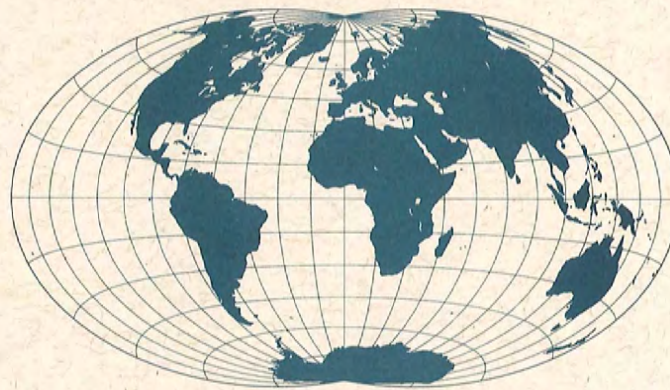# CAER

CONSULTING ASSISTANCE ON ECONOMIC REFORM II

DISCUSSION PAPERS

Impact of Outward-Looking, Market-Oriented
Policy Reform on Economic Growth and Poverty
Technical Paper

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A I-R D

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DISCUSSION PAPERS

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Impact of Outward-Looking, Market-Oriented Policy Reform on Economic Growth and Poverty Technical Paper

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A⨍ I⌐⌊R⌊D

IMPACT OF OUTWARD-LOOKING, MARKET-ORIENTED POLICY REFORM ON ECONOMIC GROWTH AND POVERTY

by J. Dirck Stryker and Selina Pandolfi

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IMPACT OF OUTWARD-LOOKING, MARKET-ORIENTED POLICY REFORM ON ECONOMIC GROWTH AND POVERTY

J. Dirck Stryker and Selina Pandolfi

EXECUTIVE SUMMARY

Since the early 1980s, when many developing countries experienced severe economic difficulties because of excessive market regulation and trade protection, a number of them have initiated extensive policy reforms These reforms have been designed to free up markets and to move these countries in a more outward-oriented direction. A major objective of the reforms has been to increase the importance of trade in Gross Domestic Product (GDP) by reallocating resources away from inefficient production of import-competing goods and nontradables, and towards production of exports. This should lead to increased growth of GDP not only because of static economic gains associated with the exploitation of comparative advantage and economies of scale but also because of a number of dynamic ways in which trade contributes to economic growth.

The empirical evidence for developing countries largely supports the theoretical arguments concerning the favorable impact of outward-looking, market-oriented policy reform on trade and growth. Nevertheless, recent experience in some countries, especially in Africa, has been disappointing. This may reflect the failure of reforms to be fully implemented or sustained. It may also be because of structural factors such as landlocked location, deteriorating terms of trade, or excessive concentration on primary product exports. Furthermore, many African countries may lack the physical infrastructure, human capital, and institutions that are necessary to take full advantage of the potential resulting from policy reform. Thus policy reform may be a necessary but not sufficient condition for expanded trade and growth, or, alternatively, the time required for these beneficial effects to occur may be longer where other conditions necessary for growth remain unsatisfied.

Outward-looking, market-oriented policy reforms have sometimes been criticized for having adverse effects on the poor. Much of this criticism has focused on the short run, before there has been sufficient time for the effects of reform on unemployment to be reversed by new investment in expanding sectors. But even if policy reform has had adverse short-term effects on the poor in some countries, and the evidence cited in this paper shows this to be far from universal, its long-term effects are likely to be positive, especially where reform contributes to more rapid economic growth.

While much of the empirical evidence supports the proposition that outward-looking, market-oriented policy reform stimulates trade and growth and that economic growth leads to poverty alleviation, most of this evidence applies to the industrial countries and the middle-income developing world. Relatively little of it includes the poorer countries, which appear to

have experienced the most difficulty in benefiting from these reforms. Nor do these studies analyze why reform has not been more successful in these countries. Furthermore most of the studies use data for years prior to the major reforms of the past decade.

In order to test the proposition that policy reform contributes to trade and growth, and that all of these lead to poverty alleviation, an econometric analysis was conducted across a broad spectrum of developing countries for the period from 1974 to 1993. In addition to indicators of economic policy, the analysis also included control variables related to the structure of the economy and to levels of economic development in order to determine why policy reform has not always been as successful as had been hoped.

The study starts by developing a number of hypotheses regarding linkages between policy reform, trade, growth, and poverty alleviation. Details regarding the origins of these hypotheses -- whether based on a review of the literature, the application of economic theory, or the experience of the authors in a number of countries that have undergone policy reform – are presented in Annex A. The study then discusses the econometric approach used. This involves dividing the data into five-year epochs, which correspond reasonably well to different world economic conditions facing the developing countries over the twenty-year period, i.e., moderate economic growth, with high prices for primary products and easy access to international capital (1974-78); economic stagnation, with capital markets increasingly closed to many LDCs (1979-83); moderate economic growth accompanied by prolongation of the international debt crisis, with structural adjustment programs required for many LDCs to get access to foreign capital (1984-88); and stagnation of world economy, with continuation and extension of structural adjustment programs (1989-93). Averages (or in some instances rates of change) for each five-year period and country are treated as separate observations in the analysis.

The relative importance of trade is measured in the regression analysis by the ratio of exports plus imports to GDP. Policy measures include the ratio of trade taxes to the value of trade, the ratio of the parallel market exchange rate to the official exchange rate, and an index of trade liberalization measures. Growth is defined in terms of the relative rate of growth of real per capita GDP, measured in international prices using the Purchasing Power Parity approach. The structural variables include total population, population density per unit of arable land, percentage of the population living in urban areas, per capita GDP in 1970, rate of growth of per capita GDP over the previous ten years, changes in the terms of trade, ratio of raw material exports to GDP in 1970, and whether or not a country is landlocked. The development variables include road density per unit of arable land, as a measure of infrastructure; average years of schooling per adult member of the population, as an indicator of education; and the ratio of the money supply (M2) to GDP, as a measure of institutional development.

Poverty alleviation in this study is measured as an unweighted average of indices for the following: access to health facilities, access to safe water, school enrollment at the primary level, life expectancy at birth, infant mortality, prevalence of child malnutrition, and literacy rate. One

advantage of this indicator is that it is a broader concept than household income, which does not include the value of services furnished by the public sector. A disadvantage of the indicator is that it measures some of the effects of poverty rather than poverty itself. Furthermore, it is as much an indicator of the effort by government to supply social services as it is of the effects that these services have had on the poor. Nevertheless, it is an important indicator of well-being for the poor.

The empirical results provide strong support for most of the hypotheses. Above all, **the results show the vital importance of outward-looking, market-oriented policy in promoting trade, growth, and poverty alleviation**. All three policy measures have an important influence on the ratio of trade to GDP. This in turn exerts a positive effect on economic growth, which is important in alleviating poverty. In addition, more open policies have a positive effect on economic growth independent of their influence on trade, and both lower trade taxes and more open policies have a favorable effect on poverty alleviation independent of their influence, either direct or indirect via trade, on economic growth. These are important findings, given USAID's commitment to trying to assure the success of policy reforms.

Among the development variables, education and especially institutional development are important in stimulating trade. The fact that the response of exports to policy reform has been slow in some countries may be primarily because of inadequate investment in human capital and in the institutional infrastructure required for trade. Lack of adequate physical infrastructure appears to be less of a problem, though more research is required before this can be said with certainty. The problem with existing infrastructure may be related more to quality than to quantity, and this in turn may be due to educational and institutional deficiencies. However, both road density and institutional development have a beneficial influence on poverty alleviation independent of their effects on trade and growth.

Concerning the effects of the structural variables, it seems clear that trade is most important for economies in which the size of markets is limited. On the other hand, higher population density contributes positively to trade because these countries are unable to satisfy their need for primary products from domestic sources alone. They are forced, therefore, to specialize in the production of manufactured goods, exchanging these for primary product imports. In the long run, this turns out to be highly beneficial, the results suggest, since countries that depend more on their natural resources for exports tend to grow less rapidly than those who base their exports on industrial goods.

Somewhat surprising is the strength and robustness of the positive influence of population size on growth of per capita GDP. Other things equal, a one percent increase in the size of the population will result in an increase in the economic growth rate of almost one percentage point. The mechanisms by which such gains are realized are not well understood. They may relate to the exploitation of economies of scale, to greater competition, or to an increase in the externalities associated with learning. More research is required here.

Also noteworthy is the lack of evidence for the hypothesis of economic convergence, i.e., countries that start further behind are likely to grow more rapidly than those that start with a higher per capita GDP. This is not because countries that start out with a lower per capita GDP have pursued less open policies, since this variable is controlled for. There is some suggestion that the evidence for convergence over longer periods of growth might be due to the differential impact of changes in the world economy on different countries. More research is required, however, to verify this.

A number of additional findings are also important. As expected, improvements in the terms of trade have a positive effect on economic growth. This effect, however is relatively weak. More surprising is the finding that being landlocked, other things equal, impedes neither trade nor growth. This finding is very robust and contradicts that of Sachs and Warner (1996), which is that landlocked countries, other things equal, grow less rapidly than those with direct access to the sea. This is another area for further research, especially in view of the fact that unrecorded trade is probably relatively more important in landlocked countries. The analysis also suggests that the rate of domestic savings has no influence on economic growth once the effects of population and the importance of trade are taken into account.

Poverty alleviation appears to be negatively correlated with population density, which is an indicator of pressure on the natural resource base. On the other hand, urbanization contributes positively to poverty alleviation, probably because it facilitates access to social services. Most important, however, is the very positive contribution that economic growth makes to poverty alleviation.

Furthermore, outward-looking, market-oriented policies, which contribute to poverty alleviation through trade and growth, also have a direct beneficial influence on poverty. Alleviation of poverty is strongly correlated with low rates of trade taxation and with open trade policies. This is hardly surprising in view of the fact that poverty is greatest in rural areas and these policies tend to favor those in the countryside. It is also clear that there has been substantial progress towards poverty alleviation over time that has been independent of these various explanatory variables.

These findings have important implications for USAID and the other donors. First, they strongly support the emphasis placed by the donors on economic policy reform as indispensable for economic growth. Second, they show convincingly that economic growth, as well as policy reform, is highly beneficial for poverty alleviation. Third, they indicate that USAID's funding of projects to promote the expansion of nontraditional exports is justified in terms of its impact on growth. Fourth, they suggest that high priority be given to the development of financial, commercial, legal, promotional, fiscal, and other institutions. Fifth, they indicate that donors should support the promotion of industrialization for export. Finally, they show that construction, rehabilitation, and maintenance of rural roads has important implications for poverty alleviation.

IMPACT OF OUTWARD-LOOKING, MARKET-ORIENTED POLICY REFORM ON ECONOMIC GROWTH AND POVERTY

J. Dirck Stryker and Selina Pandolfi

INTRODUCTION

Since the early 1980s, when many developing countries were experiencing severe economic difficulties because of excessive market regulation and trade protection, a number of them have initiated extensive policy reforms These reforms have been designed to free up markets and to move these countries in a more outward-oriented direction. The reforms have included deregulation of markets, reduction in or elimination of taxes and subsidies on marketing and trade, devaluation, movement towards more flexible exchange rates, dismantling of quantitative restrictions on imports, harmonization of import tariffs, and establishment of preferential regimes to promote exports via directed credit schemes and exemption from taxation of inputs used in the production of exports.

A major objective of the reforms has been to increase the importance of trade in Gross Domestic Product (GDP) by reallocating resources away from inefficient production of import-competing goods and nontradables, and towards production of exports. This should lead to growth of GDP not only because of static economic gains associated with the exploitation of comparative advantage and economies of scale but also because of a number of dynamic ways in which trade contributes to economic growth. These include technological transfers associated with trade and investment, increased efficiency resulting from greater competition in foreign and domestic markets, accumulation of commercial and managerial experience, acquisition of skills by the work force, growth of employment in the face of population pressure, and increased foreign exchange earnings available for the importation of capital equipment. In addition, according to the new "endogenous" growth theory, openness to trade increases returns to innovation (Harrison 1991). Finally, the reforms may impact growth directly by, for example, reducing the importance of rent-seeking and lowering the cost of domestic marketing.

The empirical evidence for developing countries largely supports the theoretical arguments concerning the favorable impact of outward-looking, market-oriented policy reform on trade and growth.[1] Nevertheless, recent experience in some countries, especially in Africa, has been disappointing. Despite a substantial record of policy reform in many African countries during the 1980s, GDP per capita in Africa fell by 0,6% from 1987 to 1994, virtually the same performance as during the previous ten years (Sachs, 1996). This poor record of growth may be due to a number of causes. First, it may reflect the failure of reforms to be fully implemented or sustained. It may also be because of structural factors such as landlocked location, deteriorating terms of trade, and natural resource abundance.[2]

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1. For a review of much of the evidence relating policy to trade and growth, see Edwards (1993). An important recent study is Sachs and Warner (1995a).

2. Recent evidence suggests that natural resource abundance may have a negative influence on growth, perhaps because of a Dutch Disease

Furthermore, many African countries may lack the physical infrastructure, human capital, and institutions that are necessary to take full advantage of the potential resulting from policy reform. Thus policy reform may be a necessary but not sufficient condition for expanded trade and growth, or, alternatively, the time required for these beneficial effects to occur may be longer where other conditions necessary for growth remain unsatisfied.

Even where outward-looking, market-oriented policy reforms have succeeded in stimulating growth, they have sometimes been criticized for having adverse effects on the poor (Jolly 1987). The Cornell Food and Nutrition Policy Program was enlisted by USAID in 1988 to examine this critique insofar as it applies to structural adjustment in Africa. Its conclusion was that the poor have not, in general, been adversely affected by structural adjustment. The major reason for this is that most of the poor in Africa live in rural areas and are sufficiently isolated from the mainstream of the economy and from access to public services that they have not suffered extensively from structural adjustment programs. Cornell's analysis has been faulted, however, for not paying sufficient attention to exceptions to this general finding (Stryker and Rogers, 1992, 24). Furthermore, it does not deal with the issue of whether the poor benefit from the favorable effects of structural adjustment on economic growth.[3] Finally, there is evidence that structural adjustment in Latin America has had an adverse short-run impact on the urban poor, who tend to be more closely integrated into the market economy and to have better access to public services than in Africa (Sahn, 1992).

Even if policy reform has had adverse short-term effects on the poor in some countries, and the evidence cited above shows that this is far from universal, its long-term effects are likely to be positive, especially if reform contributes to more rapid growth. This has been demonstrated rather convincingly with the publication of two recent working papers looking at the effects of economic growth on relative income inequality and on the absolute level of poverty (Deininger and Squire, 1996; Ravallion and Chen, 1996). Using a carefully selected data set comprising over 650 observations on the quintile distribution of income for 108 countries, Deininger and Squire find a strong positive correlation between growth in aggregate per capita income, on one hand, and increases in per capita income of all except the top quintile, on the other. A similar result is statistically confirmed by Ravallion and Chen using a slightly different definition of the level of poverty. The implication of these findings is that economic growth appears to be important to poverty alleviation.

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effect or because it makes exports less sensitive to policy (Sachs and Warner, 1995b). The Dutch Disease refers to the tendency for the real exchange rate to be overvalued because of rapid expansion of a few primary product exports. This makes it difficult to diversify the export base to include a broader range of agricultural and manufactured goods.

3. This issue is explored for four African countries in Stryker, Shaw, Rogers, and Salinger (1994). Critical factors in determining participation by the poor in modern economic growth include access to markets, infrastructure, and public social services, especially education.

Annex A offers a detailed analysis of why this might be so, based on a survey of much of the available literature. Here we are concerned specifically with how outward-looking, market-oriented policy reform acts in the long run to alleviate poverty – whether directly or through its impact on trade and growth. One example is the increase in wages and employment that accompanies successful outward-oriented reform. Wage rates tend to be low in poor countries, meaning that these countries are likely to have a comparative advantage in the production and export of labor-intensive products.[4] Exploitation of this advantage through expanded trade as a result of policy reform creates more demand for labor, absorbing some of the unemployed and underemployed. So does the economic growth that results from reform. This, together with any rise in wage rates, leads to greater incomes for the poor. This process may be slowed, however, if some of the conditions for increased trade and growth are lacking, such as efficient markets for reallocating capital and labor into the labor-intensive export sector. Then the adverse effects on employment of lowering protection of existing industries may offset the positive effects of expanded exports – at least for a time.

Another effect of policy reform on the poor results from the impact that it has in stimulating savings through growth of income. This provides resources for investment in human and non-human capital, leading to an increase in the demand for labor, a rise in labor productivity, and higher incomes for the poor. It also enhances the welfare of the poor through better health services and other non-pecuniary benefits. The experience in East Asia, for example, suggests that economic growth and poverty reduction go hand in hand (World Bank 1993). But for this to occur, policy reform must be successful in stimulating growth. In part this may result from expanded trade, but other conditions intervene as well, which may slow the growth process. For example, as noted above, a country that is rich in natural resources and highly specialized in the exportation of primary products may not respond as positively to policy reform as one that is poised for growth in the industrial sector.

While much of the empirical evidence supports the proposition that outward-looking, market-oriented policy reform stimulates trade and growth and that economic growth leads to poverty alleviation, most of this evidence applies to the industrial countries and the middle-income developing world. Relatively little of it includes the poorer countries, which appear to have experienced the most difficulty in benefiting from these reforms. Furthermore, many of these studies, the results of which are surveyed in Annex A, use data applying principally to the years prior to the major reforms of the past decade. Thus it is important not only to identify the extent to which recent policy reforms have led to increased trade, growth, and poverty alleviation but also the factors inhibiting the positive impact of these reforms. This will enable USAID and the other donors to assess the extent to which their aid programs have been oriented in the right direction and how these programs might be strengthened to increase their impact on economic

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4. In order for low wages to translate into comparative advantage in labor-intensive products, this wage advantage must not be offset by low labor productivity in these industries relative to average productivity throughout the economy.

growth and poverty alleviation.

Towards this end, an econometric analysis was conducted across a broad spectrum of developing countries for the period from 1974 to 1993. Such an analysis is possible now that a large body of country-level data has become available for the past thirty or so years from the World Bank, International Monetary Fund, and other sources. While a few studies have already been undertaken using these data (e.g., Sachs and Warner, 1996), much remains to be done. In particular, the present study explores the ways in which outward-looking, market-oriented policy reform influences growth and poverty through its impact on trade. This is especially important given USAID's commitment to trying to assure the success of these reforms via its projects to facilitate the responsiveness of trade, and especially nontraditional exports, to policy reform.

The methodological approach used in this study involved two steps. First, the study developed a number of hypotheses regarding linkages between policy reform, trade, growth, and poverty alleviation. Second, econometric analysis was undertaken using cross-country data to · test these hypotheses and to investigate the circumstances under which these linkages operate. The development of the hypotheses linking outward-looking, market-oriented policy reform, foreign trade, economic growth, and poverty alleviation is described in detail in Annex A. These hypotheses are based on a review of the literature, the application of economic theory, and the experience of the authors in a number of countries that have undergone policy reform. The hypotheses are summarized in the next section, together with the conceptual framework elaborated to describe them. Following this, the econometric approach used to test these hypotheses is described in detail. The results are then presented, after which the final section draws some conclusions and recommendations.

HYPOTHESES REGARDING POLICY, TRADE, GROWTH, AND POVERTY

A. Overview

The linkages between policy, trade, growth, and poverty can be analyzed using the conceptual framework illustrated by the following diagram:
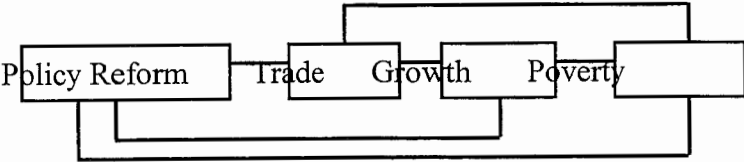
Thus outward-looking, market-oriented policy reform may increase trade, which may contribute to growth, which may help to alleviate poverty. But policy reform may also affect growth

directly, and both trade and policy reform may have direct effects on poverty as well. For example, economic growth contributes to poverty alleviation by increasing public revenues, which enables the government to provide better social services. At the same time, an expansion of labor-intensive exports increases the demand for the labor services of the poor. Finally, policy reform may in itself improve conditions for the poor, e.g., by increasing producer prices for rural farmers, even if there is no response in terms of trade and growth.

The impact of policy on trade and growth may be felt in several ways. First, an outward-looking, market-oriented policy profile should, other things equal, result in a larger share of trade in the overall economy than where the policy environment is focused in a more inward-looking direction. This would be indicated, for example, by a higher ratio of exports plus imports to GDP. In addition, the establishment of an outward-looking policy environment should also influence economic growth This might occur in three different ways. First, to the extent that this environment increases the relative importance of trade, this should have a favorable impact on economic growth for the reasons cited above. Second, the establishment of an outward-looking, market-oriented policy environment might influence growth directly even if there is no change in the importance of trade. Third, this environment might result in more rapid rates of growth of exports and imports, and these higher rates of growth of trade may be associated with more rapid growth of GDP. The problem with understanding the third influence, both theoretically and empirically, is that it is very difficult to separate cause and effect since exports are a part of GDP and imports are tied very closely to GDP. More rapid growth of trade would almost by definition imply more rapid growth of GDP. This is less true of the relationship between the level of the relative importance of trade in GDP and the growth of GDP. Therefore, the analysis in this paper concentrates on the first two ways in which policy influences growth, though it is recognized that we may be losing some of the dynamic effects related to the growth of trade.

The analysis thus far has assumed a single direction of causation. It is also possible that there are feedback effects. One of the most significant of these is the possibility that poor economic performance may influence policy, as it has recently in many developing countries. This is will likely occur with a lag, however, and the more immediate direction of causation is likely to be from policy to trade and growth. It is also possible that, in addition to economic growth resulting in a reduction of poverty, alleviation of poverty may contribute to more rapid growth by increasing investment in human capital.[5] Once again, the lags are likely to be considerable, in both directions.

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5. Moon and Dixon (1992) provide convincing empirical evidence of the important impact that investment in health and education can have on economic growth.

B. Hypotheses

The major hypothesis to be tested is that policy matters. In particular, we are interested in the extent to which outward-looking, market-oriented policy reform has a positive impact on economic growth and poverty alleviation, either directly, or indirectly via its impact on trade. The dimensions of policy reform that are of interest include effective rates of trade taxation, the importance of quantitative restrictions on trade, and the extent to which markets are regulated or controlled. Effective rates of taxation may differ from nominal rates because of exemptions, smuggling, or other means of tax avoidance or evasion. Quantitative restrictions may take the shape of import licensing, foreign exchange controls, and bans on exports or imports. Finally market restrictions and other controls may take many forms, including price regulation and restriction of marketing to public sector marketing boards and trading agencies.

It is hypothesized from the literature review in Annex A that a decrease in the rate of trade taxation, a reduction or elimination of quantitative restrictions on trade, and a decline in market regulation and control will increase the importance of trade in GDP. It is also hypothesized that greater relative importance of trade will be positively associated with a higher rate of growth of per capita GDP. In addition, it is also hypothesized that policy reform will be positively correlated with rate of growth of per capita GDP, holding constant the effect of trade. That is, even if there were no expansion of trade following policy reform, the effects of reform would still be beneficial to economic growth. For example, reduction or elimination of quantitative restrictions on trade should decrease the extent of rent-seeking and thus conserve resources that would otherwise be squandered.

As far as poverty is concerned, it is clear from the theoretical and empirical literature that more rapid economic growth should contribute to poverty alleviation. There is also a case to be made that greater importance of trade in the economies of poor countries should increase the demand for labor and thus help to alleviate poverty. On the other hand, to the extent that the poor are deprived of market opportunities because of lack of infrastructure or physical isolation, these effects may not be that important. Finally, there may also be a direct impact on poverty of policy reform, aside from its effects on trade and growth. Many of the poor live in rural areas, for example, and to the extent that lower taxes on trade or fewer market restrictions raise producer prices for agricultural products, this should benefit the poor, even if there is no expansion of output.

In addition to the impact of policy, either directly or indirectly through its effects on trade and growth, other variables associated with development have an important influence on trade, growth, and poverty alleviation. Examples include physical infrastructure, investment in education, and institutional development Where there is little infrastructure, people are poorly educated, and institutions are weak, the impact of policy may be overshadowed. Our hypothesis, then, is that these variables are positively correlated with trade, growth, and poverty alleviation and that a low state of development of these variables can offset the influence of policy reform.

Finally, there are a number of structural variables that need to be included in the analysis to avoid bias in the parameter estimates of the model and because these variables are important in their own right and could themselves offset the effects of policy. The first of these is the absolute size of the population. Other things equal, a country with a larger domestic market can be expected to engage in less foreign trade in relation to its GDP than one with a smaller market (Perkins and Syrquin, 1989). In part, this has a simple geographical explanation related to transportation costs and to the fact that the length of a country's frontiers grows less rapidly than its internal area as that area expands.[6] In addition, the ability to exploit economies of scale by relying on the domestic market is more limited the smaller is the size of the market.

Population size may also be important in explaining the rate of growth of per capita GDP. The theoretical reasons for this, however, have not been fully developed.[7] One possible explanation has to do with exploitation of economies of scale, though this source of growth is likely to be limited except for the smallest countries (Perkins and Syrquin, 1989, 1715). Another might be the greater competition that exists in larger markets, especially if they are protected from imports. A third explanation relates to endogenous growth theory, which states that skills developed in one area of the economy may spill over to other areas, raising productivity throughout the economy (Romer, 1986). If this happens more easily within than across national boundaries, countries would benefit from being larger.

Another structural variable associated with population is population density. The higher is the density of population, the more limited are the natural resources available to each person, and, other things equal, the greater is the extent of poverty. Higher population density also forces a country to increase its foreign trade to make up for this resource deficiency, and this effect grows in importance as population density continues to increase. But population density also has its positive effects in that higher population density lowers the per capita cost of domestic transportation, marketing, and administration.[8] These positive effects also occur with urbanization. It is much less costly to deliver public services, such as health and education, to people living in the cities than in the countryside. This is one reason why the poor tend to be found more in rural areas (Sahn, 1990).

The level of per capita GDP is also an important structural variable. Its effects on trade are multiple. Since exploitation of economies of scale due to larger market size is related more to GDP than to population, both population and per capita income should be used to explain the

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6. To take two extreme cases, if market exchange were equally distributed between all households on the globe and if the entire globe were one country, then all exchange would be domestic. On the other hand, if every household were an individual country, then all trade would be foreign. Perkins and Syrquin (1989, 1709)

7. Perkins and Syrquin (1989, 1735-39) find that large countries on average grew faster than small countries during the period 1960-82, primarily because of differences in the growth of productivity rather than of capital and labor inputs.

8. Stryker (1977)

decline in the importance of trade with market size. On the other hand, as per capita GDP rises, demand becomes more differentiated, which increases the number of goods demanded and limits the size of the market for any particular good (Perkins and Syrquin, 1989, 1714).

The level of per capita GDP may also have an effect on its rate of growth. For example, economic convergence would occur if poorer countries were able to reap the "advantages of backwardness" by importing capital and technology from the richer countries and so close the income gap between the two. The fact that this has not occurred may be because the poorer countries have kept their economies closed to trade (Sachs and Warner, 1995a, 2-3). On the other hand, endogenous growth theory implies that more advanced countries continue to gain from internal technological spillovers that are less available to poorer countries. Mancur Olson (1996) has also suggested that poor countries may remain poor because they lack the institutional environment to attract capital and technology from the richer countries. Similarly, Baumol, Nelson, and Wolff (1994, p. 65) argue that the poorest countries may lack the human capital to take advantage of technology and knowledge, and that there may be a "convergence club", limited to middle income countries that benefit from moderate backwardness.

Another important structural variable is the terms of trade facing a country. The terms of trade are defined here as the ratio of the prices of a country's exports to the prices of its imports. If the terms of trade improve, i.e., the prices of the country's exports rise relative to those of its imports, the country's national income or GDP increases. This is one potential source of growth of per capita GDP.

Other structural variables relate to the geographical situation of a country. For example, a country that is landlocked will have higher transportation costs to and from overseas markets than one that has direct access to the sea. This will not, however, be a disadvantage for trade with bordering countries. Similarly, a country that is a long distance from major markets will also incur higher transportation costs for trade with those markets. Whether these higher costs are a major factor inhibiting trade and growth is an empirical question, however, since once goods are loaded the cost of sea transportation is relatively low.[9]

SPECIFICATION OF ESTIMATING EQUATIONS

The foregoing hypotheses are tested in this paper using econometric analysis of cross-section data for 83 developing countries over a period of 20 years. Before proceeding to the detailed specification of the estimating equations, it is useful to conceptualize the variables and their relationships in the following form.

$$T = \alpha_0 + \alpha_1 PR + \alpha_2 S + \alpha_3 D$$

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9. Chile is a prime example of a country that has achieved impressive growth of per capita GDP despite being a very long distance from major markets.

$$G = \beta_0 + \beta_1 PR + \beta_2 T + \beta_3 S + \beta_4 D$$

$$POVALL = \gamma_0 + \gamma_1 PR + \gamma_2 T + \gamma_3 G + \gamma_4 S + \gamma_5 D$$

where T = the relative importance of trade in GDP, PR = policy reforms, S = structural variables, D = development variables, G = growth of per capita GDP, and $POVALL$ = poverty alleviation. Alternative specifications of the variables are used to estimate this model. For example, the relative importance of trade in GDP is measured by the ratio of exports plus imports to GDP. Policy measures include the ratio of export taxes plus import taxes to the value of exports plus imports, the ratio of the parallel market exchange rate to the official exchange rate, and an index of trade liberalization measures. Growth is defined as the relative rate of growth of real GDP per capita. The structural variables include total population, population density per unit of arable land, percentage of the population living in urban areas, per capita GDP in 1970, rate of growth of per capita GDP over the previous ten years, current trend in the terms of trade, ratio of raw material exports to GDP in 1970, and whether or not a country is landlocked. Finally, the development variables include road density per unit of arable land, as a measure of infrastructure; average years of schooling per adult member of the population, as an indicator of education; and the ratio of the money supply (M2) to GDP, as a measure of institutional development.

Poverty alleviation in this study is measured as an unweighted average of indices (from 0 to 100) for the following: access to health facilities, access to safe water, school enrollment at the primary level, life expectancy at birth, infant mortality, prevalence of child malnutrition, and literacy rate. One advantage of this indicator is that it can be calculated for all of the countries in the sample because data are available for at least some components of the indicator for each country. Another advantage is that it is a broader concept than household income, which does not include the value of services furnished by the public sector. A disadvantage of the indicator is that it measures some of the effects of poverty rather than poverty itself. Furthermore, it is as much an indicator of the effort by government to supply social services as it is of the effects that these services have had on the poor. Nevertheless, it is clear that this is an important indicator of well-being for the poor.

A. Variables

The following is the list of variables used in the estimating equation.

TRADE = ratio of exports plus imports to GDP

GDPCAP70 = real per capita GDP in 1970 (measured in Purchasing Power Parity (PPP) prices)

GRGDPCAP = growth of real per capita GDP in the current period

GRGDPCAP10 = growth of real per capita GDP over the 10 years previous to the current period

POVALL = indicator of poverty alleviation, consisting of an index which includes school enrollment at the primary level, life expectancy at birth, infant mortality, access to health facilities, access to safe water, literacy rate, and prevalence of child malnutrition

TT = ratio of taxes on exports plus taxes on imports to the value of exports plus imports

PO = ratio of parallel exchange rate to official exchange rate

OP = years of open policies (Sachs and Warner index)

POP = total population

POPDEN = ratio of total population to area of arable land

URB = ratio of urban population to total population

GRTOT = annual rate of change of the terms of trade index (1987=100)

LOCK = landlocked

RAWGDP70 = ratio of primary product exports to GDP in 1970

RL = ratio of roads (km) to area of arable land

SCHOOL= average years of schooling per adult member of the population

INST = institutional development, measured by the ratio of money supply (M2) to GDP

SAVGDP = ratio of domestic savings to GDP

D2, D3, D4 = dummy variables for the second, third, and fourth five-year periods.

Most of the data are taken from the World Bank, World Data 1995 . The variables are constructed from as many years of annual data as are available for four five-year periods (1974-78, 1979-83, 1984-88, 1989-93). These periods correspond, more or less, to periods of different economic conditions in the world economy. The first period (1974-78) was one of a generally favorable economic climate, when many countries expanded their exports and borrowed freely on international capital markets. The next period (1979-83) was one of economic shock, partly

because of previous borrowing, during which many countries exhausted their credit lines and were forced to begin negotiations with the international financial institutions (IMF and World Bank). During the third period (1984-88), many countries had to initiate structural adjustment programs to deal with their balance of payments crises and to gain access to international capital. These programs were often extended and broadened during the last of the four periods, which was generally one of stagnation in the world economy (1989-93).

GDP per capita (GDPCAP) is drawn from the Penn World Tables (Mark 5.6) and is expressed in 1985 international prices (dollars) adjusted for inflation and distortions in the exchange rate using the Purchasing Power Parity approach.[10] Five and ten year growth trends in GDP were estimated using ordinary least squares regression analysis.

The poverty alleviation indicator (POVALL) is an unweighted averages of indices, adjusted to 0 to 100 across the sample, for the indicators listed. For many countries, the availability of data for some of these indicators is quite limited, so averaging the indices avoids a significant reduction of the sample size. This may bias the indicators to the extent that the data for a particular variable are available only for richer countries but are assumed in the index to extend across the entire sample. To test for this, an alternative index was used that consisted of only the first three of these indicators, which were available for more countries than the other indicators. The differences between the two indices were minimal, however, so only the results of the broader index are presented here.

The ratio of taxes on exports plus taxes on imports to the value of exports plus imports (TT) measures the impact of the fiscal system on incentives to trade. Since actual tax revenues are used rather than official tax rates, the measure corrects for tax exemptions, which lower collected tax rates in comparison with official rates.[11] However, the measure does not correct for smuggling or underinvoicing. Furthermore, it has a bias in that it understates the importance of higher tax rates, which tend to discourage trade and thus are not weighted as heavily.[12] This same bias exists, however, for any index of official or collected tax rates that uses actual trade as weights.

The ratio of the parallel market exchange rate to the official exchange rate (PO) is a proxy for restrictions on trade and foreign exchange. In most developing countries where quantitative restrictions on imports have been in effect, the major reason for this has been to conserve

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[10].For a discussion of the way in which PPP and GDP are estimated in the Penn World Tables, see Summers and Heston (1991.) The Penn World Tables have been updated (mark 5.6) to inlcude observations through 1992.

11. Pritchett and Sethi (1994) find for Jamaica, Kenya, and Pakistan that collected tax rates may be as low as 60 percent of official rates, that the correlation between the two is weak, and that collected tax rates increase with official rates but much less than proportionately.

12. At the limit, a completely prohibitive tariff would not be included in the measure at all since the weight of this category would be zero.

reserves of foreign exchange. Consequently, these restrictions on trade have usually been accompanied by controls on foreign exchange. The severity of these controls is indicated by the exchange market premium, that is the degree to which excess demand for foreign exchange is reflected in a higher price on the parallel than on the official market for foreign exchange. What this indicator fails to capture is restrictions on trade that are not accompanied by exchange controls. Perhaps the most notable example of this is outright bans on certain types of trade.[13]

The variable describing openness (OP) is derived from Sachs and Warner (1995a), which classifies countries as open or closed according to the black market exchange rate premium, the influence of export marketing boards, the coverage of quotas on imports of intermediate and capital goods, and the presence of a socialist government. For the purposes of this research, we have defined the variable as the number of years within each five-year period during which a country is considered open according to Sachs and Warner.

Population density (POPDEN) and density of the road network (RL) are defined in terms of area of arable land rather than total land to avoid the bias that results when population is concentrated in only part of the country. Landlocked (LOCK) measures the geographical bias against trade. The variable is constructed with values of 0 or 1 assigned to each country according to whether the country has access to the sea, either directly or via navigable rivers. Landlocked countries with no access to the sea are assigned a value of 1 while countries with access to the sea are assigned a value of 0. The ratio of primary product exports to GDP in 1970 (RAWGDP70) is a proxy variable used to indicate the natural resource base of a country at the beginning of the period analyzed

Road density (RL) is but one measure of physical infrastructure, but one that is widely available and is especially relevant for poverty alleviation because of the large percentage of the poor who live in rural areas. Average years of schooling per adult member of the population (SCHOOL) is a broad indicator of education that is available for most of the countries included in the analysis. Institutional development (INST) is represented by a proxy variable – the ratio of the money supply (M2) to GDP. This is a good measure of the degree of development of financial intermediation, which, it turn, is closely related to the development of other institutions.[14]

The ratio of domestic savings to GDP (SAVGDP) was also tested as an explanatory variable because of its inclusion in other cross-country studies of economic growth (e.g., Sachs and Warner, 1996b). Although, strictly speaking, the savings rate depends on a number of

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13. As an example of this, Nigeria in 1986 abandoned import licensing and most controls on foreign exchange. As a result, for the next few years there was very little difference between parallel market and official exchange rates. However, imports of many foods and other products were officially banned to protect domestic industries.
14. Gillis, Perkins, Roemer, and Snodgrass (1996, 333-36) argue that the increase in liquid assets that accompanies growth of per capita income is a good measure of financial deepening, or the growth of financial intermediation. It also appears that where financial deepening occurs, there is strengthening of commercial and other institutions associated with development.

behavioral and policy variables that are not the subject of this paper, it was felt that it would be important to see whether omission of the savings rate would bias the results. It turned out not to be significant.

Preliminary analysis indicated the importance of trade in explaining the ratio of investment to GDP and the importance of the investment ratio in explaining growth.[15] However, it was recognized that investment is more of an endogenous intermediate variable than one with basic explanatory power. The factors that influence the relative importance of trade and how trade affects growth are not obvious in comparison with the fact that countries with higher rates of investment grow faster. Consequently, this paper does not attempt to determine the sources of growth of per capita GDP in terms of investment or changes in total factor productivity. Rather, it focuses on the policy, structural, and state of development variables that influence both trade and growth.

B. Estimating Equations

The estimating equations used to test the various hypotheses described above were specified in double logarithmic form, except for those in which growth of per capita GDP or the index of poverty alleviation was the dependent variable, in which case a semi-log specification was used. The variables tested in each estimating equation are as follows:

DEPENDENT | INDEPENDENT

TRADE | POP, POPDEN, GDPCAP70, RAWGDP70, LOCK, PO, TT, OP, RL, SCHOOL, INST, D2, D3, D4

GRGDPCAP | POP, POPDEN, GDPCAP70, GRTOT, RAWGDP70, LOCK, TRADE, PO, TT, OP, RL, SCHOOL, INST, SAVGDP, D2, D3, D4

POVALL | POPDEN, URB, GDPCAP70, GRGDPCAP10, RAWGDP70, LOCK, TRADE, PO, TT, OP, RL, INST, D2, D3, D4

In estimating these equations, the data were averaged over five-year periods to allow for broader coverage where there were missing observations and to reduce the effects of unusually large year-to-year variations. In addition, this meant that the data set did not vary greatly from one specification to another because of missing observations. Where data were missing, averages were calculated for the years for which there were data. Each five-year period for a given country was treated as a separate observation. As noted above, the periods comprising

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15. These relationships have been found to be very robust across substantially different specifications of econometric models explaining investment and growth (Levine and Renelt, 1992).

1974-78, 1979-83, 1984-88, and 1989-93 correspond reasonably well to different economic conditions in the world economy.

Growth of per capita GDP (GRGDPCAP) and changes in the terms of trade (GRTOT) were estimated as trends over five-year periods using log-linear regressions of each dependent variable against time. In addition, growth of per capita GDP was calculated as a trend variable over the ten years preceding each five year period (GRGDPCAP10) in order to examine the effects of past growth on current poverty alleviation.

Every effort was made to make the equations recursive rather than simultaneous. For example, the level of per capita GDP was treated as exogenous by introducing its value in 1970, well before the period of the analysis. Similarly, in order to avoid any problems of simultaneity between growth and poverty alleviation, growth was introduced as a ten-year trend prior to the period during which poverty alleviation was measured. Regarding one particular variable for which it was impossible to avoid simultaneity -- TRADE -- two-stage least squares was used when it was introduced as a explanatory variable.

The other major problem is multicollinearity. In any sample of data, whether cross-section or time-series, there are bound to be a number of variables that tend to move together. This may be because of single lines of causation between the variables, because of simultaneous lines of causation in several directions, or because the variables are linked with third variables. Sorting out multicollinearity is never easy. One cannot simply omit some of the variables, because this will bias the coefficients of the others. Instead, we tried to identify irrelevant variables, remove them from the equation, and then deal with the remaining variables in as straightforward a fashion as possible.

C. Diagnostics

In addition, a series of diagnostic tests were run where these pertain to cross-section data (Kennedy, 1996, 78-81).

Heteroskedasticity

All regressions were tested for the presence of heteroskedasticity (non-constant variance of the error terms). Heteroskedasticity was detected in the estimation of the regressions explaining TRADE. The White correction was therefore applied to these regressions.

Omitted and Irrelevant Variables

Several tests were run to determine the presence in the regressions of irrelevant variables and omitted known and unknown variables. In the TRADE equations, the three dummy variables specifying the different time periods were confirmed by the tests to be redundant

throughout the different specifications. In the GRGDPCAP equations, the same was true for the variable indicating the level of GDPCAP in 1970, as well as for the savings rate (SAVGDP) and the geographical bias (LOCK). Finally, the tests confirmed that the ratio of trade to GDP (TRADE), the ratio of the black market to the official exchange rate (PO), and the level of primary export dependency in 1970 (RAWGDP70) are irrelevant variables in explaining poverty alleviation.

The models presented in this paper were constructed following a very thorough process of selection of the independent variables because of economic theory as the basis of our hypothesis and because of their econometric significance in other empirical studies. Therefore, tests ran for omitted *known* variables always indicated the absence of such a problem. We used Ramsey's RESET test, however, to investigate the possibility of omitted *unknown* variables. This test is applicable only to OLS estimations; therefore we did not run this diagnostic for the GRGDPCAP equations. The test did not reveal any serious problems associated with omitted unknown variables.

Tests for Outliers

For all the regressions that were estimated, Jarque-Bera statistics were calculated to test for the normality of the residuals. For some of the regressions, especially those used to estimate poverty alleviation, the existence of a few outliers affected the normal distribution of the residuals. However, in the spirit of not tinkering with the data, we preferred to leave these observations in the sample, and simply note the possibility that the results might be excessively influenced by a few extreme cases.

Stability Tests

In order to test formally for the stability of the models we used the recursive least squares procedure (CUSUM). For the TRADE equations, the results of this test, which looks at the cumulative sum of the residuals plotted around a zero line and within a standard errors band, showed that the CUSUM line fits consistently within the 5% critical line, thus suggesting parameter stability. The same results were obtained when testing for the stability of the parameters for the POVALL regressions. Recursive least squares tests are applicable only to OLS estimation, so they were not used to test for the stability of the GRGDPCAP equations.

Errors in Measurement of Variables

The potential inaccuracy of economic data is well known. While errors in the measurement of the dependent variable in general only increase the variance of the residuals, those in the measurement of the independent variables generate estimators that are subject to downward bias. There is often very little that can be done. Proxies are likely to be subject to at

least as much error as the original variables. Furthermore, the Hausman test, which can be used to estimate the importance of measurement error in a given variable, can do so only if the true value of the variable can be predicted with some accuracy. Since this is often not the case, the test is of questionable usefulness. Fortunately, the consequences are not too serious. If the hypothesis that is being tested takes the form of the alternative hypothesis that the estimated parameter is significantly different from zero, then the downward bias in the estimator is such that this hypothesis is less likely to be accepted, when it is in fact not true, than it would have been if there were no bias.

EMPIRICAL RESULTS

A. Factors Influencing Trade

In Table 1 we show the effects of structural, policy, and development variables on the relative importance of trade in the economy, as defined by the ratio of exports plus imports to GDP. The first regression suggests, as expected, that trade in relation to GDP is significantly more important in smaller than in larger countries, defined in terms of population (POP). Furthermore, countries with higher population density (POPDEN) trade more than those with less pressure on their natural resource base. These two results are very robust and are confirmed in each version of the basic model presented in Table 1. The other size variable, GDP per capita, which is an indicator, together with population, of market size, is also negatively related to TRADE once a number of other, controlling variables are introduced. This result, too, is quite robust and suggests that the impact of domestic exploitation of economies of scale outweighs that of greater diversification of consumption as per capita income rises.

The second conclusion to be drawn from Table 1 is that each policy variable (PO, TT, OP) has a significant influence on the dependent variable TRADE, and that the sign of each coefficient is in the expected direction. Again, this is a fairly robust conclusion, with only the significance of the coefficient for OP falling to the 10 percent level in some of the equations. Thus it appears that each policy variable measures a somewhat different aspect of the policy environment, and that each aspect of this environment is important.

With respect to the development variables, the coefficient of institutional development (INST) is positive and highly significant in each regression. Years of schooling (SCHOOL) is significant in every case but one, that in which the natural resource base, as measured by RAWGDP70, is introduced. This appears to have more to do with the fact that the size of

TABLE 1
Factors Influencing Trade

Variable	I(1) Coefficient	Std. Error	II(1) Coefficient	Std. Error	III(1) Coefficient	Std. Error	IV(1) Coefficient	Std. Error	V(1) Coefficient	Std. Error	VI(1) Coefficient	Std. Error
C	2.682	0.395	3.446	0.430	4.884	0.471	4.737	0.479	4.966	0.481	3.479	0.493
POP	-0.260 **	0.017	-0.268 **	0.016	-0.265 **	0.018	-0.259 **	0.015	-0.263 **	0.015	-0.179 **	0.020
POPDEN	0.106 **	0.020	0.085 **	0.021	0.080 **	0.031	0.078 **	0.018	0.072 **	0.018	0.093 **	0.016
GDPCAP70	0.041	0.037	-0.046	0.036	-0.288 **	0.051	-0.282 **	0.050	-0.297 **	0.051	-0.202 **	0.045
PO			-0.233 **	0.072	-0.248 **	0.070	-0.197 **	0.070	-0.192 **	0.069	-0.272 **	0.109
TT			-0.025 **	0.011	-0.163 **	0.041	-0.159 **	0.041	-0.161 **	0.041	-0.146 **	0.037
OP			0.050 **	0.011	0.018	0.011	0.018 *	0.011	0.019 *	0.011	0.018 *	0.010
INST					0.160 **	0.039	0.158 **	0.039	0.161 **	0.039	0.150 **	0.036
SCHOOL					0.181 **	0.066	0.196 **	0.059	0.185 **	0.060	0.015	0.062
RL					-0.003	0.042						
RAWGDP70											0.204 **	0.038
LOCK									-0.094	0.072		
D2	0.059	0.064	0.068	0.067	0.019	0.063	0.011	0.064	0.016	0.063	0.027	0.054
D3	0.023	0.066	0.083	0.068	-0.006	0.067	-0.024	0.067	-0.018	0.067	0.022	0.060
D4	0.089	0.075	0.078	0.072	-0.025	0.076	-0.011	0.075	-0.002	0.074	-0.026	0.067
Adjusted R-sq.	0.493		0.588		0.723		0.711		0.712		0.789	
N	335		251		208		215		215		169	

(1)White Heteroskedasticity-Consistent Standard Errors and Covariance
(**)significant at the 5% level
(*) significant at the 10% level

the sample is reduced from 215 to 169 observations than to multicollinearity[16] Finally, the density of the road network, as a proxy for physical infrastructure, does not appear to be significantly related to TRADE.

This is somewhat surprising, given the emphasis that development practitioners often place on lack of infrastructure inhibiting response of the export sector to policy change. Accordingly, we also investigated the relationship between TRADE and the ratio of the number of telephones to the total population, as a measure of telecommunications infrastructure.[17] This variable, too, was insignificant. Our interpretation, then, is that weak institutions and lack of human capital are much more important than inadequate physical infrastructure in explaining poor trade performance.[18]

Two other structural variables were introduced. The coefficient of RAWGDP70 is significantly positive, suggesting that trade is more important for countries with a substantial natural resource base. What is interesting is that the character of this trade is likely to differ from that resulting from high population density, which also contributes positively to trade. In particular, high population density leads to specialization in exports of manufactures whereas rich natural resources result in greater exports of primary products. As we shall see shortly, the former is much more conducive to economic growth.

The other result that is somewhat surprising is that being landlocked does not seem to inhibit trade. This may be because trade with overseas countries is replaced by trade with neighbors or because transportation costs to and from the port are not sufficiently high to offset other factors conducive to trade. We do not know. Nevertheless, the fact that a greater share of unrecorded trade is likely to pass overland than through ports implies that this finding would not likely be reversed if the value of this trade were known, since trade is more likely to be underreported in inland than in coastal countries.

B. Factors Influencing Economic Growth

The results of the analysis of the factors affecting economic growth are presented in Table 2. It is clear from this table that total population size is positively related to the rate of economic growth. Larger countries, other things equal, grow more rapidly. This may be because of economies of scale, greater competitiveness, spillovers in learning as described by endogenous

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16. The correlation coefficient between SCHOOL and RAWGDP70 is .001.

17. This variable is available for a much shorter period of time and so was not used in place of, or together with, road density as an indicator of physical infrastructure.

18. This corresponds to the findings of Stryker and Shaw (1994), who examined barriers to the expansion of nontraditional exports through use of a firm survey in Ghana and Madagascar. They found that most of these were institutional, e.g., administrative obstacles, lack of access to credit, poor quality control, transport monopolies. The one exception was weak telecommunications, but even here the problem was poor quality, often related to inadequate maintenance, rather than limited quantity.

growth theory, or some other mechanism about which we know little.

TABLE 3
Factors Influencing Poverty Alleviation

Variable	I Coefficient	Std. Error	II Coefficient	Std. Error	III Coefficient	Std. Error	IV Coefficient	Std. Error	V Coefficient	Std. Error	VI Coefficient	Std. Error
C	-9.806	10.902	-5.240	11.433	-24.861	15.105	30.022	16.095	27.120	16.024	52.212	22.297
POPDEN	2.064 **	0.479	1.818 **	0.482	1.240 **	0.552	-3.468 **	0.998	-3.087 **	0.969	-4.171 **	1.511
URB	13.501 **	1.467	13.286 **	1.507	10.884 **	1.931	9.759 **	1.808	9.887 **	1.811	14.513 **	2.332
GDPCAP70	9.005 **	1.266	8.647 **	1.305	10.821 **	1.705	6.617 **	1.617	6.956 **	1.606	5.057 **	2.064
GRGDPCAP10	151.525 **	26.452	148.832 **	26.519	129.793 **	30.525	110.626 **	29.383	109.661 **	29.455	105.282 **	36.735
TRADE			1.786	1.223	2.624 *	1.496	-2.258	1.489				
PO					2.263	1.857						
TT					-0.551	0.399	-2.412 **	0.829	-2.174 **	0.816	-1.572	0.983
OP					1.185 **	0.453	1.254 **	0.435	1.101 **	0.424	1.472 **	0.494
INST							2.640 **	0.826	2.348 **	0.805	1.840 *	0.952
RL							6.417 **	1.280	5.756 **	1.206	7.147 **	1.838
RAWGDP70											-0.173	1.082
LOCK											2.297	3.247
D2	5.074 **	2.093	5.582 **	2.097	7.022 **	2.212	6.316 **	2.067	6.360 **	2.072	6.036 **	2.252
D3	11.675 **	2.179	12.124 **	2.183	12.557 **	2.406	11.712 **	2.229	11.931 **	2.230	12.671 **	2.494
D4	14.979 **	2.335	15.285 **	2.353	15.047 **	2.813	13.362 **	2.735	13.781 **	2.728	11.583 **	3.138
Adjusted R-sq.	0.618		0.621		0.660		0.702		0.701		0.716	
N	342		333		249		253		253		200	

(**) significant at the 5% level
(*) significant at the 10% level

Nevertheless, the finding that this variable has a significant impact on economic growth is very robust.

The same cannot be said of convergence theory, which states that countries that start further behind in terms of per capita income have the "advantage of backwardness" in that they can profit from the advances in technology that have been made in richer countries. This theory is not supported in Table 2, where the coefficient for GDPCAP70 is never significant. The reason for poor countries not catching up is not that they have failed to employ open policies, since this variable is controlled for (Sachs and Warner, 1995a, 3). Rather, it appears to be due to the absence of certain preconditions for growth that are associated with the relative importance of trade, such as education and institutional development.

To test the convergence effect further we estimated the economic growth equation over twenty years from 1974 to 1993. The coefficient of GDPCAP70 was negative, as predicted by convergence theory, and significant at the 5 percent level until TRADE and POP were introduced as independent variables, in which case its significance fell to the 10 percent level. Furthermore, this coefficient proved highly unstable with respect to the particular specification of the model used. All of the other variables had the same signs as in Table 2, and most were significant and reasonably stable as well. The only other major difference between the two versions was the absence of any variables representing the effect of time in the twenty year regression, whereas the equations of Table 2 contain dummy variables for the last three five-year periods.

These suggest, other things equal, that economic growth throughout the developing world was unusually high during the period 1974-78, a time when the world economy was expanding vigorously. Thereafter, economic conditions for most countries deteriorated – partly for reasons that we can explain in terms of the variables of the model, but also because the whole world economy was weaker, what with the debt crisis, inflation, and ultimately recession. Taking this into account, we find no evidence that countries that had a lower per capita GDP in 1970 were growing faster during any subsequent five year period, other things equal, than those whose per capita GDP was higher.[19]

One possible reason for this anomaly is that countries reacted differentially to changes in the world economy. The poorest countries, many of them in Africa, tended to benefit substantially from rapid expansion in the world's demand for primary products and from ready access to world capital markets during the early and mid 1970s. They also experienced economic decline in subsequent years when conditions in the world economy deteriorated. On the other hand, the middle-income countries, particularly those in Asia, were more insulated from these changes and grew more steadily. Whether this accounts for the difference in results

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19. Levine and Renelt (1992) find that, while the convergence hypothesis holds with initial secondary school enrollment held constant over the period 1960-89, it does not hold over the 1974-89 period, which is almost the same as the period of analysis here.

concerning economic convergence will require further study. In any event, there is an argument to be made that countries that were poor tended to remain poor not only because of closed policy environments but also because they lacked some of the preconditions necessary for economic growth.

One of those preconditions might be reasonably favorable terms of trade. The results support the hypothesis that a positive change in a country's terms of trade results in increased economic growth. Not surprisingly, this effect is significant and highly robust with respect to alternative specifications of the model. It is relatively weak, however, since, according to Table 2, raising the trend in the terms of trade by one percent results in only a 0.04 percent increase in the rate of economic growth.

More important in terms of its quantitative significance on economic growth is the relative share in GDP of trade with the outside world. The coefficient for TRADE in the growth equation is positive and always significant at the 5 percent level. However, the role of trade in stimulating growth appears to depend on what type of trade is involved. Primary product based exports seem to be much less successful than those of manufactured goods. This is evidenced by the significantly negative coefficient of RAWGDP70. Whether this is due to a Dutch Disease phenomenon, to endogenous growth spillovers being more important for manufacturing than for primary production, to a supply response to policy reform that is greater in the industrial sector, or to some other reason is unclear.[20]

What is more surprising is that being landlocked does not diminish growth. This finding echoes the evidence presented above of no relationship between TRADE and geographic location, but it contrasts with evidence from Sachs and Warner (1996) that lack of access to the sea has a negative effect on growth. The difference does not seem to be due to the fact that the Sachs and Warner study covers a single period from 1970 to 1989, while ours breaks the data down into five-year increments. When we ran our growth equation over the entire period from 1974 to 1993, LOCK was not significant with any specification of the model.

The only policy variable that proves significant in influencing economic growth in the equations of Table 2 is OP, which is significant in every specification of the model in which it is introduced. This does not imply that the other policy variables (TT and PO) do not have an effect on growth, but rather that this effect operates through the variable TRADE. OP, however, affects growth in two ways. First, it increases the importance of trade, which in turn raises the rate of growth. Second, it also increases growth when TRADE is held constant. This is hardly surprising given that this policy variable has a substantial element that relates to market deregulation rather than to just an orientation towards trade.

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20. This negative relationship is found in a sample of 97 developing countries by Sachs and Warner (1995b), who also explore some of its causes.

The development variables (RL, SCHOOL, INST) were also tested and were not found to be significant in explaining growth of per capita GDP. Once again, this probably is because their influence is already captured by the variable TRADE.

The domestic rate of saving was tested as an explanatory variable and was found to be insignificant. This finding contrasts with that of Sachs and Warner (1996), who found the savings rate to be positively correlated with growth in per capita GDP. In this instance, our efforts to duplicate these results were rewarded. Analyzing growth over the entire period, the domestic savings rate was significant only until TRADE and POP were introduced into the regression.

C. Factors Influencing Poverty Alleviation

The results of the analysis of factors influencing poverty alleviation are presented in Table 3. Although the coefficient of population density (POPDEN) is at first significantly positive, once the policy variables are introduced, it becomes significantly negative, as expected. Thus poverty is greater where population presses harder on the natural resource base. On the other hand, the coefficient of the degree of urbanization (URB) is significantly positive. Even though population density is higher than in rural areas, cities offer the advantage of low-cost delivery of social services such as health, clean water, and education.[21]

The effect of per capita GDP on poverty alleviation is measured in two ways. The first is represented by the variable GDPCAP70, which indicates the level of per capita income just before the entire period analyzed from 1974 to 1993. This captures the very long term impact of income on poverty. The second indicator, GRGDPCAP10, is the growth of per capita GDP over the ten years just prior to the period analyzed. This indicates the nearer term effect of economic growth on poverty alleviation. Each of these terms is highly significant. They suggest the importance of economic growth in alleviating poverty.

Somewhat surprisingly, TRADE does not appear to be a significant variable affecting poverty alleviation. This tends to refute the hypothesis that trade creates employment and generates income for the poor because it makes use of excess labor. However, this effect may not be measured very well because income is not included directly in the measure of poverty alleviation. It also may mean that the poor are not able to benefit fully from greater trade because their lack of access to capital and physical isolation prevent them from taking advantage of all the opportunities presented.

Despite the fact that TRADE is not a significant variable, two out of three of the policy variables (OP and TT) are generally significant, with signs that indicate that more

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21. Part of the high correlation between poverty alleviation and urban environment may be because the measure of poverty alleviation used here includes among its components access to some of these services.

TABLE 2
Factors Influencing Economic Growth

Variable	I(1) Coefficient	Std. Error	II(1) Coefficient	Std. Error	III(1) Coefficient	Std. Error	IV(1) Coefficient	Std. Error	V(1) Coefficient	Std. Error	VI(1) Coefficient	Std. Error
C	-0.162	0.049	-0.103	0.055	-0.094	0.051	-0.138	0.057	-0.110	0.050	-0.106	0.060
POP	0.014 **	0.003	0.011 **	0.003	0.010 **	0.003	0.008 **	0.003	0.007 **	0.003	0.007 **	0.003
GDPCAP70	-0.0006	0.003	-0.003	0.003	-0.003	0.003	0.003	0.004	0.001	0.003	0.001	0.004
GRTOT	0.081 **	0.036	0.080 **	0.034	0.080 **	0.034	0.080 **	0.035	0.082 **	0.035	0.081 **	0.035
TRADE	0.043 **	0.009	0.030 **	0.011	0.026 **	0.010	0.039 **	0.010	0.037 **	0.010	0.035 **	0.011
PO			0.001	0.006								
TT			0.002	0.001								
OP			0.004 **	0.001	0.004 **	0.001	0.005 **	0.001	0.005 **	0.001	0.005 **	0.001
RAWGDP70							-0.016 **	0.004	-0.016 **	0.004	-0.016 **	0.004
LOCK							0.009	0.009				
SAVGDP											0.0006	0.005
D2	-0.027 **	0.007	-0.027 **	0.006	-0.027 **	0.006	-0.033 **	0.006	-0.033 **	0.006	-0.033 **	0.006
D3	-0.017 **	0.007	-0.018 **	0.007	-0.018 **	0.006	-0.014 **	0.006	-0.014 **	0.006	-0.014 **	0.006
D4	-0.024 **	0.008	-0.030 **	0.007	-0.030 **	0.007	-0.029 **	0.007	-0.029 **	0.007	-0.029 **	0.007
Adjusted R-squared	0.064		0.162		0.173		0.326		0.331		0.324	
N	237		237		237		187		187		182	

(1)Two Stages Least Squares. Endogenous Variable: TRADE
(**)significant at the 5% level
(*) significant at the 10% level

open trade policies and lower trade taxes have a favorable impact on the poor -- over and above their effects on trade and growth. OP includes elements that have a particular impact on the poor, such as export restrictions and a socialist orientation, which might be particularly harmful in rural areas, where most of the poor reside. For similar reasons, TT adversely impacts the rural poor when exports are taxed.[22] Because of the way in which poverty alleviation is measured, without including any direct indicator of household income, we may not be capturing very well the short-term impact of policy reform on poverty, but in the long term the effects are clear. **Outward-looking, market-oriented policy reform increases trade and growth and helps to alleviate poverty.**

The development variables also play an interesting role in poverty alleviation. The coefficient of the institutional development indicator is positive and significant. This suggests that institutions play an important role in aiding the poor. Clearly this is the case for the delivery of social services. Lack of well developed institutions has been a critical factor impeding access by the poor to clean water, better health, and improved education. Even more important, however, is the road density variable. Since most of the poor live in rural areas, access to social services depends critically on a good network of roads. This is an important finding. Even if roads do not contribute much to trade and growth, they do help to alleviate poverty.

RAWGDP70 and LOCK were tested to see what impact, if any, they might have on poverty alleviation. None was found that was statistically significant.

Much more significant were the dummy variables, which grew in magnitude over time, suggesting that there are unexplained factors causing poverty to be reduced. This supports the findings of Berg *et al* (1994, 98-106) that the satisfaction of basic human needs has improved over time in Africa and Latin America even where there is some indication that per capita income may have decreased. This improvement may be due to technological innovations such as improved vaccines and oral rehydration. It may also be because of a continuing efforts by dedicated workers to improve conditions for the poor.

CONCLUSIONS AND RECOMMENDATIONS

The empirical results provide strong support for most of the hypotheses set forth earlier. Above all, the results show the vital importance of outward-looking, market-oriented policy in promoting trade, growth, and poverty alleviation. All three policy measures have an important influence on the ratio of trade to GDP. This in turn exerts a positive effect on economic growth, which is important in alleviating poverty. In addition, more open policies (OP) have a positive impact on economic growth independent of their influence on trade, and both lower taxes and more open policies have a favorable effect on poverty alleviation independent of their influence,

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22. To test this hypothesis, we also estimated the effect of export taxes alone on poverty alleviation. The coefficient for the ratio of export taxes to the value of exports was negative and significant.

either direct or indirect via trade, on economic growth.

Among the development variables, education and especially institutional development are important in stimulating trade. The fact that the response of exports to policy reform has been slow in some countries may be primarily because of inadequate investment in human capital and in the institutional infrastructure required for trade. Lack of adequate physical infrastructure appears to be less of a problem, though more research is required before this can be said with certainty. The problem with existing infrastructure may be related more to quality than to quantity, and this in turn may be due to educational and institutional deficiencies.

The impact of these development variables on economic growth appears to be felt primarily through their effects on trade. However, multicollinearity between these variables and trade may mask some of their direct effects on growth. This is not true of their influence on poverty. Both road density and institutional development have a beneficial influence on poverty alleviation independent of their effects on trade and growth.

Concerning the effects of the structural variables, it seems clear that trade is most important for economies with small market size. On the other hand, higher population density contributes positively to trade because these countries are unable to satisfy their need for primary products from domestic sources alone. They are forced, therefore, to specialize in the production of manufactured goods, exchanging these for primary product imports. In the long run, this turns out to be highly beneficial, the results suggest, since countries that depend more on their natural resources for exports tend to grow less rapidly than those who base their exports on industrial goods. This is true despite the fact that the ratio of trade to GDP is higher in countries with more of an orientation towards primary product exports, and greater trade contributes positively to economic growth.[23]

Somewhat surprising is the strength and robustness of the positive influence of population size on growth of per capita GDP. Other things equal, a one percent increase in the size of the population will result in an increase in the economic growth rate of almost one percentage point.[24] The mechanisms by which such gains are realized are not well understood. They may relate to the exploitation of economies of scale, to greater competition, or to an increase in the externalities associated with learning. More research is required here.

Also noteworthy is the lack of evidence for economic convergence. This is not because

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23. From Equation VI in Table 1 and Equation V in Table 2, a one percent increase in the variable RAWGDP70 will increase TRADE by 0.2 percent, which will in turn increase the growth of per capita GDP by .8 percentage points. The direct impact on the growth of per capita GDP of a one percent increase in RAWGDP70, however, is -1.7 percentage points.

24. This does not imply that raising the rate of population growth will have similar effects on the growth of per capita GDP. The effect measured here is that of static differences in population size not that of the dynamics of population growth, which may be quite different.

countries that start out with lower per capita GDP have pursued less open policies, since this variable is controlled for. There is some suggestion that the evidence for convergence over longer periods of growth might be due to the differential impact of changes in the world economy on different countries. More research is required, however, to verify this.

A number of additional findings are also important. As expected, improvements in the terms of trade have a positive effect on economic growth. This effect, however is relatively weak. More surprising is the finding that being landlocked, other things equal, impedes neither trade nor growth. This finding is very robust and contradicts that of Sachs and Warner (1996), which is that landlocked countries, other things equal, grow less rapidly than those with direct access to the sea. This is another area for further research, especially in view of the fact that unrecorded trade is probably relatively more important in landlocked countries.

The analysis also suggests that the rate of domestic savings has no influence on economic growth. Again, this contradicts other research (Sachs and Warner, 1996). In this instance, however, the results indicate that the savings rate drops out as a significant variable once population and the importance of trade are introduced into the growth equation. These variables, which are highly significant in the analysis of growth in this paper, have not been included in most other research.

With respect to poverty alleviation, it appears to be negatively correlated with population density, which is an indicator of pressure on the natural resource base. On the other hand, urbanization contributes positively to poverty alleviation, probably because it facilitates access to social services. Most important, however, is the very positive contribution that economic growth makes to poverty alleviation. The coefficient of this variable is highly significant in all specifications of the poverty alleviation equation.

Furthermore, outward-looking, market-oriented policies, which contribute to poverty alleviation through trade and growth, also have a direct beneficial influence on poverty. Alleviation of poverty is strongly correlated with low rates of trade taxation and with open trade and marketing policies. This is hardly surprising in view of the fact that poverty is greatest in rural areas and these policies tend to favor those in the countryside. It is also clear that there has been substantial progress towards poverty alleviation over time that has been independent of these various explanatory variables.

These findings have important implications for USAID and the other donors. First, they strongly support the emphasis placed by the donors on economic policy reform as indispensable for economic growth. Second, they show convincingly that economic growth, as well as policy reform, is highly beneficial for poverty alleviation. Third, they indicate that USAID's funding of projects to promote the expansion of nontraditional exports is justified in terms of its impact on growth. Fourth, they suggest that high priority be given to the development of financial, commercial, legal, promotional, fiscal, and other institutions. Fifth, they indicate that donors should support the promotion of industrialization for export. Finally, they show that construction,

rehabilitation, and maintenance of rural roads has important implications for poverty alleviation.

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TABLE 1
Factors Influencing Trade

Variable	I(1) Coefficient	Std. Error	II(1) Coefficient	Std. Error	III(1) Coefficient	Std. Error
C	2.682	0.395	3.446	0.430	4.884	0.471
POP	-0.260 **	0.017	-0.268 **	0.016	-0.265 **	0.018
POPDEN	0.106 **	0.020	0.085 **	0.021	0.080 **	0.031
GDPCAP70	0.041	0.037	-0.046	0.036	-0.288 **	0.051
PO			-0.233 **	0.072	-0.248 **	0.070
TT			-0.025 **	0.011	-0.163 **	0.041
OP			0.050 **	0.011	0.018	0.011
INST					0.160 **	0.039
SCHOOL					0.181 **	0.066
RL					-0.003	0.042
RAWGDP70						
LOCK						
D2	0.059	0.064	0.068	0.067	0.019	0.063
D3	0.023	0.066	0.083	0.068	-0.006	0.067
D4	0.089	0.075	0.078	0.072	-0.025	0.076
Adjusted R-sq.	0.493		0.588		0.723	
N	335		251		208	

(1)White Heteroskedasticity-Consistent Standard Errors and Covariance
(**)significant at the 5% level
(*) significant at the 10% level

	IV(1)		V(1)		VI(1)	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
	4.737	0.479	4.966	0.481	3.479	0.493
	-0.259 **	0.015	-0.263 **	0.015	-0.179 **	0.020
	0.078 **	0.018	0.072 **	0.018	0.093 **	0.016
	-0.282 **	0.050	-0.297 **	0.051	-0.202 **	0.045
	-0.197 **	0.070	-0.192 **	0.069	-0.272 **	0.109
	-0.159 **	0.041	-0.161 **	0.041	-0.146 **	0.037
	0.018 *	0.011	0.019 *	0.011	0.018 *	0.010
	0.158 **	0.039	0.161 **	0.039	0.150 **	0.036
	0.196 **	0.059	0.185 **	0.060	0.015	0.062
					0.204 **	0.038
			-0.094	0.072		
	0.011	0.064	0.016	0.063	0.027	0.054
	-0.024	0.067	-0.018	0.067	0.022	0.060
	-0.011	0.075	-0.002	0.074	-0.026	0.067
	0.711		0.712		0.789	
	215		215		169	

TABLE 2
Factors Influencing Economic

Variable	I(1) Coefficient		Std. Error	II(1) Coefficient		Std. Error	III(1) Coefficient		Std. Error
C	-0.162		0.049	-0.103		0.055	-0.094		0.051
POP	0.014	**	0.003	0.011	**	0.003	0.010	**	0.003
GDPCAP70	-0.0006		0.003	-0.003		0.003	-0.003		0.003
GRTOT	0.081	**	0.036	0.080	**	0.034	0.080	**	0.034
TRADE	0.043	**	0.009	0.030	**	0.011	0.026	**	0.010
PO				0.001		0.006			
TT				0.002		0.001			
OP				0.004	**	0.001	0.004	**	0.001
RAWGDP70									
LOCK									
SAVGDP									
D2	-0.027	**	0.007	-0.027	**	0.006	-0.027	**	0.006
D3	-0.017	**	0.007	-0.018	**	0.007	-0.018	**	0.006
D4	-0.024	**	0.008	-0.030	**	0.007	-0.030	**	0.007
Adjusted R-squared	0.064			0.162			0.173		
N	237			237			237		

(1)Two Stages Least Squares. Endogenous Variable: TRADE
(**)significant at the 5% level
(*) significant at the 10% level

Growth

	IV(1)		V(1)		VI(1)	
Coefficient		Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
-0.138		0.057	-0.110	0.050	-0.106	0.060
0.008 **		0.003	0.007 **	0.003	0.007 **	0.003
0.003		0.004	0.001	0.003	0.001	0.004
0.080 **		0.035	0.082 **	0.035	0.081 **	0.035
0.039 **		0.010	0.037 **	0.010	0.035 **	0.011
0.005 **		0.001	0.005 **	0.001	0.005 **	0.001
-0.016 **		0.004	-0.016 **	0.004	-0.016 **	0.004
0.009		0.009				
					0.0006	0.005
-0.033 **		0.006	-0.033 **	0.006	-0.033 **	0.006
-0.014 **		0.006	-0.014 **	0.006	-0.014 **	0.006
-0.029 **		0.007	-0.029 **	0.007	-0.029 **	0.007
0.326			0.331		0.324	
187			187		182	

TABLE 3
Factors Influencing Poverty Allev

Variable	I Coefficient	Std. Error	II Coefficient	Std. Error	III Coefficient	Std. Error
C	-9.806	10.902	-5.240	11.433	-24.861	15.105
POPDEN	2.064 **	0.479	1.818 **	0.482	1.240 **	-0.552
URB	13.501 **	1.467	13.286 **	1.507	10.884 **	1.931
GDPCAP70	9.005 **	1.266	8.647 **	1.305	10.821 **	1.705
GRGDPCAP10	151.525 **	26.452	148.832 **	26.519	129.793 **	30.525
TRADE			1.786	1.223	2.624 *	1.496
PO					2.263	1.857
TT					-0.551	0.399
OP					1.185 **	0.453
INST						
RL						
RAWGDP70						
LOCK						
D2	5.074 **	2.093	5.582 **	2.097	7.022 **	2.212
D3	11.675 **	2.179	12.124 **	2.183	12.557 **	2.406
D4	14.979 **	2.335	15.285 **	2.353	15.047 **	2.813
Adjusted R-sq.	0.618		0.621		0.660	
N	342		333		249	

(**)significant at the 5% level
(*) significant at the 10% level

ation

	IV			V			VI	
Coefficient		Std. Error	Coefficient		Std. Error	Coefficient		Std. Error
30.022		16.095	27.120		16.024	52.212		22.297
-3.468	**	0.998	-3.087	**	0.969	-4.171	**	1.511
9.759	**	1.808	9.887	**	1.811	14.513	**	2.332
6.617	**	1.617	6.956	**	1.606	5.057	**	2.064
110.626	**	29.383	109.661	**	29.455	105.282	**	36.735
-2.258		1.489						
-2.412	**	0.829	-2.174	**	0.816	-1.572		0.983
1.254	**	0.435	1.101	**	0.424	1.472	**	0.494
2.640	**	0.826	2.348	**	0.805	1.840	*	0.952
6.417	**	1.280	5.756	**	1.206	7.147	**	1.838
						-0.173		1.082
						2.297		3.247
6.316	**	2.067	6.360	**	2.072	6.036	**	2.252
11.712	**	2.229	11.931	**	2.230	12.671	**	2.494
13.362	**	2.735	13.781	**	2.728	11.583	**	3.138
0.702			0.701			0.716		
253			253			200		

ANNEX A

DEVELOPMENT OF HYPOTHESES

A. Effects of Policy Reform on Trade and Growth

There is an extensive literature on the impact of policy reform on trade.[1] Much of this literature refers to three basic stages in the evolution of trade policy in developing countries. The first involves the exportation of primary products. During this stage, the country experiences an opening up to external markets through investment in roads, railroads, port facilities, agricultural research, and other areas enabling it to exploit its "vent for surplus" (Myint, 1959, 317-37). Aside from policies designed to promote these types of investments, the most important policy changes instituted during this period are the imposition of export taxes and the creation of marketing boards and similar institutions, each of which redirects a share of the profits earned in the export sector towards the government. Although this might not create much of a problem as long as rents earned in the export sector are relatively high owing to inelastic supply, the disincentive effect increases in importance as supply limits are reached and more marginal resources are drawn upon. In addition to these direct disincentives, the prevalence of traditional primary product exports leads to the Dutch Disease problem, in which appreciation of the real exchange rate decreases the profitability of producing tradable goods domestically, encouraging imports and discouraging nontraditional exports. This may have a detrimental effect on economic growth to the extent that nontraditional exports tend to promote that growth (Sachs and Warner, 1995b). (Hypothesis: A higher proportion of exports of primary products to total exports or to GDP leads to lower expansion of nontraditional exports and lower rate of economic growth. This effect may vary depending on how well opportunities for traditional primary product exports have already been exploited and whether and at what rate these exports are taxed.)

Partly because of the difficulty of competing with imports, but also because of limits to traditional primary product exports on the side of both demand and supply, the second evolutionary stage generally involves import substitution through the use of trade and exchange rate policy, which encourages domestic production behind protective import barriers. Policy changes during this phase may include the raising of import tariffs and the imposition of quantitative restrictions on imports and controls on foreign exchange. These policies not only reduce imports but also decrease exports in two ways. First, among tradable goods, they tend to redirect resources away from the export sector and towards the import competing sector. Second, they lead to overvaluation of the exchange rate, which creates a bias in favor of the production of nontradables at the expense of tradable goods and services, including exportables. (Hypothesis: High rates of import taxation, plus other restrictive trade policies such as import quotas and exchange controls, result in lesser importance of trade in relation to GDP and slower growth of exports and imports.)

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1. For excellent reviews of this literature, see the papers by Stephen R. Lewis, Henry Bruton, and Bela Balassa in Chenery and Srinivasan (1989). See also Chapters 17 and 19 in Gillis, Perkins, Roemer, and Snodgrass (1996); Thomas and Nash (1991, 219-40); World Bank (1992); and Dean, Desai, and Riedel (1994).

In the end, although there may be some benefits associated with import substitution in terms of exploitation of economies of scale or learning effects, these are likely to be outweighed by a number of disadvantages that impede economic growth. First, the anti-trade bias introduced by policies to promote import substitution prevents the country from reaping the gains associated with fully exploiting its comparative advantage. Second, the economies of scale gained by exploiting the domestic market are quite limited if the size of that market is small. Third, the benefits from learning are likely to be offset by the losses associated with reduced competition. Fourth, the lack of foreign exchange that results from decreased exports is not offset by a reduction in the demand for imports, especially of capital goods and intermediate products. This interrupts production and prevents the country from taking advantage of new technology embodied in capital equipment. Fifth, weak competition usually results in poor product quality and limited entrepreneurial skills. Sixth, overvaluation of the exchange rate subsidizes the importation of capital equipment, which limits expansion of the demand for labor as population grows. Finally, limits to market expansion reduce the returns to innovation. (Hypothesis: Lesser importance of trade in the economy associated with import substitution policies leads to lower rates of economic growth.)

Because a strategy of import substitution ultimately leads to reduced economic growth, pressures build to undertake the policy reforms required to focus the country in a more outward-oriented direction. These pressures may be offset for a time, however, by a political establishment supported by the urban class, which receives most of the benefits of import protection (Bates 1988, 331-58). Frequently, the entrenchment of this class also leads to other distortions such as regulated markets that provide food to the cities at subsidized prices. In the end, however, the breakdown of producer incentives ultimately results in the undermining of the productive base of the economy, leading to inflation and balance of payments disequilibrium, which often brings these countries to seek the assistance of the international financial institutions, i.e. the IMF and the World Bank.

The kinds of policies advocated by the IMF and the World Bank are designed to restore macroeconomic stability and to alter the structure of incentives in a more outward-oriented direction. In the third stage of the evolution of trade policies in developing countries, macroeconomic reforms include restrictions on the supply of money and credit, reduction of fiscal deficits, and in some cases devaluation to reduce absorption. Incentive reforms comprise deregulation of markets, reduction or elimination of market taxes and subsidies, devaluation of the local currency, establishment of more flexible exchange rates, dismantling of quantitative restrictions on imports, lowering and harmonization of import tariffs, reduction in or elimination of taxes on exports, and establishment of preferential regimes regarding credit and taxation of imported inputs used in the production of exports. These policy reforms lead to increased importance of trade and greater economic growth. (Hypothesis: Outward-looking, market-oriented policy reform leads to increased importance of trade, more rapid expansion of exports and imports, and greater economic growth.)

Krueger (1978) first attempted to demonstrate this econometrically by defining various phases of trade policy for the nine countries included in the NBER study of trade liberalization undertaken during the 1970s. These phases were introduced into the estimating equation as

dummy variables along with the real exchange rate. The results suggest that both variables are important in explaining export growth, but that neither explains GDP growth independently of their effects on exports.[2] Heitger (1987, 249-61) used data on 47 countries for 1960-70 to test the impact on GDP growth of the mean and standard deviation of effective rates of protection across commodities. He found the coefficients of both variables to be significantly negative. Similarly, Thomas, Halevi, and Stanton (1991) used a country-by-country assessment of trade liberalization and concluded that this has increased GDP growth significantly. Harrison (1991) found that several indexes of trade liberalization based on trade and exchange rate policies, and on the black market premium for foreign exchange as an indicator of the restrictiveness of trade policy, are statistically correlated with economic growth. Finally, Sachs and Warner (1995a) found a positive relationship between trade policy and economic growth using data for 122 countries (78 of which are LDCs), which were ranked by their level of openness according to four indicators: import quota coverage, black market premium, existence of restrictive export policies, and whether the country is socialist.

It is unclear from these studies whether trade policy influences growth of GDP through its impact on the growth of exports or by increasing the relative importance of trade in GDP. It is also unclear as to whether there is a direct effect of policy on growth. This could occur, for example, because of a reduction in opportunities for rent-seeking. (Hypothesis: The impact of outward-looking, market-oriented policy reform on economic growth occurs because of the effects of this reform on the relative importance of trade and on the growth of exports and imports. There is no independent effect of policy reform on economic growth. Alternative Hypothesis: There is an independent effect of policy reform on growth that does not depend on the impact of reform on trade.)

Krueger also found that the removal of the anti-export bias associated with depreciation of the exchange rate has a greater impact on export growth than does liberalization of trade. This finding is important and warrants further study. Normally, outward-looking, market-oriented policy reform involves both elements since the exchange rate is usually overvalued prior to reform and trade liberalization by itself induces import expansion, which must be held partially in check by devaluation.[3] Depreciation of the real exchange rate can occur without trade liberalization, but this is likely to be less permanent and beneficial than if devaluation is accompanied by trade liberalization. (Hypothesis: Depreciation of the real exchange rate leads to an expansion of exports and a decline in imports, other things equal, but the impact on trade and growth is less than that resulting from a combination of both depreciation and trade liberalization.)

Thomas, Halevi, and Stanton (1991) held constant variables such as the terms of trade, external financing, and the real exchange rate in order to look at the effects of trade policy on

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2. Michaely *et al* (1991) and the World Bank (1987, 85) confirmed these results by showing that countries that have pursued more outward-oriented trade policies have outperformed others. These studies suffered, however, from arbitrariness in the definition of outward-oriented trade policies (Edwards, 1993, 1986-87). Harrison (1991, 27) also found a strong correlation between various indicators of trade liberalization and the ratio of exports plus imports to GDP.

3. Devaluation, plus accompanying reduction in or elimination of export taxation, also stimulates exports, which helps to compensate for the expansion of imports, albeit often with a lag, which may require some foreign financing of imports until exports catch up.

growth. Similarly, the findings of Sachs and Warner (1995a) suggest that trade policies ensure economic growth if they are accompanied by sound macroeconomic policies and an economic environment conducive to growth of the private sector. Thus outward-looking, market-oriented policies may be a necessary, but not sufficient, condition for expansion of trade and growth. (Hypothesis: The impact of policy reform on trade and growth depends on other variables, such as the terms of trade, the extent of external financing, sound macroeconomic financing, and an economic environment conducive to growth of the private sector.)

Most studies do not investigate the differential impact that trade policy has on trade and growth depending upon the level of development.[4] A recent World Bank study, however, finds that import tariff levels and the real exchange rate are strongly associated (negatively) with growth of GDP for a group of intensive trade adjusters but are not well associated for a group of less intensive adjusters (World Bank 1992, 84-95). Furthermore, even among the intensive adjusters, there are important differences in the strength of the association and the size of the regression coefficients that appear to be due to levels of development. Experience in many of the poor countries in Africa suggests, in fact, that the impact of policy reform is greater where there are better infrastructural facilities, higher levels of education, stronger commercial and financial institutions, and other advantages associated with development. (Hypothesis: The impact of policy reform on trade and growth is likely to be more pronounced where there is better infrastructure, more human capital, and stronger institutions.)

In addition, there are a number of structural variables that one might want to hold constant in looking at the effects of policy on trade, and ultimately on growth. For example, large countries, in terms of both population and per capita income, benefit from trade less than small countries because they are able to exploit economies of scale to a greater extent without trade and have more internal competition. Similarly, countries that are landlocked or do not have adequate ports may be more closed to trade. Countries that are more densely populated in relation to agricultural land, on the other hand, are likely to be actively involved in international trade as an outlet for their labor. Finally, nations at higher levels of per capita income tend to trade more because both their demand and their supply are more diversified and involve more specialized products. On the other hand, higher per capita income, along with larger population, permits greater competition and exploitation of economies of scale without trade. (Hypothesis: Relative importance of trade as well as growth of trade are positively associated with access to the sea and density of population in relation to agricultural land. They are negatively related to the total size of population. Their relation to per capita income is mixed.)

B. Effects of Trade on Growth

Trade affects economic growth because (1) it provides access to imported inputs, and with these to new technology; (2) it takes advantage of a country's comparative advantage and allows it to exploit economies of scale, resulting in more efficient resource allocation; (3) it

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4. Helleiner (1986), for example, has argued that a minimum level of development is necessary before the benefits of export promotion can be realized. He surmises, therefore, that export promotion would have minimal effects in Africa.

opens production to competition, thereby stimulating innovation not only at the technological level but also in terms of managerial competence and skills of the workforce; and (4) it serves as an outlet for surplus labor or other resources. Some of these effects operate by increasing total factor productivity of the resources that are used in production; others increase the availability of resources for production.[5] Furthermore, some of the effects are static and others are dynamic.

There is considerable evidence supporting the view that trade, and especially exports, contributes positively to total factor productivity.[6] This occurs not only because productivity rises in the export sector but also because there are external spillovers to other sectors.[7] There is some evidence that the effects are more pronounced in heavy than in light industries.[8] This may help to explain why the effect of trade on total factor productivity is weaker for the least developed countries than for those that are more advanced.[9] (Hypothesis: Trade, and especially exports, contributes to a rise in total factor productivity not only in the export sector but also in the rest of the economy. This effect is particularly strong for heavy industry and for the more advanced developing countries.)

Other evidence supports the view that the effects of trade on growth are not neutral with respect to the sector of the economy. There is some indication, for example, that these effects are more pronounced in manufacturing than in agriculture.[10] This thesis has been challenged by those who have argued that the least developed countries are not able to take advantage of the spillover effects resulting from rapid growth of manufactured exports and must therefore depend more on exports of primary products.[11] This result must be looked at, however, in light of studies that

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5. Helpamm (1991) and Edwards (1992), for example, have emphasized the positive effects that freer trade has on the level of technology of an economy.

6. Holding constant factors of production such as capital, labor, education, and land, Harrison (1991) shows that there is a significantly positive relationship between trade and GDP growth. Other studies (Lopez, 1990, and Nishimuzu and Page, 1984) provide evidence of a positive correlation between export growth and productivity growth but a negative one between imports and productivity growth.

7. Feder (1983), using neoclassical production functions for exports and nonexports, finds that there is a positive externality associated with exports (because of a productivity differential in favor of exports), which contributes to the growth of the nonexport sector. Using a sample of 31 semi-industrialized countries, Feder includes in his regression the ratio of exports to GDP (X/y) times the rate of growth of exports ($\delta X/X$) and finds that the coefficient is positive and significant. He also finds that the marginal factor productivity of labor and capital is higher for the export sector. Introducing (X/y) and ($\delta X/X$) as separate variables, Feder finds that the coefficient of each is positive and significant, but export externality (X/y) is more important than export productivity ($\delta X/X$).

8. Based on time-series data developed at the World Bank on Total Factor Productivity (TFP) growth at the sectoral level within manufacturing for Korea, Turkey, Yugoslavia, and Japan, Nishimizu and Robinson (1984) show a strikingly similar pattern of faster growth of TFP in heavy industries and slower growth in light industries that is associated with the export-orientation of these industries.

9. Kavoussi (1984) uses a sample of 73 developing countries, divided into low and middle-income categories, to determine whether the correlation between export expansion and economic growth is affected by the level of development. The Spearman correlation coefficient, while positive and highly significant for both groups, is higher for the middle-income countries. The study also finds that export growth enhances Total Factor Productivity, but the contribution is much greater in the case of more advanced developing countries.

10. Greenaway and Chong Hyun Nam (1988) examine whether there appears to be any systematic difference in industrialization and macroeconomic performance of countries following different trade orientation. Using 41 countries divided into strongly outward-oriented, moderately outward-oriented, moderately inward-oriented, and strongly inward-oriented strategies, they measure cross-country performance relating to a number of indicators. The results of the study suggest that (1) manufacturing value added appears to have grown more quickly in the outward-oriented economies, (2) the average share of manufacturing value added is higher in the outward-oriented economies, (3) the average share of the labor force in industry is higher in the outward-oriented economies, and (4), manufacturing exports have grown more quickly in the outward-oriented economies.

11. Ukpolo (1994) finds that the composition of the export sector is a determinant of the degree to which export growth influences economic growth. The study uses a sample of eight low-income African countries over a period of 20 years, with exports disaggregated by fuel, non-fuel primary products, and manufactured products. The results show that non-fuel primary exports (in which most of the countries have a comparative advantage) are a major determinant of economic growth. The relation between exports of manufactured goods and growth is positive but not significant, which confirms the argument of Yaghmaian (1994) and others that a minimum level of development is

show the potential negative effects of primary goods export-led growth (Sachs and Warner, 1995b). (Hypothesis: The impact of trade on growth is more important for the manufacturing sector than for other sectors of the economy, but this result applies more to the more advanced developing economies than to those that are least advanced.)

While the empirical evidence that is available is useful in suggesting that trade improves total factor productivity, especially in heavy industry and in the more advanced developing nations, this does not tell us very much about how that improvement takes place. In terms of our earlier discussion, does it (1) lead to the importation of new technology, (2) promote more efficient allocation of resources through the exploitation of comparative advantage and economies of scale, or (3) encourage greater innovation by management and labor because of increased competition? These hypotheses are difficult to test in the absence of micro-level studies at the firm or industry level. Nevertheless, it is useful to formally state the hypotheses as a guide to future research, even if they are not tested here. (Hypothesis: Increased trade leads to higher total factor productivity because (1) it leads to the importation of new technology, (2) it promotes more efficient allocation of resources through the exploitation of comparative advantage and economies of scale, and (3) it encourages greater innovation by management and labor because of increased competition.)

In the same vein, nothing has been said about how trade might contribute to economic growth by increasing the availability of resources used in production. There is some evidence that this is true. For example, Kohli and Singh (1989) found for 41 countries that capital formation was higher in more outward-oriented economies. But there is no indication as to why this was so. Were the investment funds already available but unutilized because of a lack of profitable projects in which to invest? It also appears that growth of exports of labor-intensive products should result in increased productive use of labor that has previously been either in surplus or in relatively low productivity employment. Yet we have not come upon any studies that have documented this across a broad range of countries. (Hypothesis: Increased trade leads to greater capital formation and expanded use of idle or underemployed labor.)

C. Effects of Policy Reform, Trade, and Growth on Poverty

The effects of policy reform, trade, and growth on poverty can be divided into short-run and long-run effects. Strictly speaking, short-run effects are those that occur because of the impact of changes in these variables on the wealth, income, and other welfare indicators of the poor in the absence of changes induced by new investment; long-run effects allow for the reallocation of resources that occurs with new investment. Since only variable factors of production, such as labor, are reallocated in the short run, the effects of policy reforms on trade and growth are likely to be minimal during this period. It is useful, therefore, to restrict short-run effects to those that operate through changes in prices and do not involve any reallocation of resources. Long-run effects occur, then, as a result of the reallocation of resources induced by policy reform, including its impact on trade and growth.

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necessary in order to profit from manufactured exports.

C.1. Short-Run Effects

The short-run effects of structural adjustment have been analyzed in detail for Africa by the Cornell Food and Nutrition Policy Program. Some of the major conclusions of this research that relate particularly to outward-looking, market-oriented policy reform are summarized here (Sahn, 1990):

1. Poor people tend to consume mostly nontradable foods and other goods and services and are therefore less influenced by the effects of adjustments on import taxes, trade controls, and exchange rates than are those who are less poor.

2. The poor tend to be concentrated in rural areas. A reduction in export taxation or a devaluation accompanying structural adjustment is likely to benefit the poor. The same is true for relief from taxes on imported agricultural inputs, though devaluation may work in the opposite direction. A reduction or elimination of agricultural price and market controls tends to aid the poor.

3. To the extent that the poor are involved in the production of nontradable agricultural products or in construction and other service sectors, they derive little benefit on the production side from devaluation.

4. The impact of devaluation on the poor cannot be estimated without taking into account concurrent changes in trade and price policy, marketing arrangements, and government subsidies. Frequently, the poor do not buy and sell goods at prices determined by the official exchange rate, but at much higher prices that prevail on the parallel market. Where food, credit, and input subsidies are involved, the poor generally do not have access to these at official prices. They therefore tend to benefit from the elimination of two-tiered market structures, which often reduces prices on the parallel market. The evidence suggests, for example, that prices of food have not risen more rapidly on average than prices of nonfood items following structural adjustment.

5. To the extent that the adjustment process includes short-term, low-cost initiatives to aid the poor, this is easier to accomplish the greater is the level of government revenue. Raising government revenues is a major task of most reforms. Tarification of non-tariff barriers and raising the border prices of traded goods through devaluation are two ways in which policy reform contributes to government revenue in the short run.

The general lesson from this research is that structural adjustment in Africa, aside from being unavoidable given the economic crises that preceded it, has not generally had negative effects on the poor. This is because the poor are to large extent isolated from markets and from the delivery of public services. The negative effects of devaluation on poor consumers, for example, have not been observed in a number of countries because these consumers never had access to imported goods at the official exchange rate. Loss of subsidies and of public services have had few effects on the poor because they have never been able to obtain access to

subsidized goods and public services.

But there are wide variations in experience. The country case studies and comparative analyses associated with the Cornell project suggest that outcomes are quite variable from one country to another and, within countries, that the effects vary according to population group as defined by geographic region and economic sector. Some poor people have been negatively affected, and the effects have varied from year to year. In addition, even though the proportion of the poor in urban areas is low in many countries, the policies affecting their welfare are likely to be different from those in rural areas. Of special importance is the impact of economic recession, brought on by macroeconomic restrictions and the laying off of public sector employees, on the demand for the goods and services produced in the informal sector, in which the poor are strongly represented. In addition, the poor in urban areas tend to consume more tradable goods than those in rural areas, so they are affected more by changes in trade and exchange rate policy. This is especially important in Latin America and Eastern Europe where the poor are concentrated in the cities more than in Africa.

The evidence from Latin America suggests, in fact, that the poor fared somewhat worse under structural adjustment than in Africa (Berg, Hunter, Lenaghan, and Riley, 1994). Although, using the proportion of total population in poverty as a measure, adjusting countries performed somewhat better than nonadjusters or late adjusters, the more comprehensive data on per capita private consumption, wages, and employment suggest the reverse.[12] Despite this, there has been no difference between these two groups with respect to such outcome indicators as infant mortality, child malnutrition, and rates of illiteracy, all of which have tended to decrease.

It is difficult to elaborate many clear-cut hypotheses regarding the short-term impact of policy reform on poverty. As Sahn's conclusions above suggest, there frequently are numerous interrelated cause-and-effect mechanisms involved, which can only be sorted out through careful household-level surveys and micro-level analysis. Nevertheless, we attempt to develop here a few hypotheses that can be tested using more macro-level data.

(Hypothesis: Trade and market liberalization have a positive impact on poverty that is not offset by devaluation or the elimination of subsidies.) The argument here is that trade and market liberalization free up the availability of imported and domestic goods, giving the poor greater access to these goods at lower prices. Devaluation has minimal adverse direct effects on the poor because their only access to imported goods has been in parallel markets where prices reflect scarcity values rather than the official exchange rate. Similarly, they do not suffer from the elimination of subsidies on agricultural inputs because they never had access to these in the first place.

(Hypothesis: The poor in rural areas benefit from policy reform more than the poor in

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12. Even if adjusting countries showed greater declines in consumption, wages, and employment for the poor, this does not say that adjustment was the cause. These declines may have occurred in these countries because of the basic economic conditions that made the reforms necessary in the first place.

urban areas, who may be substantially injured by reform.) The poor in rural areas are likely to benefit from policy reform to the extent that they produce export crops on which taxes are reduced or eliminated and for which devaluation is likely to be beneficial. They also benefit substantially from market reform. Even if they do not produce directly the crops affected, they benefit from a general rise in wages and incomes associated with improved incentives in rural areas. The poor in urban areas, on the other hand, are likely to suffer some decrease in the demand for their services as a result of a general slump in urban economic activity in the short run. They may also experience some price increases for tradable goods as a result of devaluation.

(Hypothesis: Although policy reform may yield additional public revenue in the short run, which could be used to finance social safety nets, these nets are so limited and inadequate to the task, especially in Africa, and the link between public revenue and social safety nets is so tenuous, that one should expect to find no correlation between public revenue and poverty in the short run.) There has been considerable concern about social safety nets in Latin America, and much is being done to put these in place. Nevertheless, at the time that policy reform was undertaken, the nets that did exist were quite ineffective in reaching the poor. The same is true in Africa, but to a much greater extent because of the extremely limited capacity of governments there to finance or administer them.

C.2. Long-Run Effects

The short-run impact of policy reform on poverty becomes long term if no resource reallocation occurs in response to the new structure of incentives. This may happen because the changes in incentives are weak, they are not perceived by investors, there is a shortage of capital with which to undertake new investments, or there is a lack of complementary markets, infrastructure, and institutions that would make these investments profitable (Stryker, Shaw, Rogers, and Salinger, 1994). As we have seen, many of these conditions prevail in the poorer countries of the world, especially in Africa. There we might expect the long run to be not too different from the short run.

Even if conditions are better, so that policy reform is translated into expanded trade and growth, there is no guarantee that the poor will be included. Most of the poor in Africa and in other least developed countries have not seen a major decline in their living standard as a result of structural adjustment because they are isolated from markets and have little access to public services under any conditions. This is why they are poor. Their situation improves only when they are removed from this isolation. Thus development of markets, infrastructure, and institutions may be critical to the poor benefiting from policy reform in the longer run.

Isolation of the poor can take a number of forms. It can be physical due to lack of transportation and social services infrastructure, as is particularly true in Africa. It can be economic in that the poor have little land, physical assets, or human capital with which to work, as is particularly true in parts of Asia. And it can be social to the extent that the poor are marginalized in relation to other groups, or political when the poor have little representation, as is often true in Latin America.

This line of reasoning joins an older tradition of concern for the medium and longer term effects of economic growth on the distribution of income.[13] While it is clear that inequality is not likely to be eliminated without economic growth, it is also apparent that inequality can be reduced more rapidly if growth is accompanied by policies designed to aid the poor. The evidence from developing countries supports the conclusion that, as economic development proceeds, the policies pursued by governments to influence the course of development play a vital role in determining whether or not inequality is reduced (Adelman and Robinson, 1989, 957-63).

Frequently this requires improving their asset base. Two key areas are agricultural improvements made under secure systems of land tenure and investment in education and other forms of human capital. Although land reform and large investments in education may be possible prior to development of industry and agriculture, it may be much easier to allocate a larger share of the proceeds of economic growth to asset accumulation by the poor (Adelman and Robinson, 1989, 984-85). Examples of such investments include nutrition, health, education, transportation, irrigation, credit, and research and extension.

There is also strong empirical evidence to support the contention that investment in basic human needs contributes rather than competes with growth. Employing an index of basic needs satisfaction based on infant mortality and life expectancy at age one, Moon and Dixon (1992, 191-210) use a cross-section regression covering 104 countries to analyze the effect of the level of this indicator at the beginning of the time period under consideration on economic growth during that period. Holding the level of GDP and the ratio of investment to GDP constant, the authors find that basic needs satisfaction contributes significantly to economic growth. When change in basic needs satisfaction is introduced as an additional variable, it contributes positively to growth along with the initial level of satisfaction. This conclusion is remarkably robust when shorter time periods and different lags are introduced, helping to refute the notion that basic needs satisfaction is only the result, and not a cause, of economic growth. Nevertheless, it is clear that economic growth is a necessary, if not a sufficient, condition for improved living conditions for the poor.

This has been demonstrated rather convincingly with the publication of two recent working papers looking at the effects of economic growth on relative income inequality and on the absolute level of poverty (Deininger and Squire, 1996; Ravallion and Chen, 1996). Using a carefully selected data set comprising over 650 observations on the quintile distribution of income for 108 countries, Deininger and Squire find a strong positive correlation between growth in aggregate per capita income, on one hand, and increases in per capita income of all except the top quintile, on the other. For individual countries, aggregate growth is associated with an increase in the average income of the poorest quintile in more than 85 percent of 91 cases. In almost all of the instances in which the relation is not clearly positive, either a positive

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13. It is important to note that this concern is focused more on reducing relative income inequality rather than on decreasing absolute poverty, which is the preoccupation of most of the literature cited in this section. Evidence referred to below suggests that economic growth alone is strongly correlated with the alleviation of poverty but has little impact on income inequality.

association exists if a longer period is used or there was no appreciable economic growth in the first place (Deininger and Squire, 21). A similar result is statistically confirmed by Ravallion and Chen using a slightly different definition of the level of poverty. The implication of these findings is that growth is essential to poverty alleviation. This does not mean, however, that substantial poverty will not continue to coexist even with rapid growth or that governments cannot pursue policies consistent with both growth and poverty alleviation -- as the analysis of Moon and Dixon suggests.[14]

The long-term impact of policy reform, trade, and growth on poverty depends at least partially on creating the resources needed for the investments described above. In addition, there may be other ways in which policy reform, trade, and growth contribute to the alleviation of poverty. For example, as we have said earlier, most policy reform packages during the 1980s and 1990s have involved measures designed to increase participation in international trade. The effect of this opening to trade is to encourage production and export of goods in which the country has a comparative advantage at the expense of production that was previously protected. This should increase the demand for the factors of production that are relatively abundant in the country as opposed to those that are relatively scarce, which were in greater demand under policies promoting import substitution. Generally, these abundant factors include labor, which helps to alleviate unemployment and raise the incomes of the poor. Here there is a potential conflict between transitional unemployment in the short run and an increase in the demand for labor over the larger term.

The link between trade regimes and employment was the subject of a NBER project undertaken during the late 1970s, directed by Anne Krueger (1981). This study found that labor markets were highly distorted in the ten countries studied, with industrial minimum wages being the most important distortion. Nevertheless, despite these distortions, the study found that exports were produced using more labor-intensive techniques than were goods competing with imports. Two other findings of this study were that employment tends to grow faster in outward-oriented economies and elimination of labor market distortions and trade restrictions tends to have a favorable effect on employment. In a recent World Bank study, the authors found that in most cases of trade liberalization the increase in transitional unemployment has been relatively small (Michaely, Papageorgiou, and Choksi, 1991, 80).

From this analysis and very brief literature review, we can elaborate a few hypotheses regarding the long-term effects of policy reform, trade, and growth on poverty.

(Hypothesis: Marketing and trade policy reform have a more favorable longer term impact on the poor in economies in which there is a good transportation system and where levels of education and literacy are relatively high; it has a lesser longer term impact in economies where the poor are isolated from the market and have little access to public social services.) This effect occurs at two levels. First, marketing and trade policy reform have a more favorable

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14. These studies do not find any correlation between growth and change in income inequality, as measured by the Gini coefficient. This is consistent with what was said above about the need for additional measures to reduce inequality, though it may also be because the Gini coefficient is very sensitive to small changes in inequality (Deininger and Squire, 1996, 20-23).

longer term impact on the poor in economies in which these reforms lead to greater importance of trade and more rapid economic growth, which exert a favorable effect on poverty independent of the short-term impact of the reforms. This occurs more readily where there is a good transportation system and where levels of education and literacy are relatively high. In addition, the impact of trade and growth on the poor will be greater where there is better transportation and education.

(Hypothesis: Investment in health and education contributes to poverty alleviation by (1) allowing the poor to participate more effectively in the market economy and (2) increasing economic growth, which also helps to alleviate poverty.) One of the mechanisms by which improved health and education contribute to growth is by permitting the work force to take better advantage of the opportunities presented through expanded trade. In addition, improved health and education may also be considered as separate dimensions of poverty alleviation beyond that measured solely in terms of household income.

(Hypothesis: Expansion of exports and greater importance of trade in the economy are associated with increased employment, higher wages, and less poverty, although this effect may have a considerable lag because of transitional effects.) This hypothesis states that export growth and openness to trade contribute to poverty alleviation not only in terms of their contribution to economic growth but also because they tend to lower unemployment and raise real wages independently of their effects on growth.