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Trade Policy

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Developing Country Experience in Trade Reform

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The countries that received trade adjustment loans experienced relatively more growth in output than other countries did, partly because of growth in imports and partly because of policies. The factors that most constrain trade reform are macroeconomic instability, inadequate conviction about reform, weak implementation capacity, and conflicts in design.

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Trade Policy

During the 1980s, developing countries have addressed trade reform in varying degrees.

There has been major reform in exchange rate policy, in the reduction of export restrictions, and in removing impediments to the imports of inputs needed by exporters.

Import regimes in many countries have been improved by substituting tariffs for quantitative restructions. The lowering of import protection has been more modest in the face of foreign exchange constraints.

Through adjustment lending, the World Bank has supported trade reform in more than 40 countries. Considering this emphasis, one might expect stronger reforms. Four factors that have constrained reform action are:

- Macroeconomic instability.
- Inadequate conviction about the benefits of (and vested interests against) reform.
- Weak implementation capacity.
- Conflicts in design.

When considering nine performance indicators, trade loan recipients showed stronger improvement in performance than nonrecipients in about two-thirds of the instances.

Much of the growth in output was associated with additional imports. Policy reform had a positive impact on growth performance.

Less progress was made in debt indicators.

The evidence supports the need for continued, stronger efforts to reform trade regimes and complementary policies as part of adjustment lending.

This paper is a product of the Trade Policy Division, Country Economics Department. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Sheila Fallon, room N10-017, extension 61680 (39 pages with tables and figures).

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DEVELOPING COUNTRY EXPERIENCE IN TRADE REFORM

Introduction

After a period of brisk growth during 1965-81, gross domestic product (GDP) and export growth rates in developing countries decelerated significantly, while current account deficits and debt indicators worsened sharply in the late 1970s and 1980s. A major contributing factor was external shocks -- the oil price hikes, interest rate increases and their effects on the debt problem, and terms of trade shocks that continued through most of the decade (for more details, see World Bank 1988). Domestic policy weaknesses prevented the majority of countries from adjusting quickly to these external shocks. To address increasing debt burdens, especially in the face of sluggish world growth, many developing countries focused their attention on export expansion. In the majority of these countries, disincentives to the production of tradables relative to nontradables needed to be reduced. In particular, the antiexport bias needed to be lessened by exchange rate depreciation, lowering export disincentives, reducing import protection, or a combination of these. In addition, reform has also included actions in such related areas as infrastructure, marketing and technology that are undertaken to promote a more internationally competitive trade sector.

During the 1980s, many developing countries have received financial and policy support from the World Bank and the International Monetary Fund for trade policy reform. This paper evaluates these policy reforms using cross-country data and country studies. The analysis considers reform proposals in the forty countries that received trade adjustment loans and the extent of implementation in twenty-four countries

for which sufficient data are available (box 1). The effect of reforms on the incentives is also examined, as are changes in economic performance in countries that have received trade adjustment loans and have carried out reforms.

Box 1: Trade Loans and Country Groupings

The analysis in this paper with a significant trade reform component that were approved during 1979-87 -- eighty-one trade loans to forty countries. Among the eighty-one trade-related loans, forty-seven were structural adjustment loans (SALs), thirty-two were sectoral adjustment loans (SECALs), and two program loans. Many of these operations included technical assistance components or were accompanied by technical assistance loans in support of trade reforms. Detailed implementation data were available for only twenty-four of the forty countries for which sufficient time had elapsed since they had received their first trade adjustment loans. Most of these twenty-four countries received a trade loan before 1986, although a slightly different group of twenty-six countries constitutes the pre-1986 recipients. Among the forty countries, ten "intensive" adjusters received three or more trade adjustment loans. Some indicators (such as the real exchange rate and the composition of imports) are available for all forty countries, but others (extent of liberalization) are available only for the twenty-four, and yet others (effective protection) only for six to ten cases. Twenty-three countries in the sample were middle-income countries and seventeen were low-income countries (GNP per capita below $480 in 1987).

The full country sample comprises eighty-eight developing countries: the ninety-five countries under the World Development Report 1989 definition of developing countries, excluding ten countries with serious data problems (Afghanistan, Bhutan, Iran, Iraq, Kampuchea, Lao PDR, Lebanon, Libya, Romania, and Viet Nam); but including Gambia, Guinea-Bissau, and Guyana because they received adjustment loans. Thus the sample includes forty countries that received trade adjustment loans and forty-eight countries that did not.

Extent of Reforms

Degree of Restrictiveness

In reviewing commercial policy (export and import policy) reform, Halevi (1989) considered the following restrictions: export impediments,[1] import impediments on inputs used in export production, quantitative restrictions,[2] on both noncompetitive and competitive imports, and tariff rates[3] and rate dispersion. Based on the evidence, the countries were

grouped into three categories according to judgments on the antiexport bias before adjustment lending for each country: low, medium, or high.[4] Sufficiently large differences were detected to permit such a broad classification. Only Chile and Korea had a relatively low level of restrictions; 60 percent had a high level, and 35 percent had a medium level.

A comparison with trade restrictiveness in developed countries helps to put the initial restrictions in developing countries in broader perspective. The weighted average tariff rate for fifty developing countries was 26 percent at the end of 1985 according to Erzan et al. (1966). Adding other import charges raises the figure to 34 percent. For OECD countries average tariffs on industrial goods were estimated to be about 5 percent according to a 1980 GATT report and Finger and Laird (1987) and are roughly of that order today. Erzan et al. estimated the coverage of nontariff barriers in the same fifty developing countries to be 40 percent (unweighted) of import items corresponding to all tariff positions at the end of 1985. Finger and Laird provide a similar estimate for thirty-eight developing countries for 1982. They also estimated that 15 percent of the product categories of the eleven industrial countries in their sample were subject to nontariff barriers in 1984. Laird and Yeats (1988) provide a similar figure (15.9 percent) for all products in fourteen industrial countries in 1986.[5] While the intent and influence of tariffs and nontariff barriers must be interpreted individually for each country, these estimates indicate that developing countries, on the whole, have a much more restrictive trade regime than do developed countries.

What Was Proposed

The intensity of proposals corresponded to the initial degree of restrictiveness in more than half the forty countries that received trade adjustment loans. In twelve of the twenty-four countries with initial restrictiveness, reform proposals were also strong (for example, Ghana, Jamaica, Mexico, and Turkey). In six of these twenty-four cases, however, reform proposals were moderate (for example, Bangladesh and Yugoslavia), and in six others they were mild (for example, Brazil, Guyana, and Pakistan). Among the fourteen cases with moderate initial restrictiveness, nine had moderate or strong proposals. In general, the correspondence of the intensity of the proposals with the initial degree of restrictiveness was stronger in export policy than in import policy. Also, the intensity of the proposals was relatively greater in Latin America than in the other regions.

The main components of trade policy proposals under adjustment lending are summarized in table 1. Although policy packages are not uniform across countries because initial problems are not uniform, a common thread is a reduction in restrictions on exports and imports and a greater reliance on the price mechanism, that is, on exchange rate depreciation and the use of tariffs in place of quantitative restrictions.[6] The loan proposals were most consistent in their attempt to reduce direct impediments to exports and restrictions on imported inputs used for export production. Reform of exchange rate policy was almost always a stated, or unwritten but important, goal. Almost all loans supported a greater use of price mechanisms (for example, tariffs in place of quantitative restrictions), as well as reductions in the level and dispersion of tariff rates. Proposed reductions in quantitative

Table 1. Intensity and Distribution of Major Trade Policy Reform Proposals Among Forty Countries Receiving World Bank Trade Adjustment Loans

Area of reform	Present	Not present	Strong	Moderate	Mild or absent
Exchange rate[a]	38	2			
Export promotion[b]	33	7			
Protection studies	28	12			
Overall export policy			15	15	10
Imports for exports			17	15	8
Overall import policy			14	15	11
Nonprotective quantitative restrictions			14	16	10
Protective quantitative restrictions[c]			14	15	11
Tariff level[c]			7	21	12
Tariff dispersion			7	24	9
Schedule of future action			6	29	5
Overall reduction in antiexport bias			17	12	11

a. Often these were not explicit conditions, but understandings under the program.
b. Removal of restrictions, provision of export credits, insurance, guarantees, institutional development, and the like
c. Where reforms include a replacement of quantitative restrictions, they are counted in both these lines.

Source: World Bank data.

restrictions were large in some cases but modest on average across countries in the case of both items competing with domestic production and noncompetitive items (luxuries, for example). Over one-third of the eighty-one trade-related loan operations reviewed included technical assistance components or were accompanied by technical assistance loans to help in implementing reforms or carrying out studies.

There has been less attention under adjustment lending, however, to reforms that would promote greater internal competition. Because most

proposals were put together quickly, as is usual in loans for direct balance of payments support, they often included plans for studies to identify future actions. Sometimes these plans reflected serious intentions to undertake reform, but often they served merely to delay difficult actions. Not much evidence is available for assessing progress on these studies. Proposals to reduce protection for import-substitutes have been cautious. Most programs envisaged that some level of effective protection would continue indefinitely. In some cases, particularly in Sub-Saharan Africa, additional incentives were introduced for import substitution -- for example, higher duties on imported inputs that compete with domestic production. (Increasing the duties on imported inputs reduces the protection provided to finished goods that use them.)

Implementation Record

For twenty-four of the forty countries receiving trade adjustment loans, detailed implementation data are available. Implementation records were good for the two of the twenty-four countries that had a low level of restrictiveness (Chile) or antiexport bias (Republic of Korea) at the beginning of the 1980s. Success in implementation for the eight countries judged to have a moderate level of restrictiveness covered the range from low (for example, Malawi), through medium (Panama), to high (Mauritius). Among the remaining fourteen countries that had high initial levels of restrictiveness, six of the nine countries with strong commercial policy reform proposals had relatively good implementation records (Ghana, Madagascar, Mexico, Philippines, Senegal, and Turkey).

In general, while implementation was swift in exchange rate adjustment and the removal of export restrictions, countries in the sample have been slow to liberalize imports. Overall, trade reforms were moderately significant. Substantial actions were taken in reducing export restrictions (licensing, prohibitions, and export taxes). Restrictions on imported inputs for exports have also been significantly reduced. On the import side, switching from quantitative restrictions to tariffs has been slow on average, but several countries (Jamaica, Mexico, Senegal, and Turkey) have made substantial progress. Many countries have adopted tariff reform programs. Progress has been most notable in reducing maximum tariff rates, limiting the number of tariff classes, establishing a (low) minimum tariff, and reducing tariff exemptions.

The lowering of protection levels, however, has been modest on average. Most trade regimes continue to maintain escalated tariff structures, with higher tariffs (and quantitative restrictions) on final goods than on capital goods and low rates (and exemptions) for intermediate and raw materials. Tariff dispersion has usually been reduced, but dispersion in effective protection is still large. This experience supports the conclusion of Michaely, Papageorgiou, and Choksi (forthcoming) that commercial liberalization is a drawn out process. For instance, four countries (Jamaica, Mexico, Senegal, and Turkey) of the fourteen with highly restrictive trade regimes in the early 1980s had achieved a high degree of commercial liberalization by 1987-88.

Reform implementation has been stronger in exchange rate policy than in commercial policy. There was a larger depreciation in the real

exchange rate in most of the countries receiving trade adjustment loans than in most of the others, in part because the higher debt and greater external shocks in the trade adjustment loan countries required larger depreciation. The larger depreciations were also the result of exchange rate reform, accompanied by macroeconomic stabilization and some trade liberalization.[7] A real depreciation of the currency is an important liberalization measure. In the presence of binding quantitative restrictions on imports, it increases not only the price of tradables relative to nontradables but also of exportables relative to importables, thereby reducing antiexport bias. Moreover, a large depreciation can eventually make quantitative restrictions redundant, thereby resulting in a de facto liberalization of the import regime.

Progress and Constraints to Implementation

The degree of implementation has been highly variable across countries and policy areas. Overall, price reforms have been relatively substantial under trade adjustment programs. Examples include removal of export taxes, introduction of duty drawback schemes for exporters, and more uniformity in tariffs. But there has been less success in institutionalizing and sustaining some of the price changes. By and large, institutional reform has been limited. There are many instances of abandonment, reversals, and flip-flops in price policies. Despite modest goals, Yugoslavia abandoned reforms, Kenya and Côte d'Ivoire made slow progress, Morocco and Thailand partially reversed their tariff policy reform; Argentina reversed its reform of quantitative restrictions, and Sierra Leone, Somalia, Uganda, and Zambia reversed

their policies of exchange rate auctions. Unless changes appear to be sustainable, the credibility of actions and the supply response to them are likely to be limited. The sustainability of reform measures, therefore, ought to be a goal of liberalization attempts (see Rodrik 1988).

Based on the sample of twenty-four countries with implementation data, background studies, and interviews with World Bank economists, four factors were identified as constraints to more thorough implementation and sustainability. **Weak macroeconomic performance and instability** is a first impediment. Economic instability and external imbalances are serious constraints to liberalization, while export growth makes liberalization easier. Recession, inability to address inflation, and real appreciation of the currency have inhibited trade reforms to varying degrees in Costa Rica, Jamaica, Mexico, and the Philippines. Balance of payments problems resulting from a fall in copper prices and faulty exchange rate management contributed to the reversal of reform policy in Zambia. Export performance and foreign exchange availability also offset the sustainability of reform. Strong and rapid supply response improves the sustainability of reforms by reducing the transition costs of reforms associated with the release of resources from previously highly protected sectors. Slow export expansion hurt Kenya's liberalization attempts. Export diversification is just beginning in Costa Rica and Côte d'Ivoire, which made more rapid progress in commercial policy reform but were also vulnerable to declining terms of trade. Even in Chile, the rapid growth of exports and the availability of foreign exchange have been important in preventing policy reversals. In Jamaica, the availability of

financing has been crucial for maintaining the liberalization effort in the face of a worsening current account balance.

A second constraint is inadequate government commitment to reform. In a number of cases in which the government has not "owned" the program (Kenya, Malawi, Zambia), implementation has been weak. The slow pace of reform has in turn sometimes hurt the credibility of the program for the private sector, thereby diminishing its sustainability. Inadequate commitment has limited the sustainability of reforms, particularly in the highly indebted countries and in Sub-Saharan Africa. Changes in political regimes and leadership have often compounded these problems and have led to policy reversals. A related constraint is internal opposition to reform.[8] There are always winners and losers from policy changes. Resistance from losers, as in Zimbabwe, has often delayed or reversed reductions in protection. In Yugoslavia, despite modest goals related to trade and the foreign exchange regime, political opposition (in addition to macroeconomic instability) led to a dilution or reversal of most elements of the program.

A third constraint relates to difficulties in implementation. Sometimes, a country's limited administrative capacity has been a critical constraint. Bangladesh and Côte d'Ivoire made slow progress in part because of administrative difficulties. The introduction of export tax rebates, duty drawback systems, and bonded warehouses has been subject to administrative delays in many cases. Often, changes in policy require changes in administrative arrangements and capabilities, if they are to be successfully implemented, (for example, import administration may need to be reorganized to implement tariff reforms). Sometimes,

policy changes were predicated on the completion of studies, which were delayed for various reasons in a number of the cases reviewed (for example, Colombia and Kenya).

A general problem is the lack of medium-term policy frameworks within which trade and other macroeconomic reforms can be discussed and implemented. Planning ministries or departments in many countries (Colombia, India, and Pakistan, for example) are well organized for medium-term physical and financial planning, while finance ministries or monetary authorities are ready to deal with short-term macroeconomic policies. There is often a void, however, when it comes to the formulation of trade and other macroeconomic policies for the medium term.

Conflicts among policy reforms and weaknesses in design are a fourth set of impediments to reform implementation. Inadequate stabilization efforts have constrained trade reform in Pakistan and Panama. In contrast, stabilization and trade reforms in the 1980s have reinforced one another in Chile, Colombia, and Korea, where the ability to quickly regain external sector stability has helped to sustain trade reforms. The targets of structural adjustment and stabilization have at times conflicted. For instance, the imposition of customs duties and tariff surtaxes to increase revenues for stabilization purposes in the Philippines has conflicted with attempts to liberalize imports. Morocco increased import tariffs, which had been reduced in an earlier phase of reform, for revenue purposes. These conflicts may sometimes be unavoidable. Trade taxes create distortions, so less-distorting, alternative revenue sources are preferable. When a country has a weak

tax system, however, some trade taxes may remain necessary in the short term to generate revenue.

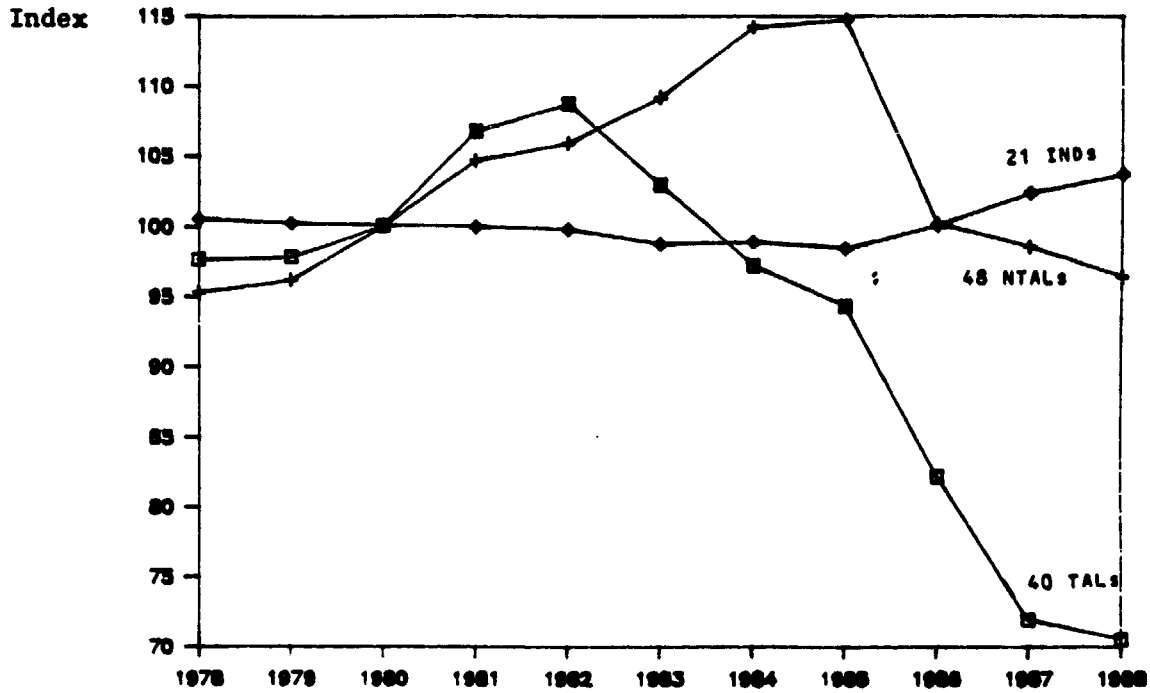
Effects of Policy Change

Change in Incentives

Real exchange rate. An indicator of the incentives for the production of tradables relative to nontradables is the real exchange rate. Exchange rate misalignments were significant in the early 1980s for the group of forty countries that received trade adjustment loans. Subsequent adjustments were also substantial in a large number of cases. The adjustments involved a series of devaluations or institution of a crawling peg, supported by macroeconomic adjustments. Figure 1 compares changes in a trade-weighted multilateral real exchange rate vis-a-vis major trading partners for a group of twenty-one industrial countries, the forty recipients of trade adjustment loans, and forty-eight nonrecipients. The domestic currency depreciated in real terms by over 22 percent between the periods 1981-83 and 1985-87 for the group of forty trade adjustment loan countries, in contrast to 2 percent in the nonrecipient countries and a slight appreciation in the industrial countries. This implies that the price of traded goods relative to that of nontraded goods increased in the trade adjustment loan countries.

Real exchange rate indices provide an indication of the change in bias against tradable goods, but they rarely distinguish between exportable commodities and import-substitutes.[9] To make that distinction, measures of changes in the levels of effective protection

Figure 1. Real Exchange Rate Indices for Selected Country Groupings, 1978-88 (unweighted averages)



21 INDs = twenty-one industrialized countries.
40 TALs = forty trade adjustment loan recipient countries.
48 NTALs = forty-eight nonrecipients of trade adjustment loans.

Note: Increase in index indicates real appreciation. This figure does not indicate initial currency misalignments (for a discussion of "proper" levels of exchange rates, see Williamson 1985).

Source: Trade-weighted multilateral index of the real exchange rate for the various countries based on IMF data.

for the different sectors would be needed or measures of effective exchange rates for exporting activities versus import-substituting activities. Individual country studies of effective protection and antiexport bias exist (for example, for Chile, Colombia, Kenya, Korea, Mexico, Morocco, Pakistan, Philippines, and Turkey), but the results are not comparable across countries. Comparisons of even nominal protection

rates or the coverage of quantitative restrictions are difficult. In a few cases, changes in protection levels over time have also been assessed, but intercountry comparisons of the changes are even more difficult than comparisons of the levels.

Import Liberalization and Protection

During the 1980s, import levels in developing countries declined (in current and constant prices) on average because of balance of payments problems, and did import/GDP ratios. The ratio of nonfuel imports to GDP declined as well, although the extent of the fall was less than for total imports. The reduction in the import/GDP ratio was significantly less, however, for countries associated with trade reforms and adjustment lending. As indicated in table 2, the declines in the ratio were systematically less among countries that received trade adjustment loans than in the other countries.

Direct examination of the conditions in trade adjustment loans and their implementation records indicate that import protection on average has fallen modestly (rather than dramatically) in most of these countries. By and large, tariff structures remain escalated, with the highest protection afforded to final goods. This seems consistent with the evidence on changes in the composition of nonfuel imports since 1980. If protection of the most protected goods (consumer goods) had been reduced substantially, they would have increased as a fraction of total imports, and intermediates used in their domestic production would have decreased as a share of the total. Instead, intermediate goods, and capital goods to a lesser extent, have increased relative to consumer goods in the total (table 3).

Table 2. Imports of Goods and Nonfactor Services in Current Prices as a Percentage of GDP for Selected Country Groupings, 1980-88 (unweighted averages)

Sample group	1980	1981	1982	1983	1984	1985	1986	1987	1988a/	Percentage change 1984-86/ 1980-82	Percentage change 1985-87/ 1981-83
10 Intensive trade loan recipients	32.7	33.3	29.4	30.1	31.1	32.0	29.5	31.1	33.1	-2.9**	-0.1**
26 Trade loan recipients	34.3	34.7	31.0	29.7	30.5	30.9	29.2	31.7	30.7	-9.3**	-3.8**
40 Trade loan recipients	33.0	33.4	31.6	30.3	30.7	30.8	29.0	30.3	30.6	-7.7**	-5.5**
48 Nonrecipients	38.8	40.4	38.8	35.6	34.1	33.5	33.1	32.2	32.3	-14.6	-14.0
88 Developing countries	36.1	37.2	35.5	33.2	32.5	32.3	31.2	31.3	31.4	-11.8*	-10.5*
21 Industrial countries	35.5	35.7	35.1	34.5	36.5	36.9	33.2	32.6	31.5	0.3	-2.5

* The difference in means between the trade adjustment loan recipients and nonrecipients is significant at the 10-percent confidence interval.

** The difference in means between the trade adjustment loan recipients and nonrecipients is significant at the 5-percent confidence interval.

a. Preliminary estimates.

Source: World Bank estimates.

Table 3. Composition of Nonfuel Imports at Current Prices in the Trade Adjustment Lending Countries, 1980-87 (percentage shares of total nonfuel imports)

Component	1980	1982	1983	1984	1985	1986	1987
Consumer goods	22.4	20.4	20.2	19.7	18.0	17.9	16.5
Capital goods	31.0	32.6	33.7	32.7	33.1	32.2	32.2
Intermediate goods	46.6	47.0	46.1	47.6	48.9	49.9	51.3
Total nonfuel imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average value (US$ million)	4,260	3,871	3,492	3,568	3,517	3,818	4,379

Note: Data are averages for the thirty-seven countries for which data were available.

Source: World Bank data.

Information on individual countries shows considerable variation in changes in impediments to imports. Chile, Mexico, Korea, Turkey, and the Philippines are among the countries that undertook broad import reform. Chile's import liberalization, which began in 1975, has been the most extensive in recent time. Quantitative restrictions were rapidly replaced by uniform tariff rates of 10 to 15 percent by mid-1979. Commercial policy reversals were corrected and coupled with a substantial devaluation during 1983-87, during which time the export/GDP ratio nearly doubled. Mexico implemented a major reduction in import restrictions in the mid-1980s, substantially reducing antiexport bias and achieving a significant increase in exports. Korea is an example of sustained liberalization and export development over a long period of time. Turkey carried out a major trade reform in the first half of the 1980s, transforming the economy from its inward orientation to a more outward-looking one, and nearly tripling its export/GDP ratio during 1980-87. The Philippines began with a tariff reform in the early 1980s, followed by substantial reductions in quantitative restrictions in the mid-1980s.

Milder reform and even reform reversals occurred in some cases. Colombia, whose trade regime has been characterized by remarkable stability over the past thirty years, undertook some export promotion along with modest import reform in the 1980s. Kenya and Pakistan, among many others, undertook only mild reforms, although their existing trade regimes were quite restrictive. Other cases -- such as Yugoslavia and Zambia -- have involved policy improvements followed by abandonment of reforms or policy reversals. Estimates are available on the effects of

trade reforms on relative incentives in seven cases -- Colombia, Kenya, Korea, Mexico, Morocco, Pakistan and Philippines. The estimates, however, are not comparable across the countries since definitions and methods employed are quite different. In general, the effect of trade reform on antiexport bias has varied, ranging from very significant reduction in Mexico to little change in Pakistan.

Relative Performance Before and After Lending

Changes in performance indicators for trade adjustment loan recipients compared with nonrecipients are presented in table 4. To allow some time after the first trade adjustment loan, only the twenty-six countries that received a trade adjustment loan before 1986 are considered. The table categorizes average changes in indicators for trade loan recipients relative to nonrecipients for the period 1985-87 compared to the period 1981-83 and average changes for the trade loan recipients for the three-year period following the first loan (excluding the year of the loan) compared with the three years before the loan relative to the changes over the same periods for nonrecipient comparators (see Balassa 1988). The numbers show how many trade adjustment loan countries in each classification performed better on each indicator than their comparators after the start of trade adjustment lending. The plus and minus signs indicate an improvement or a worsening of the average value of an indicator for the trade adjustment loan group in comparison with the average value of the same indicator for the comparator group.[10]

There are important limitations to this type of comparison as presented in table 4 (see Khan 1988, for instance for a discussion). Most important, perhaps, the adjustment lending countries are not necessarily

Table 4. Performance Indicators for Trade Adjustment Loan Recipients Before and After Trade Adjustment Lending: Twenty-Six Pre-1986 Trade Loan Recipients vs. Forty-Eight Nonrecipients

Indicator	Low income	Middle income	Row sum	Sub-Saharan Africa	Highly indebted countries	Manufactures exporters
Number of trade loan recipients	9	17	26	11	10	7
Number of nonrecipients	21	27	48	19	4	8
Panel 1: 1985-87 compared to 1981-83						
GDP growth	9(+)**	12(+)**	21	10(+)**	3(-)**	5(+)
Investment/GDP	5(+)	14(+)	19	9(+)	6(-)	7(+)
Real exchange rate	8(+)*	15(+)**	23	9(+)*	8(+)	7(+)
Manufacturing exports growth	7(+)**	12(+)	19	10(+)**	1(-)**	4(-)
Import growth	8(+)**	12(+)**	20	8(+)**	4(-)	6(+)
Resource balance/GDP	2(-)	12(+)	14	5(-)	10(+)**	1(-)
Inflation	8(+)*	14(+)	22	10(+)**	7(-)	1(-)
External debt/exports	6(+)	17(+)*	23	8(+)	10(+)**	6(+)
Debt service/exports	5(+)	10(+)	15	4(-)	3(-)	7(+)
Share showing improvement[a]	0.72	0.77	0.75	0.74	0.58	0.70
(10 intensive recipients)	(0.78)	(0.72)	(0.73)	(0.78)	(0.58)	(0.56)
(All 40 recipients)	(0.70)	(0.64)	(0.67)	(0.68)	(0.58)	(0.54)
Panel 2: Three years after compared to three years before						
GDP growth	5(+)	13(+)	18	6(+)	5(+)	4(+)
Investment/GDP	4(-)	11(+)	15	5(-)	8(+)	4(-)
Real exchange rate	5(+)	16(+)	21	10(+)*	9(+)	7(+)
Manufacturing exports growth	7(+)	14(+)	21	9(+)	5(-)	4(+)
Import growth	6(+)	14(+)*	20	6(+)	5(+)**	7(+)*
Resource balance/GDP	5(+)	11(+)	16	8(+)	8(+)	2(+)
Inflation	7(+)	13(+)	20	9(+)	6(+)	4(-)
External debt/exports	5(+)	14(+)	19	7(-)	9(+)	5(+)
Debt service/exports	5(-)	9(+)	14	3(-)	5(+)	4(+)
Share showing improvement[a]	0.60	0.75	0.70	0.64	0.44	0.66
(10 intensive recipients)	(0.78)	(0.69)	(0.71)	(0.64)	(0.71)	(0.78)
(All 40 recipients)	(0.58)	(0.70)	(0.67)	(0.62)	(0.63)	(0.54)

Note: The numbers in the table show for each indicator the number of trade adjustment loan recipients in each classification that improved in the period after the loan compared with the period before the loan relative to the change over the same periods for nonrecipient comparators. The year of receipt of the first loan is excluded from the comparison in panel 2. The plus and minus signs indicate an improvement or a worsening of the average value of an indicator for recipients compared with the change in average value for nonrecipients.

* The change in means for the recipients between the two periods relative to the change for nonrecipients is significant at a 10-percent confidence interval.

** The change in means for the recipients between the two periods relative to the change for nonrecipients is significant at a 5-percent confidence interval.

a. The share of the product of the number of variables and the number of countries showing improvement in the total.

selected randomly. Many other factors affect performance other than the presence of this type of lending and reforms. Subject to these and other caveats, panel 1 shows, on average, the change in performance on the trade indicators between 1981-83 and 1985-87 was better for the twenty-six pre-1986 trade loan recipients than for the forty-eight nonrecipient comparators. The last three rows in each panel show the total percentage of cases in which trade adjustment loan countries on three different classifications did better than the others across all nine indicators. Changes during three years after versus three years before the first loan are considered in panel 2. The relative performance of the trade adjustment loan recipients is usually weaker when all 40 recipients are considered than when the focus is on the twenty-six pre-1986 recipients or the ten intensive recipients. Middle-income countries performed better, on average, on most indicators than did the low-income countries.

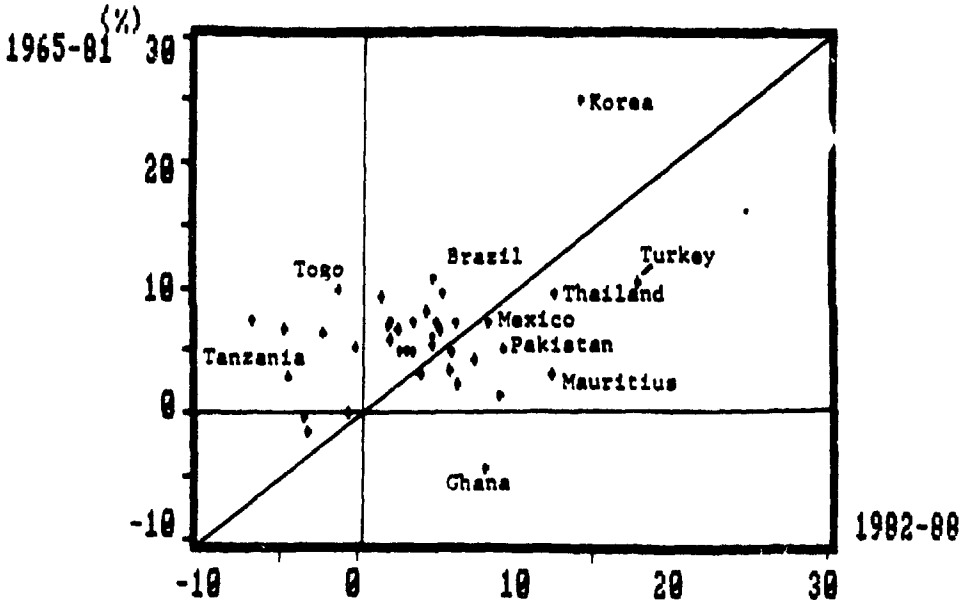
The relative improvements in the trade adjustment countries are most apparent in the trade and growth indicators. These improvements are probably attributable to the additional financing provided by the loans, exchange rate adjustments, and some improvement in the trade regime. There was a relative worsening, however, with respect to some debt indicators. This is not altogether surprising since these countries borrowed more heavily than the others, but since they also made major adjustments, the weak improvements in the debt indicators may have ramifications for the sustainability of the improvements.

Difference in Export Performance

Expansion of developing country exports, which was rapid in the 1970s, decelerated in the 1980s to a level half that of the 1970s. While

Figure 2

EXPORT GROWTH FOR 40 TRADE ADJUSTMENT LENDING COUNTRIES



Source: World Bank data.

overall export growth was weaker in the 1980s (3.6 percent average annual rate) than in the 1970s (6.8 percent), performance was stronger for recipient countries (4.5 percent) than for nonrecipients (2.8 percent) in the 1980s. About one-third of the trade loan recipients also managed to increase their exports in recent years (1982-88) compared with the longer-term trend (1965-81, figure 2). Among the ten intensive trade adjustment loan recipients (those that received three or more trade loans), more than half increased their shares in total exports to industrial countries from nonoil-exporting developing countries.

Manufacturing exports from developing countries grew at an average annual rate of 7.6 percent during 1982-87, while the rate of

increase for all exports was only 3.1 percent. Particularly rapid rates of increase in manufacturing exports during 1982-87 were recorded by Turkey (29 percent), Mauritius and Mexico (25 percent), Thailand (20 percent), Korea and Zambia (around 15 percent), and Ghana and Morocco (10 percent each). Growth in manufacturing exports was stronger in the trade loan adjustment countries than in the other countries, even when calculated using unweighted averages (table 5). The growth rate for 1982-87 was 9 percent for the loan recipient group compared with 6 percent for the nonrecipient group. Although exports of primary products and services have been very important for some countries, over time the main contribution to export performance at the margin probably came from manufactured exports.

To improve performance in this area, a realistic exchange rate policy that yields competitive production costs, given the productivity of labor in each country, will continue to be essential, as will measures to enhance productivity. Exporters also need access to a growing range of domestically produced inputs at world prices and of world quality. Institutional and marketing support to export activities are also especially strong among successful exporters while the opposite is true among the poor performers.

Some countries have introduced export incentives while maintaining protection in the import regime. But unless protection is reduced, the incentive to shift resources from production for a captive domestic market to a tough and competitive international market is likely to remain limited. And as long as import controls remain in place, special schemes will need to be introduced, such as duty drawback schemes,

Table 5. Average Annual Percentage Growth Rates of Export Volume and GDP for Selected Country Groupings, 1980-88
(unweighted averages)

Indicator/country group	1980	1981	1982	1983	1984	1985	1986	1987	1988[a]	Percentage change 1984-86/ 1980-82	Percentage change 1985-87/ 1981-83
Merchandise exports											
88 Developing countries	5.4	2.4	2.6	0.1	6.6	5.2	3.7	6.0	4.4	49.0*	19.2**
10 Intensive trade loan recipients	12.1	7.5	7.8	-4.9	11.5	3.5	9.2	7.5	3.5	-11.7**	94.2
26 Trade loan recipients	9.1	4.8	2.2	-2.9	7.3	3.6	8.3	7.8	5.1	19.3**	380.5**
40 Trade loan recipients	7.6	4.7	-0.4	-1.2	6.8	5.0	6.8	5.7	4.1	56.3**	464.5**
48 Nonrecipients	3.5	0.3	5.1	1.2	6.5	5.4	1.0	6.3	4.8	44.9	92.4
Manufacturing exports[b]											
88 Developing countries	10.4	9.7	1.2	11.2	9.8	10.6	7.2	5.5	10.7	-5.8*	5.4**
10 Intensive trade loan recipients	26.8	20.2	-3.8	15.6	11.9	9.5	10.2	13.7	17.2	-26.9*	4.5**
26 Trade loan recipients	18.7	7.3	0.9	6.7	9.0	11.5	5.0	12.7	12.2	-5.2*	92.6**
40 Trade loan recipients	25.6	6.5	0.6	10.3	7.4	14.1	11.6	9.9	13.7	1.2**	104.9**
48 Nonrecipients	11.9	12.6	1.7	12.1	11.8	7.4	3.5	1.7	7.9	-13.4	-52.2
GDP											
88 Developing countries	3.6	3.4	1.8	1.2	2.4	3.1	3.2	2.3	3.3	-0.9**	34.8**
10 Intensive trade loan recipients	0.2	2.4	1.1	0.2	2.1	2.7	3.3	4.2	4.1	128.8**	188.7**
26 Trade loan recipients	3.4	2.2	0.7	0.6	2.7	3.3	4.2	3.7	3.8	60.2**	214.1**
40 Trade loan recipients	2.7	2.8	0.3	0.4	2.2	3.5	3.9	3.2	3.6	63.7**	198.2**
48 Nonrecipients	4.4	3.8	3.1	1.9	2.6	2.7	2.6	1.6	3.0	-29.2	-20.5

* Differences in means between the trade adjustment loan recipients and nonrecipients were significant at the 5-percent confidence interval.

** Differences in means between the trade adjustment loan recipients and nonrecipients were significant at the 1-percent confidence interval.

a. Preliminary estimates.

b. The definition of manufactures is from the Foreign Trade Statistics, International Economics Department, World Bank; it includes line items of 5+6+7+8-68 in SITC.

Source: World Bank data.

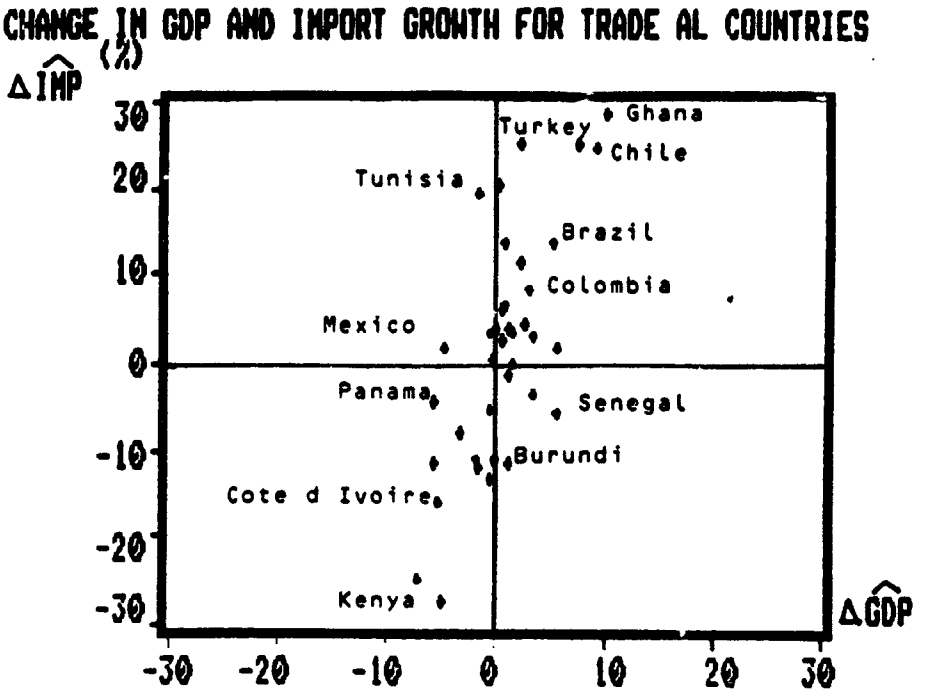
export processing zones, and bonded warehouses, to ensure that exporters receive special access to imported inputs at world prices. The successful

East Asian exporters have also paid attention to easy access to foreign exchange for exporters, preshipment credit for working capital, labor costs, training, education, infrastructure, technology, and marketing (for a discussion see Keesing 1988.) Their exports have also benefited from a favorable regulatory environment, support for enterprise development, and a forward-looking industrial policy. They have also dealt successfully with protection abroad to maintain their prospects for market penetration.

Does Policy Matter?

Trade reform has frequently been included under adjustment lending during the 1980s because of the belief that increased trade can help to minimize the slowdown in growth that often accompanies stabilization. The World Bank Report on Adjustment Lending (1988) suggests that short-term changes in the resource balance (the difference between exports and imports of goods and nonfactor services) and GDP growth have been negatively related. Regression results for developing countries show strongly significant and negative coefficients for the change in GDP with respect to a change in the resource balance in the 1980s. However, expenditure-switching policies induced by relative price changes (for example, as a result of real exchange rate adjustment), by improving efficiency, are expected to lessen the reduction in output that would result from stabilization measures. If expenditure switching leads to a supply response, a given resource balance improvement could be achieved at less cost in terms of foregone growth than would otherwise be the case.

Figure 3



$\Delta \widehat{GDP}$ = Percentage point improvement in the GDP growth rate 3-years after the first trade loan compared to 3-years before.

$\Delta \widehat{IMP}$ = Percentage point improvement in the import growth rate 3-years after the first trade loan compared to 3-years before.

Source: World Bank data.

In the first half of the 1980s, import compression was the dominant force behind the negative resource balance-GDP relationship. Figure 3 shows the strong positive link between import growth and GDP growth. Imports can affect GDP growth in at least two ways. One is through the effect of imports on the domestic production of competing goods. Increased competition from imports hurts inefficient production and leads over time to a more efficient structure of domestic production.

The other way is through the effect of imported inputs -- raw materials and intermediate and capital goods -- on production. When domestic savings have not been easily converted into foreign exchange for imports, the relaxation of import controls will contribute directly to higher GDP. Adjustment lending has supported some import liberalization and has provided additional financing for imports. Changes in trade policy, including real exchange rate adjustments, have been expected to boost GDP more than would the increased importation of inputs alone, however.

To assess whether adjustment lending has improved performance, we investigate whether the import-GDP relation is significantly different for loan recipients than for nonrecipients. While there are two-way links between imports and GDP, country evidence suggests that under the import and foreign exchange constraints many countries faced in the 1980s, changes in imports under adjustment programs led to changes in GDP. When a country begins from a situation of policy restrictions, efficiency gains will accrue from policy reforms to the extent that resources switch among exportable, importable, and nontradable sectors and the shifts in resources raise their net marginal product.

Four effects on GDP are considered: those from an increase in imports, those from terms of trade changes, those from real exchange rate changes, and those from commercial policy reform. The impact on GDP of increased imports is expected to be positive unless the negative effect on import-competing production is larger than the positive effect from greater availability of imported inputs. An improvement in terms of trade is also expected to increase GDP. A depreciation of the real exchange rate would have a positive effect on GDP unless the increase in tradable

production is offset by the decline in nontradable production. Commercial policy that reduces antiexport bias would increase GDP unless the negative effect on importables is larger than the positive effect on exportables.

To illustrate these propositions we consider the following reduced form equation:

$$(1) \quad \dot{GDP}_i = \beta_0 + \beta_1 \dot{I}_i + \beta_2 \dot{TOT}_i + \beta_3 \dot{RER}_i + \beta_4 D_i + \beta_5 D_i \cdot \dot{I}_i + \epsilon_i$$

where

I	=	import volume of goods and nonfactor services
TOT	=	terms of trade
RER	=	real exchange rate
D_i	=	dummy variable for commercial policy in which $D_i = 1$ for the trade adjustment countries and $D_i = 0$ for the others.
ϵ	=	the error term, which is assumed to be uncorrelated with the independent variables with constant variance
$\cdot$	=	rate of change

The four independent variables are postulated to be related to $\dot{GDP}$ in a log linear fashion. Estimations were performed for the forty trade adjustment loan countries versus forty-eight nonrecipients. Estimations were also performed for a group that excluded the four trade loan recipient countries with no progress or a reversal in commercial policy versus the forty-eight nonrecipients. Finally, we also considered a group of thirty-eight reformer countries (the thirty-six reformers within the group of trade loan recipients plus Bolivia and Haiti, which carried out

trade reforms without adjustment loans) versus the remaining fifty "nonreformers."

Table 6 provides the results of ordinary least squares estimations for the eighty-eight developing countries. Changes during 1985-87 versus 1981-83 are compared in panel 1 and three years after the loan versus three years before in panel 2. Changes in imports were found to be a strong determinant of changes in GDP growth, presumably because of the importance of foreign exchange and import constraints. The estimated coefficient of $\dot{I}$ suggests that a 10-percent increase (recovery) in imports is associated with a more than 1.5-percent increase (recovery) in GDP. The contribution to GDP of changes in imports also appears greater in the presence of reform under trade adjustment lending, as indicated by the coefficient of the dummy variable D for a trade adjustment loan country ($\beta 4$). In other words, the results suggest that the import-GDP relation, such as that depicted in figure 3, shifts up in the presence of policy reform. The significance of the coefficient of the dummy variable ($\beta 4$) is stronger when reformers are compared with nonreformers. The results suggest that trade adjustment loans contribute to the import-GDP relation not only through the financing of additional imports but also through the effect of policy change on efficiency.

The additional impact on GDP growth of real exchange rate depreciation (defined as a decrease) is positive. It is not significant in the simultaneous presence of the dummy variable, presumably because of the high correlation between the two variables. The coefficient of the slope dummy ($\beta 5$) turned out to be insignificant (not shown in the table).

Table 6. GDP Growth, Imports, and Effect of Policy Reform

Dependent variable: $\dot{GDP}$	Constant	$\dot{I}$	$\dot{TOT}$	$\dot{RER}$	D	R^2	F-stat	No. of obs.
Panel 1: 1985-87 compared to 1981-83								
(i) Dummy: 1 = 40 recipients 0 = 48 nonrecipients	-0.21 (-0.34)	0.15 (4.67)	0.01 (0.58)	-0.02 (-1.17)	1.05 (1.18)	0.36	11.9	66
(ii)	-0.29 (-0.53)	0.16 (5.30)	0.01 (0.48)		1.40 (1.71)	0.35	13.3	79
(iii)	0.26 (0.56)	0.15 (4.72)	0.02 (0.70)	-0.03 (-1.57)		0.34	11.8	72
(i) Dummy: 1 = 38 reformers[a] 0 = 50 nonreformers[b]	-0.38 (-0.65)	0.15 (4.55)	0.01 (0.56)	-0.02 (-1.24)	1.48 (1.76)	0.37	9.9	72
(ii)	-0.39 (-0.72)	0.16 (5.33)	0.01 (0.52)		1.69 (2.10)	0.36	14.1	79
Panel 2: Three years after compared to three years before[c]								
(i) Dummy: 1 = 40 recipients 0 = 48 nonrecipients	-0.18 (0.29)	0.18 (5.14)	0.04 (1.50)	-0.02 (-1.19)	0.11 (0.12)	0.44	11.9	66
(ii)	-0.21 (-0.37)	0.18 (5.73)	0.04 (1.62)		0.45 (0.52)	0.41	15.5	72
(iii)	-0.13 (-0.27)	0.18 (5.18)	0.04 (1.51)	-0.02 (-1.25)		0.44	16.2	66

Table 6. GDP Growth, Imports, and Effect of Policy Reform (cont'd)

Dependant variable: $\dot{GDP}$	Constant	$\dot{I}$	$\dot{TOT}$	$\dot{RER}$	D	R^2	F-stat	No. of obs.
(i) Dummy: 1 = 38 reformers[a]	-0.59	0.17	0.06	-0.02	1.17	0.46	12.7	68
0 = 50 nonreformers[b]	(-1.00)	(5.04)	(1.79)	(-1.09)	(1.31)			
(ii)	-0.58	0.17	0.06		1.37	0.43	16.8	72
	(-0.97)	(5.62)	(1.92)		(1.58)			

Note: t-statistics are within brackets.

a. Excluding Guyana, Yugoslavia, Zambia, and Zimbabwe from the group of forty trade loan recipients, but including the nonrecipient reformers Bolivia and Haiti.

b. Excluding Bolivia and Haiti from the group of forty-eight nonrecipients but including the four countries listed in footnote a.

c. 1984 is the reference year for nonrecipients.

Finally the, coefficient of $\dot{TOT}$ ($\beta 2$) has the expected sign and mild significance in most instances.

The following equations consider multicollinearity among the independent variables.

For 40 recipients vs. 48 nonrecipients:

$$\dot{I} = \underset{(-0.98)}{-2.48} + \underset{(1.87)}{0.21}\ \dot{TOT}\ \underset{(-3.02)}{-0.19}\ \dot{RER} + \underset{(1.05)}{4.11}\ D \tag{2}$$

$$R^2 = 0.23, \quad F = 6.2, \quad obs = 66$$

For 38 reformers vs. 50 nonreformers:

$$\dot{I} = \underset{(-1.41)}{-3.36} + \underset{(2.11)}{0.24}\ \dot{TOT}\ \underset{(-3.13)}{-0.19}\ \dot{RER} + \underset{(1.76)}{6.63}\ D \tag{3}$$

$$R^2 = 0.26, \quad F = 7.1, \quad obs = 66$$

The coefficients of $\dot{TOT}$ and $\dot{RER}$ are significant. While this is suggestive of an association of $\dot{TOT}$ and $\dot{RER}$ with import growth, the low R^2 also implies their independence with respect to import growth.[11] The coefficient of the dummy variable is less significant, however, which suggests that the effect of the dummy variable on $\dot{GDP}$ is the result of policy impact as well as of financing. However, the dummy variable is more likely representative of a set of macroeconomic and sectoral reforms and other positive factors that affect growth than of trade reform <u>per se</u>.[12]

Conclusion

Overall, implementation of trade policy reform has been moderately significant in the sample of developing countries, but weaker

than expected. Reforms have occurred in exchange rate policy and in the reduction of impediments to export, including reduction in impediments to the import of inputs needed by exporters. While quantitative restrictions have been replaced by tariffs in many countries, success in lowering quantitative restrictions has been more modest in the face of foreign exchange constraints, except in selected cases (for instance, Chile, Korea, Mauritius, and Mexico). In some cases there has been a reduction in effective protection for importables and in antiexport bias (for example, Mexico, Morocco, Philippines). Domestic reforms, however, have lagged even in some of the major trade reformers (for example, Mexico), and institutionalization of reforms and reductions in protection levels have been limited.

Given the strong emphasis on trade policy under adjustment lending, one might expect greater reforms of the trade regimes than actually occurred during this period. In particular, four factors have constrained reform: macroeconomic instability, inadequate conviction concerning the benefits of reform and vested interests against reform, weak implementation capacity, and conflicts in design. Institutional reform has been found to be particularly slow, while price reforms have not always been sustained. These issues are important because sustainable price changes and effective institutional support are vital to achieving meaningful supply responses.

On nine performance indicators, the strongest improvement of trade loan recipients over nonrecipients in the postloan period relative to the preloan period was in growth in manufacturing exports and in imports. Less progress was made with respect to debt indicators. For

the short period under review, the overall positive evidence is modest. In general, the more significant improvements concern middle-income countries. The evidence is also more favorable when early loan recipients are considered (especially when only the ten intensive trade loan recipients are considered) than when all forty recipients are included in the comparisons.

Regression analyses of GDP growth rates found the growth in output to be associated with the contribution of additional imports, presumably because foreign exchange shortages had been a serious constraint. At the same time, policy reform was found to have a positive impact on growth performance. Countries that have received trade adjustment loans have experienced a stronger growth impact from additional imports than have other countries. The evidence of this policy impact is mild when all trade loan recipients are compared with nonrecipients but stronger when reformers are compared with nonreformers. Country studies corroborate this finding as well. The evidence supports the need for continued and stronger efforts to reform trade regimes as part of adjustment lending. Although not analyzed in this paper in any detail, factors other than trade policy are also important in complementing and sustaining trade reform. Thus, greater efforts in trade reform will be beneficial for adjustment and growth, but their impacts will be stronger if attention is paid to complementary policies.

Notes

1. Export restrictions have included prohibitions based on economic or safety grounds, restrictive licensing, export quotas, export taxes, and regulations limiting foreign exchange retention.

2. Quantitative restrictions have included import prohibitions, quotas, and restrictive licensing of various sorts. Other restrictions include foreign exchange licensing and control, advance import deposit requirements, and restricted import channels (as in the case of a state trading monopoly.)

3. In addition to customs duties, customs charges include customs surcharges, surtaxes, stamp taxes, and taxes on foreign exchange.

4. The sources were reports on recommendations for loans, country memoranda, country briefs, audit reports, mission reports, background work for World Bank (1988), IMF reports, and the Ford Foundation project on trade policy and the developing world. Sufficiently large differences were detected to permit such a broad classification.

5. When "secondary trade restrictive intent" is included, the figure rises to 27.2 percent; estimates for imports "affected," rather than covered, are higher still -- 48 percent instead of 27.2.

6. These proposals are grounded in the conceptual and empirical work of many trade policy analysts; see, for example, Balassa (1988); Bhagwati (1978); Corden (1974); Krueger (1978); and Little, Scitovsky, and Scott (1970).

7. While the achievement of a real depreciation clearly depended on macroeconomic adjustments (fiscal, monetary, and wage), this chapter focuses only on exchange rate policy identified under trade adjustment lending.

8. When quantitative restrictions are binding before and after the depreciation, however, the depreciation increases the price of exportables relative to importables.

9. For most indicators a positive change is an improvement. For resource balance/GDP, external debt/exports, and debt service/exports, a positive change is a worsening and is indicated in the table by a minus. For the real exchange rate, a greater real depreciation for recipients between periods than that for comparators is an improvement.

10. Sample selectivity bias is likely to come into play here in that changes in performance attributed to the receipt of a loan may reflect conditions that systematically led to the receipt of the loan.

11. Since a depreciation is defined as a decrease in the RER in this analysis, a positive sign on the coefficient of RER would be expected if equations vii and viii in table 6 were demand functions of I.

12. That is, there may be an additional dependent term $\beta_6 Z_i$ in equation 1, so that $E(\beta_4) = \beta_4 + \beta_6 \gamma$, where γ is the coefficient of a regression of Z_i on D_i. The term Z_i could represent characteristics other than trade reforms.

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Annex 1

Efficiency Gains from Trade Reform

Domestic value added is comprised of the value added in exportables (x), in importables (m) -- with x and m comprising tradeables, t -- and in nontradeables (n) at their respective prices P_x', P_m' and P_n'. In the short- to medium-term, the production of each category is thought to be constrained by variable domestic inputs represented by L, and imported inputs I. Expressing all prices in terms of the price of importables P_m'.

$$(1) \quad GDP = P_x Q_x (L_x, I_x) + Q_m (L_m, I_m) + P_n Q_n (L_n, I_n)$$

where GDP is the aggregate value added, and the $P_i Q_i$s are the sectoral value added in i = x, m and n, all at constant prices. The use of domestic resources L_i in x and m are dependent on the terms of trade P_x, tariffs and subsidies on exports and imports γ, and total resources in tradeables L_t. In turn, L_t is determined by the relative price of tradeables with respect to non-tradeables, or the real exchange rate RER, inclusive of equal import tariffs cum export subsidies (i.e. inclusive of net taxation of trade). Thus γ would only include the differential trade policy components. Changes in P_x and γ are assumed not to affect L_t, but only L_x and L_m. Domestic resources in non-tradeables L_n is determined by the total domestic resources $\bar{L}$ and L_t; full employment is assumed.

$$(2) \quad L_x = F (P_x, \gamma, L_t)$$

$$(3) \quad L_m = G (P_x, \gamma, L_t)$$

$$(4) \quad L_t = H (RER)$$

$$(5) \quad L_n = \bar{L} - L_t$$

In initial equilibrium, real wages across the three sectors are the same. The product prices and the marginal products can change from three sources: (i) external factors, specifically represented by terms of trade changes; (ii) import growth, through changes in non-competing imported inputs in domestic production of final goods, I_1, as well as in any imports competing with local production, I_2; and (iii) policy changes

represented specifically by real exchange rate and commercial policy changes. In order to restore real wage equilibrium, domestic resources (L_i) move across sectors thereby changing GDP. Differentiating (1) partially with respect to each of the exogenous changes, we obtain four hypothesized relationships.

First, we consider the effect on GDP of changes in imports. If the marginal product of I_1 in each i is the same, and if changes in domestic resources used in the import-competing sector and the exportable sector come entirely from each other:

$$(6)\quad \frac{\partial GDP}{\partial I} = (P_x + P_n + 1)\frac{\partial Qi}{\partial I_1} + \left(P_x \frac{\partial Qx}{\partial L_x} - \frac{\partial Qm}{\partial L_m}\right)\frac{\partial Lx}{\partial I_2}$$

[Direct effect of changes in imported inputs in GDP] + [Induced net effect of changes in imported products on tradeable production]

Next, we turn to the effect on GDP of changes in the terms of trade, TOT, defined as the exportable price index divided by the importable price index. Assuming again that changes in resource use in the exportables and the importable sector come from each other, and noting that P_x is the terms of trade, we consider the effect on GDP of a change in terms of trade resulting from a change in P_x' or P_m':

$$(7)\quad \frac{\partial GDP}{\partial P_x} = Q_x + \left(P_x \frac{\partial Qx}{\partial L_x} - \frac{\partial Qm}{\partial L_m}\right)\frac{\partial Lx}{\partial P_x} + Qn\frac{\partial Pn}{\partial P_x}$$

[Direct effect of TOT change on value of exportable production] + [Induced net effect of TOT change on tradeable production] + [Change in the non-tradeable production valued at Pm']

The effect of a change in the real exchange rate, defined as the price of tradeables divided by the price of nontradeables, is considered next. Noting that $L_n = L - L_t$,

$$(8)\quad \frac{\partial GDP}{\partial RER} = \left(P_x \frac{\partial Qx}{\partial L_t} + \frac{\partial Qm}{\partial L_t} - P_n \frac{\partial Qn}{\partial L_t}\right) \frac{\partial Lt}{\partial RER} + Q_n \frac{\partial Pn}{\partial RER}$$

[Difference between change in tradeable production and nontradeable production from resource shift] + [Change in non-tradeable production valued at Pm']

Finally, we turn to the effect of a change in commercial policy, γ, that changes the price of exportables relative to importables.

$$(9)\quad \frac{\partial GDP}{\partial \gamma} = \left(P_x \frac{\partial Qx}{\partial L_x} - \frac{\partial Qm}{\partial L_m}\right) \frac{\partial Lx}{\partial \gamma}$$

[Difference between changes in exportable and importable production from resource shift]

The effect on GDP in equation (6) is expected to be positive unless the induced net effect is negative and large enough to offset the direct positive effect. The same can be said of the effect in equation (7). The effect of a depreciation in RER in (8) would be positive unless the increase in tradeable production is offset by the decline in nontradeable production; there is the additional effect of a change in the valuation of non-tradeable production. A commercial policy change that reduces the anti-export bias in (9) would have a positive effect unless the negative effect on importables is larger than the positive effect on exportables.

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