variables that are expected to affect investors' decisions to move into a country. To the extent that domestic investment is complementary to foreign investment, we would expect a positive sign on the investment ratio. The size of government can be taken as an indication of fiscal balance (or imbalance) and as a sign of the host country's stance towards the private sector. Both of these factors

would suggest a negative relationship between GC and FDI flows. On the other hand, the share of government in GDP can also capture factors, such as the government's investment in infrastructure and education, which would tend to attract FDI flows. The sign on the GC variable is therefore a priori ambiguous. The level of the real exchange rate is another policy variable which we assume should also have an impact on the size and location of FDI flows. Overvalued exchange rates detract from a country's international competitiveness, and are likely to discourage FDI. Given our definition of the real exchange rate index—an increase in the RER index represents an appreciation— we would thus expect the sign on the corresponding coefficient to be negative.

We use several alternative variables to measure a country's trade policy stance. We begin by using "openness", or exports plus imports as a share of GDP, as our measure of trade orientation. This variable offers the advantage that it is available for all the countries in our sample and for the whole period. But, as argued above, "openness" ratios based on actual trade flows are at best an imperfect proxy for trade policy. We hence try two other measures. First, we use direct measures of the average level of tariffs. Higher tariffs should correspond to more protected markets, and hence be negatively associated with FDI inflows. Second, we try an adjusted version of Dollar index that attempts to capture the extent of distortions in a country's relative prices of tradables. A higher Dollar index will indicate a more distorted structure of tradable relative prices, and hence also be negatively associated with foreign investment.

Our measures of exchange restrictions are taken from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*.<sup>10</sup> These data were used by Fry *et al* (1995) and are coded as dummy variables which equal 1 if a particular restriction exists. They cover the following restrictions: existence of special rates for some or all capital transactions; multiple rates for imports; multiple rates for

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<sup>10</sup> These data were made available to us in computerized format by Stijn Claessens.

exports; restrictions on payments in respect of current transactions; restrictions on payments in respect of capital transactions; import surcharges; advance import deposits; and requirement to surrender export proceeds. Presumably, the existence of restrictions on balance of payments transactions should deter FDI flows.

Table 5 presents the results obtained by estimating equation (2) on our panel of 74 countries. Columns (1) through (3) present different specifications which use our three alternative measures of trade policy. Note that the trade measures are entered both in levels and in lagged changes. The level variable should capture cross-country differences in FDI flows due to different levels of protection. The change variable is meant to capture within-country effects of past reforms. We obtain somewhat different results depending on the variable used. Columns (4) through (6) include the measures of BOP restrictions in addition to the trade policy variables.

As expected, openness appears strongly positively correlated with FDI in both the specifications with and without the dummies for BOP restrictions. The coefficient on lagged changes in openness, however, is insignificant. The adjusted Dollar index is negatively associated with foreign investment. A higher index, indicating greater price distortions, appears to reduce FDI flows. Surprisingly, the average level of tariffs enters positively, suggesting that higher average tariffs are associated with more, not less, foreign investment. This result stands in sharp contrast to those obtained when using the openness ratio and the Dollar index. A possible explanation is that the average tariff gives little indication of the true extent of protection, since it tells us little about the dispersion of tariffs, their coverage or their effects. It also does not capture the impact of non-tariff barriers or other forms of implicit protection, which may be better captured by the Dollar index. The sign on lagged change in tariff levels, on the other hand, makes more sense. Reductions in tariff levels *within* countries appear to be associated with increases in FDI.

Comparing the coefficient obtained on the average level of tariffs with that estimated on lagged changes in tariffs suggests that cross-country differences in protection levels do not explain why some countries receive more FDI than others—in the sense that countries with higher tariffs appear to receive more, not less FDI. But changes in protection within a particular country do seem to be associated with increases in foreign investment.<sup>11</sup> Overall, the results for the trade variables point to a positive link between “trade openness” and FDI, although it is not as straightforward a link as we may have expected.

The estimates for the BOP restrictions dummies are rather inconclusive. The coefficients on the special rates dummy, on multiple rates for exports, on restrictions on payments to the current account and on advance import deposits are consistently negative, but not always significant. Those on restrictions on multiple rates on imports, restrictions on the capital account and on surrender of export proceeds are often positive, but mostly insignificant. We made several attempts to merge the multiple exchange restrictions dummies into a single variable that could capture the overall importance of exchange restrictions, but results for this equation were ambiguous, with the coefficient on the different synthesis variables turning out consistently insignificant.

Real GDP per capita is never significant, in contrast with the results reported by Edwards (1990), but in line with recent findings elsewhere (World Bank, 1995). Lagged growth in GDP per capita, on the other hand, enters positively in all specifications, and is significant in 4 out of the 6 regressions. Higher growth rates hence seem to draw in more foreign investment. The size of government, as proxied by its share in GDP, appears to be positively related to foreign investment. This is also in contrast to results by Edwards (1990), and somewhat contrary to what we expected. On the other hand, if size of government is correlated with factors that tend to attract investment, such as availability of infrastructure and spending

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<sup>11</sup> We are in the process of exploring these results further, to try to understand how the cross-country and within-country variance affect the estimates.

on education, a positive relationship would not be surprising. The coefficient on the investment ratio is mostly insignificant, while that on the real exchange rate tends to enter negatively, as expected.

*Multilateral adjustment and policy-based lending and FDI.*

One interesting question is whether reform that is accompanied by multilateral lending tends to attract FDI or not. To investigate this, we estimate a set of regressions similar to those presented in Table 5, but add a dummy variable for “receiving” World Bank adjustment or policy-based lending. This variable is included lagged, to explore whether reform-based lending “leads” inflows of foreign investment. Unfortunately, our database—which offered detailed information on the type of conditionality associated with the loans— contained information only for World Bank lending, and not for the IMF or other regional-based development banks. To the extent that multilateral adjustment lending tends to complement each other and impose parallel conditionality the omission of the details on other multilateral lenders may not be too serious. One can always interpret the adjustment lending dummy as reflecting the impact of multilateral lending in general, and not just the World Bank.<sup>12</sup>

Results for these regressions are presented in Table 6. The adjustment lending dummy is negative and significant in all three specifications. Although this result is surprising, it is consistent with recent findings by Rodrik (1995) that non-IMF multilateral lending may have negative effects on subsequent private flows.

One possible explanation for this puzzling result could be that World Bank adjustment lending tends to focus on countries that are in economic difficulties or struggling with growth. Hence, there could be a negative self-selection effect at work that would tend to associate World Bank lending with poorer

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<sup>12</sup> However, recent results by Rodrik (1995) suggest that the effects of IMF lending are distinct from those of other multilateral lending, especially that by the World Bank. In this case, the World bank dummy may be better interpreted as measuring the specific effects of non-IMF lending.



performers. The correct question to ask would then be whether, in the absence of lending, FDI flows would have been even lower in these lagging economies.

This counterfactual question is almost impossible to answer. However, we attempt to pursue the negative selection issue further by restricting the sample only to those countries that do receive World Bank lending, and examining whether the existence of specific conditionality appears to make a difference to FDI flows. We run a simplified version of our basic regression on that sub-sample of countries that did receive World Bank lending, and include details on the conditionality associated with the loan. Specifically, we include separate dummies to identify whether a particular World Bank loan included conditionality on macroeconomic policies, exchange rate policies and trade reform. We also include a measure of the size of total lending received by each country from the World Bank in a particular year, both in absolute terms and as a share of GDP.

Results for these regressions are presented in Table 7.<sup>13</sup> Within this sample of countries that did receive World Bank lending, the existence of macroeconomic conditionality appears to be positively and significantly associated with FDI flows. The existence of policy conditionality on exchange rates enters positively, but is not quite significant. Conditionality associated with trade policies and trade reform, on the other hand, appears to have no discernible effect on foreign investment flows. The size of the lending package has no significant impact on FDI when measured as a share of GDP; but is weakly negatively correlated with FDI flows if entered in absolute levels.

*Trade reform and FDI Flows: What can we conclude?*

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<sup>13</sup> These results are a first cut at what is a very rich database on lending and conditionality. We are in the process of experimenting with introducing additional conditionality variables and also some evidence on country compliance with the conditions.

Empirical evidence on the link between trade reform and foreign investment flows is scarce, and obviously, much more empirical work is needed in this area before any robust conclusions can be drawn. Our simple econometric analysis, however, offers a few interesting insights.

Our analysis reveals a positive cross-country association between openness—whether measured through higher trade ratios or via lower price distortions—and foreign investment flows. We also find weak evidence that changes in the trade regime (as reflected in reductions in tariffs) have a positive impact on FDI flows within countries. More extensive analysis of cross-country patterns, and especially of within-country changes, are needed to ensure these findings are robust.

We also find that trade policies, and hence trade reform, seem to have a minor impact on the foreign investment relative to other factors. Among these other factors, the macroeconomic environment seems to be the most important. This is highlighted by our finding that among a sub-sample of countries receiving adjustment lending, macroeconomic conditionality had a larger impact on FDI flows than trade reforms. Continued research aimed at better understanding what influences foreign investment can help clarify these linkages.

#### **IV. Conclusions**

The magnitude of existing research on the effects of trade reform is impressive. And yet, as a profession, economists have not reached a clear consensus on a number of important questions such as the labor market impact of trade reform, the link between trade and foreign direct investment, and the relationship between trade and growth. In this paper we have attempted to clarify what we know and do not know concerning the relationship between trade reform, factor markets and growth.

Although many studies have shown a positive relationship between various measures of openness and growth, many nagging problems remain. A number of more recent studies do not show a clear

relationship between more liberal trade policies and productivity or GDP growth. Possibly more importantly, trade policy is never measured using the most obvious indicators--such as tariffs and non-tariff barriers. Finally, many of the existing studies are plagued by serious econometric problems. One difficulty in measuring the impact of trade policies on growth is that trade policy itself may be a function of other variables, including growth. Studies that have tried to identify the causal relationship between GDP growth and various measures of trade policy have generally yielded mixed results.

The evidence on labor markets and trade reform is much less extensive. Based on the studies to date, it appears that the unemployment and wage effects of the trade reforms have generally been small. The only exceptions are in the transitional economies--such as Czechoslovakia, Mongolia, Poland, and Romania--where trade reforms were accompanied by a restructuring of the entire economy. Evidence across industries within a particular country, available for Mexico, Morocco and Uruguay, generally supports this conclusion. In particular, wages and employment in Mexico and Morocco did not decline significantly in those manufacturing sectors which experienced the highest cuts in tariffs and quota coverage.

The small employment and wage responses to very large changes in either trade policies or trade flows are puzzling. At the very least, one would expect a larger reallocation of employment away from import-competing sectors--in both developed and developing countries. One possibility is that wages and employment are constrained by labor market regulations. Yet the empirical evidence suggests that these labor market restrictions are not responsible for the sluggish labor market response to trade reforms. Our analysis of Mexico and Morocco suggests another explanation: employment in these countries remained largely unaffected by trade reform, not because of problems in the labor market, but because output failed to respond to the changes in the trade regime.

Our analysis of the data on trade policies and foreign investment flows suggests that, in many countries, trade reform was accompanied by significant increases in foreign investment inflows. This appears to be largely unrelated to trade reforms themselves, but stems from the fact that reforms were generally accompanied by a macroeconomic reform and by liberalization of exchange arrangements and restrictions. We nevertheless find a significant positive association between openness—whether measured in terms of higher trade ratios or lower price distortions— and foreign investment flows, and conclude that countries undergoing trade reform need not fear capital flight away from formerly protected domestic markets.

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**Table 1: Productivity and International Competition in US Manufacturing**  
(T-Statistics in ())

	No Adjusting for Material Prices or Capacity Utilization		Adjusting for Material Prices and Capacity Utilization	
	First Differences	Long Differences	First Differences	Long Differences
B <sub>1</sub> (Mark-up)	1.217 (77.7)	1.289 (24.5)	1.156 (79.0)	1.171 (13.0)
B <sub>2</sub> (Returns to Scale)	0.921 (68.3)	1.019 (44.3)	0.894 (95.5)	0.929 (21.1)
B <sub>3</sub> (MPEN)	-0.017 (2.5)	0.159 (2.0)	-0.015 (1.6)	0.160 (0.8)
B <sub>4</sub> (Mark-up*MPEN)	-0.133 (1.5)	0.218 (1.4)	-0.249 (3.1)	0.172 (0.8)
B <sub>5</sub> (RND)	0.215 (5.4)	2.845 (3.7)	0.215 (4.4)	3.708 (2.3)
B <sub>6</sub> (XPT)	-0.010 (2.7)	0.177 (1.3)	-0.019 (3.6)	-0.094 (0.5)
B <sub>7</sub> (Mark-up*XPT)	-0.019 (0.6)	0.307 (1.4)	-0.138 (4.4)	-0.156 (1.7)
B <sub>8</sub> (UNION1)	0.004 (0.3)	0.536 (1.6)	0.008 (0.5)	1.414 (2.3)
B <sub>9</sub> (UNION2)	-.005 (0.4)	-0.609 (2.3)	-0.020 (1.3)	-1.412 (2.8)
B <sub>10</sub> (IMMRAT)	0.030 (2.0)	0.562 (3.0)	0.009 (0.4)	-0.137 (0.3)
N	9984	384	9984	384
R-Square	0.86	0.95	0.77	0.83

Note: All standard errors corrected for arbitrary heteroskedasticity.

**Table 2: Employment, Output and Trade Reform in Morocco**

Year to Year Changes

	Log Change in Output	Log Change in Number of Workers	Change in Import Penetration	Change in Tariffs	Change in Quota Coverage
Log Change in Output	1.00	0.314	-0.016	0.022	-0.010
Log Change in Workers		1.00	0.005	-0.008	-0.010
Change in Import Penetration			1.00	-0.185	-0.048
Change in Tariffs				1.00	0.215
Change in Quota Coverage					1.00

Long Period Changes (1984 and 1990 Only)

	Log Change in Output	Log Change in Number of Workers	Change in Import Penetration	Change in Tariffs	Change in Quota Coverage
Log Change in Output	1.00	0.481	-0.055	0.008	-0.052
Log Change in Workers		1.00	-0.023	-0.066	-0.062
Change in Import Penetration			1.00	-0.255	-0.039
Change in Tariffs				1.00	0.200
Change in Quota Coverage					1.00

**Table 3: Employment, Output and Trade Reform in Mexico**

Year to Year Changes

	Log Change in Output	Log Change in Number of Workers	Change in Tariffs	Change in Quota Coverage
Log Change in Output	1.00	0.092	0.025	0.058
Log Change in Workers		1.00	-0.010	0.056
Change in Tariffs			1.00	-0.155
Change in Quota Coverage				1.00

Long Period Changes (1984 and 1990 Only)

	Log Change in Output	Log Change in Number of Workers	Change in Tariffs	Change in Quota Coverage
Log Change in Output	1.00	0.133	-0.087	0.174
Log Change in Workers		1.00	-0.057	0.000
Change in Tariffs			1.00	0.112
Change in Quota Coverage				1.00

**Table 4: Top Ten Recipients of FDI Inflows, 1990-1992 average**

<b>Country</b>	<b>Percent of total FDI to developing countries</b>	<b>Cumulative Percent</b>	<b>FDI as percent of recipient GDP</b>
China	14.4	14.4	1.6
Mexico	10.9	25.3	1.5
Portugal	10.8	36.1	3.4
Thailand	10.1	46.2	2.3
Malaysia	9.6	55.8	7.1
Argentina	7.6	63.4	1.5
Indonesia	4.5	67.9	1.2
Brazil	3.7	71.6	0.3
Korea	3.0	74.6	0.3
Turkey	2.8	77.4	0.7

Note: From sample of 74 countries. Countries of Former Soviet Union excluded.

Table 5. Determinants of Foreign Direct Investment in LDCs

(dependent variable = FDI/ GDP)

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Real GDP per capita	-0.0004 (-0.460)	0.001 (0.827)	0.001 (0.595)	-0.001 (-0.969)	-0.001 (-0.577)	-0.0001 (-0.117)
Change in real GDP per cap (-1)	0.022 (2.228)	0.007 (0.651)	0.025 (3.125)	0.022 (2.265)	0.007 (0.648)	0.029 (3.392)
Investment Ratio	-0.0002 (-2.294)	0.0002 (1.085)	-0.0001 (-0.631)	-0.0002 (-2.209)	0.0002 (1.202)	-0.0001 (-1.232)
Government Share	0.0002 (1.889)	0.0005 (2.747)	0.0003 (2.632)	0.0002 (2.132)	0.0004 (2.808)	0.0002 (1.743)
Real Exchange Rate	-0.002 (-3.128)	-0.001 (-0.945)	-0.003 (-2.421)	-0.002 (-2.162)	-0.001 (-0.881)	-0.002 (-1.765)
Openness	0.285 (10.208)			0.272 (12.057)		
Change in openness (-1)	-0.073 (-0.792)			-0.070 (-0.779)		
Avg. tariff		0.002 (1.956)			0.002 (1.935)	
Change in avg. tariff (-1)		-0.002 (-1.623)			-0.002 (-1.518)	
Adjusted Dollar Index			-0.009 (-2.843)			-0.09 (-2.878)
Change in Dollar Index (-1)			0.009 (1.116)			0.008 (0.990)
Special rates				-0.001 (-0.517)	-0.006 (-2.077)	-0.003 (-2.136)
Multiple rates on M				0.003 (2.202)	0.001 (0.397)	0.002 (1.146)
Multiple rates on X				-0.0002 (-0.183)	-0.005 (-2.821)	-0.004 (-2.010)
Rest paymts current account				-0.006 (-4.375)	-0.006 (-2.860)	-0.003 (-2.069)
Rest paymts capital account				0.000 (0.017)	0.001 (0.191)	-0.003 (-1.293)
M surcharges				-0.0002 (-0.172)	0.0005 (0.507)	0.001 (1.058)
Advance M deposits				-0.0003 (-0.321)	-0.001 (-1.392)	-0.002 (-1.866)
Surrender X proceeds				0.0001 (0.043)	0.001 (0.426)	0.002 (0.994)
R <sup>2</sup>	0.247	0.110	0.147	0.265	0.170	0.201
N	1293			1292		

Note: T-statistics in parentheses. Robust errors estimated using White's (1980) procedure. Real GDP per capita, the real exchange rate and the average tariff level are all in logs. The regression also includes a constant term and allows for one lag in the dependent variable.

**Table 6. The Impact on FDI of Multilateral Adjustment and Policy-Based Lending**

(dependent variable = FDI/ GDP)

Variable	(1)	(2)	(3)
Openness	0.268 (1.846)		
Change in openness (-1)	-0.067 (-0.744)		
Avg. tariff		0.002 (1.904)	
Change in avg. tariff (-1)		-0.002 (-1.583)	
Adjusted Dollar Index			-0.009 (-2.929)
Change in Dollar Index (-1)			0.007 (0.940)
Adjustment Lending Dummy	-0.003 (-2.697)	-0.002 (-1.754)	-0.003 (-2.353)
Special rates	-0.001 (-0.480)	-0.006 (-2.116)	-0.003 (-2.073)
Multiple rates on M	0.004 (2.125)	0.001 (0.384)	0.002 (1.122)
Multiple rates on X	-0.000 (-0.034)	-0.005 (-2.770)	-0.004 (-1.961)
Rest paymts current account	-0.006 (-4.283)	-0.006 (-2.768)	-0.002 (-1.883)
Rest paymts capital account	0.000 (0.017)	0.001 (0.204)	-0.003 (-1.294)
M surcharges	-0.0003 (-0.339)	0.0004 (0.424)	0.001 (1.015)
Advance M deposits	-0.0003 (-0.475)	-0.001 (-1.438)	-0.001 (-1.773)
Surrender X proceeds	0.0002 (0.063)	0.001 (0.395)	0.002 (1.008)
R <sup>2</sup>	0.267	0.171	0.207
N	1292		

Note: Same specification as in Table 3. Only relevant variables on trade policy, exchange restrictions and world bank lending dummy are shown. Lending dummy = 1 if country received adjustment lending or other types of policy-based conditional lending that period. Sample is same as Table 3. T-statistics in parentheses. Robust errors estimated using White's (1980) procedure.

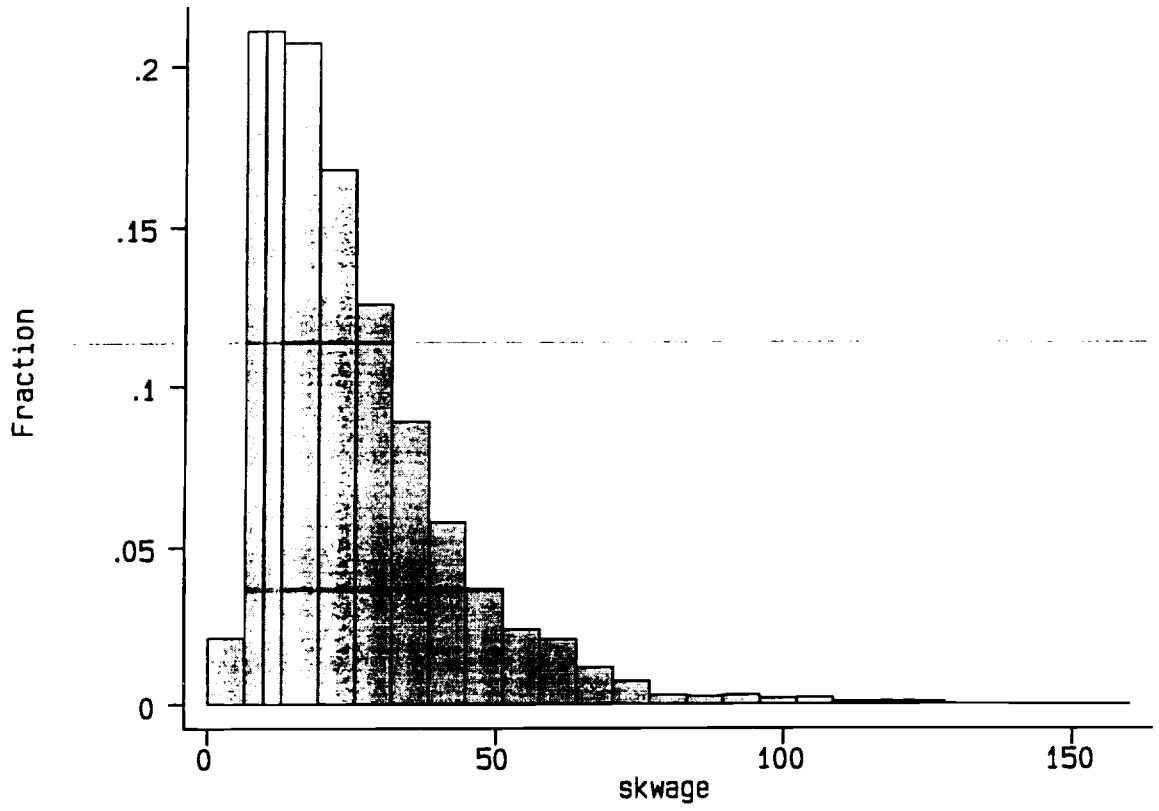
**Table 7. Does Conditionality Make a Difference?**  
(dependent variable = FDI/ GDP)

**Restricted Sample**  
(Adjustment Lending Dummy = 1)

Variable	(1)	(2)	(3)
Real GDP per capita	-0.002 (-1.322)	-0.002 (-1.343)	-0.001 (-0.994)
Change in real GDP per cap (-1)	0.007 (0.533)	0.007 (0.518)	0.005 (0.378)
Investment Ratio	-0.0003 (-1.990)	-0.0003 (-2.076)	-0.0003 (-2.034)
Government Share	0.0002 (1.187)	0.0002 (1.191)	0.0002 (1.210)
Real Exchange Rate	0.0005 (0.350)	0.0006 (0.651)	0.0009 (0.606)
Openness	0.169 (5.183)	0.170 (4.858)	0.164 (5.104)
Macro conditionality	0.003 (2.039)	0.003 (1.999)	0.003 (2.175)
Exchange Rate conditionality	0.002 (1.240)	0.002 (1.440)	0.002 (0.942)
Trade conditionality	0.0001 (0.058)	0.0001 (0.070)	0.0004 (0.276)
WB Lending as % of GDP		-0.0009 (-0.120)	
WB Lending (levels)			-7.96e-07 (-1.530)
Constant	-0.004 (-0.530)	-0.004 (-0.492)	-0.007 (-0.825)
R <sup>2</sup>	0.282	0.282	0.286
N	214		

Note: Same specification as in Table 3. Restricted sample includes only those countries receiving World Bank adjustment lending during the period and included in the ALCID database. T-statistics in parentheses. Robust errors estimated using White's (1980) procedure.

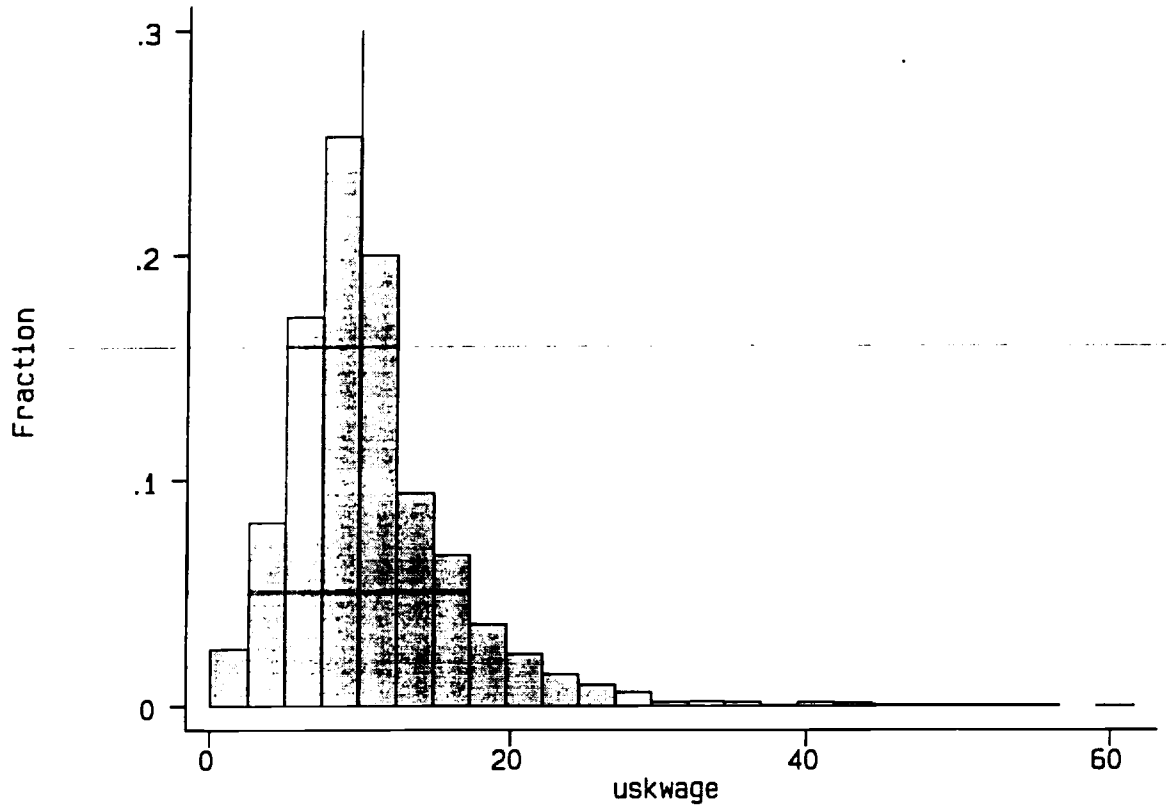
Figure 1: Distribution of Skilled Wages and the Minimum Wage, 1986



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Figure 2: Distribution of Unskilled Wages and the Minimum Wage



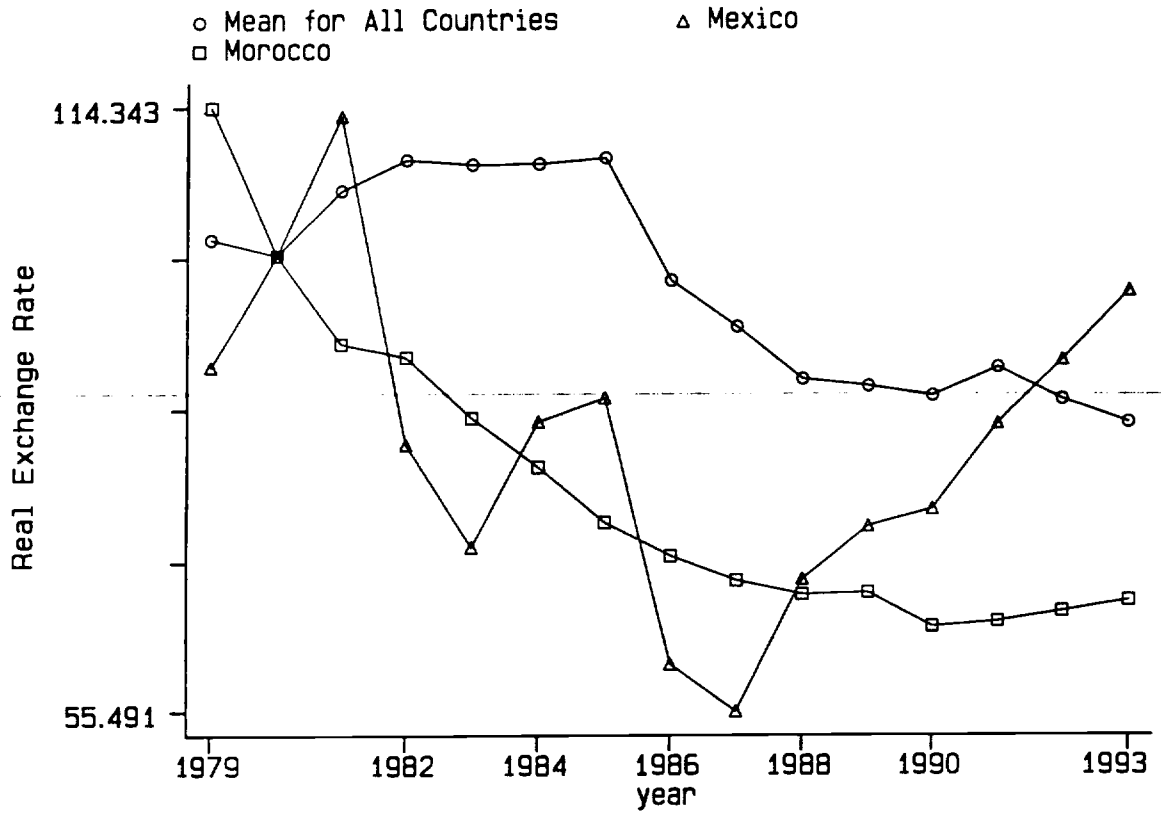
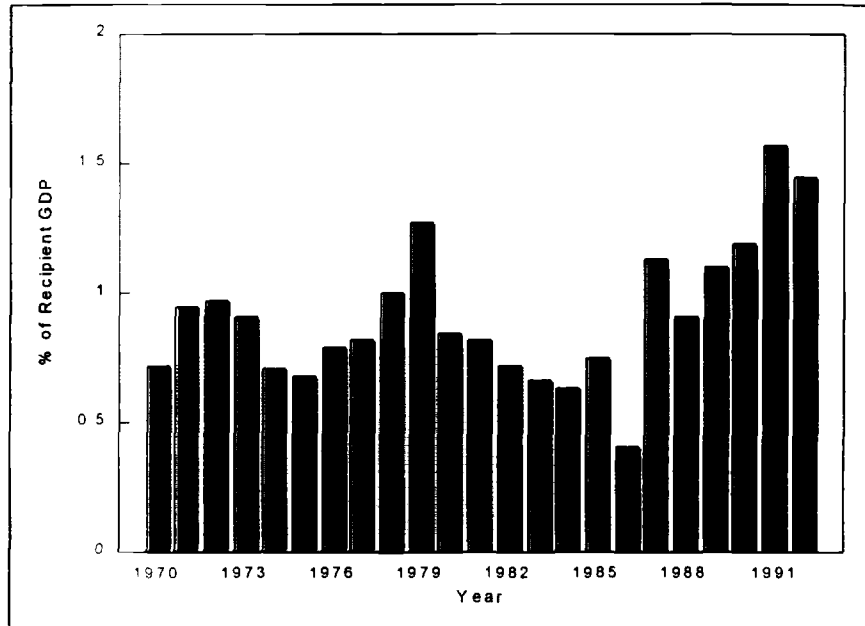


Figure 3: Real Exchange Rates in Mexico and Morocco

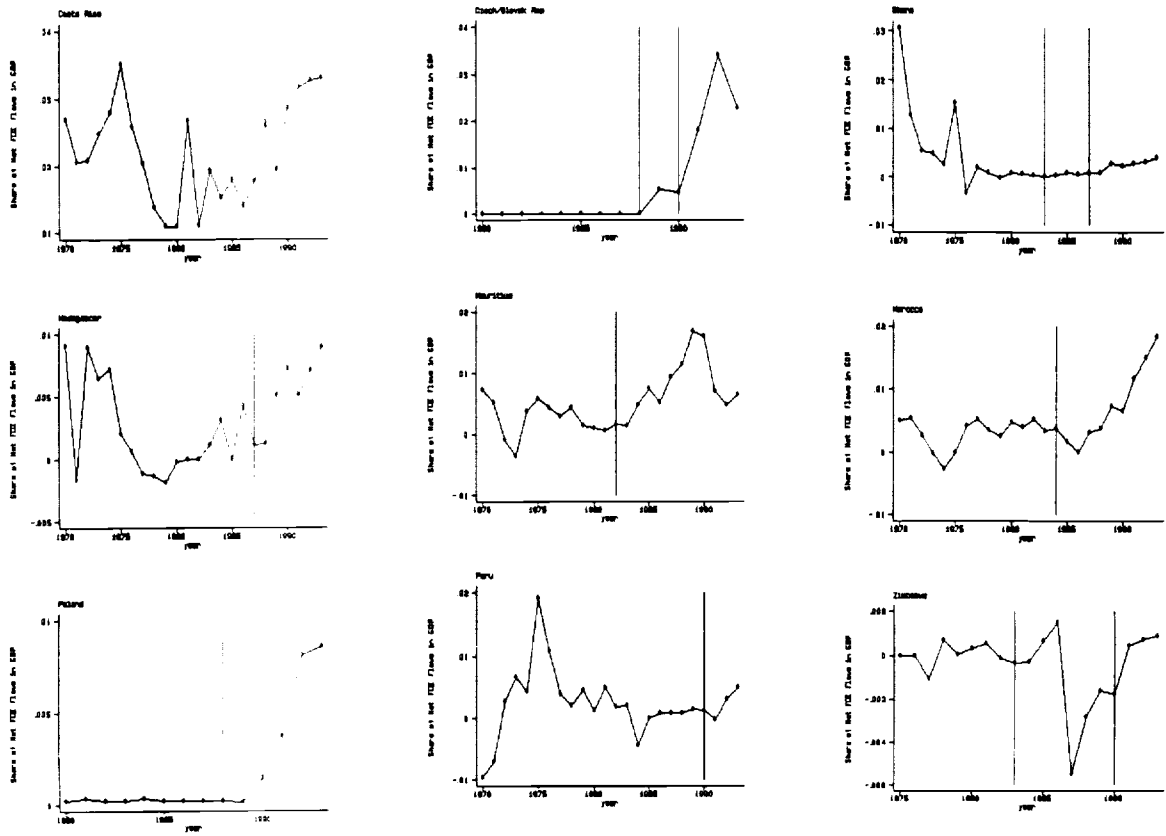
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**Figure 4: FDI flows to developing countries, 1970-1992**



Note: FDI as percent of recipient GDP. Unweighted average for sample of 74 countries, 1970-1992.

**Figure 5: Trends in Foreign Investment**



Note: Vertical lines mark introduction of trade reforms.

## Data Appendix

### *The evidence on trade, productivity and growth*

Data for this section are drawn from the NBER productivity database, augmented to include trade and labor market variables by Abowd (1991). The research and development variable is taken from the U.S. Census Bureau, as modified by Kortum (1993).

### *Trade and exchange restrictions and foreign direct investment*

The database includes annual data for 74 countries over the 1970-1992 period. It is an unbalanced panel in that although most countries have data for the full sample period, some are covered only during part of the period (e.g. Angola, Comoros, Poland, Romania, among others).

Data on FDI flows are taken from the World Bank, *World Debt Tables*, various years. Data on real GDP per capita, investment ratios, government share and openness come from the Summers and Heston Revised Penn World Tables (PWT 5.6). Real GDP per capita is expressed in constant dollars (international prices, base 1985).

Data on average tariff levels and adjusted Dollar indices were compiled by Harrison. Tariff levels were taken from IFS statistics. The adjusted Dollar indices were computed from the Summers and Heston dataset, after adjusting for the influence on non-tradeables. Details are discussed in Harrison (forthcoming).

Data on balance of payments restrictions were taken from the IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, and were given to us in computerized format by Stijn Claessens. These data are coded as dummy variables which equal 1 if a particular restriction exists. They cover the following restrictions: existence of special rates for some or all capital transactions; multiple rates for imports; multiple rates for exports; restrictions on payments in respect of current transactions; restrictions on payments in respect of capital transactions; import surcharges; advance import deposits; and requirement to surrender export proceeds.

### *Multilateral adjustment lending and FDI*

Data on World Bank lending and conditionality are taken from the World Bank's, *Adjustment Lending Conditionality and Implementation Database (ALCID)*, which contains data on policy conditionality and implementation in adjustment and other policy-based loans. The database contains information on 289 loans to a total of 74 countries. The sample includes all adjustment loans made between 1979 and 1992. The database includes details on the size of loans, type of loan, detailed policy conditionality, and degree of implementation of conditionality at different points in time.

The World Bank lending variable used in the analysis has been coded as 1 for those countries that received adjustment lending during the sample period, and coded as 0 otherwise. Within the sub-sample of countries receiving lending, policy conditions have been coded into dummies which equal 1 if such conditionality existed. The three dummies used in the analysis correspond to (a) conditionality on macro/fiscal/financial issues (including wage and

employment policies, debt management, budget deficit, public recurrent expenditures, public investment/capital expenditures, subsidies, interest rates, money supply, financial intermediation policies, and other macro/public sector policies); (b) conditionality on exchange rate policy; and (c) conditionality on trade (including on import/export quantitative restrictions, duties, subsidies, import/export financing and credit, other export incentives, regime, institutions and promotion, and other trade policies).

Details on the ALCID database can be found in Bateman (1990), *ALCID Users Guide*, World Bank.