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## The long and short of it: Global liberalization, poverty and inequality

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Zentrum für Europäische Integrationsforschung  
Center for European Integration Studies  
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Christian E. Weller and Adam Hersch

**The Long and Short of It:  
Global Liberalization,  
Poverty and Inequality**

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THE LONG AND SHORT OF IT:  
GLOBAL LIBERALIZATION, POVERTY AND INEQUALITY

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Abstract

Global deregulation of current and capital account is often touted as successful means to reduce poverty and inequality. On the face of it, though, the evidence does not support this claim. Rising intra-country inequality is widespread, income inequality between countries grows, the absolute number of people living in poverty increases, and poverty rate reductions are geographically isolated. Critics of global deregulation have charged that more deregulated trade flows result in a worse income distribution and unregulated capital flows in more macro economic instabilities that are especially harmful to the poor. Using data from the World Bank, the IMF and the UN, we test the impact of increased deregulation on the incomes of the poor. Our results indicate that global deregulation of trade and capital markets does hurt the poor. We find that the income share of the poor is generally lower in deregulated and in macro economically less stable environments, which are more prone to occur after capital account liberalization. The evidence also suggests that trade flows in more regulated environments may be good for growth and, by extension, for the poor in the long-run.

## **I. Introduction**

Recently, a number of policy makers touted the potential for global economic integration to combat poverty and inequity. For instance, World Bank researchers claimed that globalization “reduces poverty because integrated economies tend to grow faster and this growth is usually widely diffused” (Dollar and Collier 2001: 1).

Others, however, cast doubt on this benign view of global liberalization. In particular, the evidence indicates that successful reductions in poverty and income inequality remain elusive in most parts of the world at the same time that trade and capital flows have become more integrated due to current and capital account deregulation.

Evidence of the trends in global poverty and inequality tends not to support the stance taken by proponents of the global liberalization agenda. Gains in poverty reduction over the previous two decades, if any, were relatively small and geographically isolated. The number of poor people rose from 1987 to 1998, and the share of poor people increased in many countries; in 1998 close to half of the population were considered poor in many parts of the world. Moreover, the numbers show that income inequality between and within countries increased along with deregulation of trade and capital markets. In 1980, median income in the richest 10 percent of countries was 77 times greater than in the poorest 10 percent; by 1999, that gap had grown to 122 times. Inequality has also increased within a vast majority of countries.

A closer look at the relationship between economic openness, growth and poverty reduction reveals that one of the main differences in the interpretation of the evidence lies in the time frame of reference. In particular, those in favor of liberalized trade and capital flows focus on the long-run, often ignoring short-term fluctuations that are especially harmful to the poor. Moreover, some of the previous studies used data only through the early 1990s, when the last round of trade and capital liberalizations e.g., through the introduction of the World Trade Organization (WTO), had not taken place. In comparison, we study the short-term impacts on the poor from greater liberalization of trade and capital flows through the end of the 1990s. In addition, we analyze whether any short-term costs are offset by long-term gains.

Our results indicate that global deregulation of trade and capital markets does hurt the poor. We find that the income share of the poor is generally lower in deregulated and in macro economically less stable environments, which are more prone to occur after capital account liberalization. The evidence also suggests that trade flows in more regulated environments may be good for growth and, by extension, for the poor in the long-run.

## **II. Measuring “Globalization”**

An overview of the existing literature illustrates that the empirical results that are often used to support increased global liberalization may not necessarily be robust. In particular, the definitions of global liberalization are subject to scrutiny as are the selection of countries and the time frames employed in previous analyses.

A key problem lies in the difficulty of gauging economic openness. While research has focused on defining openness in terms of statutory measures as well as on the actual flows of trade and capital across national borders, these approaches suffer from a host of problems (Rodriguez and Rodrik 1999; Eichengreen 2001).

Some problems associated with measuring openness can be found in the research conducted by the World Bank. Recent World Bank research<sup>1</sup> looks at the effects of increasing international integration of production, consumption and investment on developing countries, measured in the level of international trade and capital flows relative to GDP. This research makes a two-step argument supporting the view that globalization tends to benefit the poor, first showing that an increasing level of trade is good for economic growth and second that the benefits of this growth tend to be distributed equally throughout different income levels over long periods of time (Dollar and Kraay, 2001a, 2001b).

Implicit in this approach is the assumption that changes in trade volumes are attributable to changes in trade policy (Dollar and Kraay, 2001b). But such a leap from the notion that integration is good to the notion that openness is good because it will lead to integration is problematic. Trade volume alone indicates only a policy outcome, not a policy choice for development. It is clear that “some markets appear more integrated [based on flow variables] than one would expect on the basis of statutory restrictions” imposed by nation-states (Eichengreen 2001). Moreover, the trade-volume approach tends to ignore possible causes of increasing trade other than changes in trade policy such as reduced transportation costs and growing world demand. As Rodriguez and Rodrik (1999) note, while purporting to answer the question, “Do countries with lower policy-induced barriers to trade grow faster,” the volume measures actually answer a qualitatively different question, “Does growth of trade raise economic growth rates?” The latter question offers little insight into the policy choices facing developing countries.

The second step of the two-step argument examines the distribution of income to the poor relative to the rest of society. In the long run, Dollar and Kraay (2001a) find a one to one relationship between the share of income accruing to the bottom quintile relative to the top quintiles. It should be no surprise that in the long run the shares of growth are distributed equally across all income levels. If the elasticity of income growth of the poor with respect to overall income growth were anything but one, in the long run the poor would either receive unrealistically low or high shares of total income.

To address the problems included in using trade volumes to measure openness, Jeffrey Sachs and Andrew Warner (1995)<sup>2</sup>, in perhaps the most comprehensive study of economic openness to date, combined a detailed institutional analysis of the history of the latest wave of global economic integration with empirical tests. They deem an economy to be open when none of the following characteristics hold true: (1) non-tariff barriers covering more than 40 percent of trade; (2) average tariff rates of 40 percent or more, (3)

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<sup>1</sup> Dollar and Collier (2001) provide a thorough review.

<sup>2</sup> Hereafter referred to as SW.

black market premiums of 20 percent or more for the 1970s or 1980s decade, (4) a socialist economic system, or (5) a state-monopoly on major exports. Using this classification, they find that open economies tended to grow faster.

While this study is often held as a benchmark for understanding the growth effects of economic openness, it suffers from a number of problems. First, as SW themselves note, it is difficult to disencumber the effects of trade and capital market deregulation from other economic reforms such as price liberalization, budget restructuring, privatization and deregulation that inevitably comprise a comprehensive program of reform.

Accepting that, for a moment, Rodriguez and Rodrik (1999) ask which component policies of the SW index explain the association of openness with growth. By breaking apart the openness index that SW use, Rodriguez and Rodrik (1999) test the effects of its individual policy components on growth. Their findings show that black market premia, which implies that foreign exchange restraints act as a trade barrier, and the existence of state monopolies over exports, which reduce the level of trade, explain the association of openness with growth. Meanwhile regime type, tariff rates and non-tariff barriers have insignificant effects on growth. Rodriguez and Rodrik (1999) also find that the state export board variable poses a selection bias (it is highly correlated with the regional variable for Africa) and that the black market premia variable is a bad indicator of trade policy since it is more closely related with macroeconomic imbalances attributable to other failed policies, political conflict and external shocks.

Second, just because an economy is open does not mean that it will integrate with the rest of the world. In a review of cross-country studies of capital market integration, Barry Eichengreen (2001) cautions “there can be no presumption that capital will flow into uses where its marginal product exceeds its opportunity cost.” Likewise for trade: just because a country reduces trade barriers does not mean it will export more.

Third, SW examine the effect of openness on growth in the period 1970-1989, yet most countries in their sample did not open their economies until the 1980s or 1990s. Twenty countries in their sample opened their economies between 1989 and 1994 and others only opened at the end of the period under examination. Since it is widely held that economic integration and the transition to openness may take “a couple of decades or more” (Dollar and Kraay 2001b), it is unclear that, with such a lag, the growth effects SW observe for those countries opening in the 1980s result from economic openness. In the time since the publication of SW, deregulation of trade and capital markets has become nearly universal, with membership in the WTO totaling 144 countries. With such a pervasive shift to liberalized economic policies, it is worth examining how well SW’s findings hold for different time periods and for other countries.

### **III. Deregulated Trade and Capital Flows, Inequality and Poverty**

We address some of the shortcomings of earlier research in this paper. In particular, we control for both trade volumes and institutional design. Second, we extend the research to include the later part of the 1990s. Third, we analyze both the short-term and

long-term effects of openness and trade on the poor. In particular, based on the existing literature we would expect that global liberalization of capital and current accounts are harmful to the poor in the short-run, but that there may be offsetting effects in the long-run thanks to higher economic growth rates.

Over the past decades international capital mobility has grown as capital controls were reduced or eliminated virtually everywhere. Consequently, capital flows to developing countries grew rapidly from \$1.9 billion in 1980 to \$120.3 billion in 1997, the last year before the global financial crisis, or by more than 6000 percent. Even in 1998, in the wake of the global financial crisis, capital flows remained remarkably high at \$56 billion. A substantial share of these capital flows, e.g. 36% in 1997, were short-term portfolio investments (IMF, 2001b).

Faster capital mobility in a more deregulated environment can lead to rising inequality in the short and medium term, both within countries and between countries, and to less poverty reduction or even increasing poverty.

The probability of financial crises in developing countries rise in direct relation to rises in unregulated short-term capital flows (Weller, 2001; Easterly and Kraay, 1999; Demirgüç-Kunt and Detragiache 1999). More short-term capital inflows result in more speculative financing, thereby increasing financial instability. Financial crises reduce the likelihood for the poor to escape poverty through economic growth because they are ill equipped to weather the adverse shocks of macro-economic crisis (Bannister and Thugge, 2001; Lustig, 2000, 1998). Financial crises lower short-term growth rates, and it is estimated that for every percent decline in growth, poverty increases by 2 percent (Lustig, 2000). Developing countries are prone to experience more severe economic crises with greater frequency than developed economies (Lustig, 2000; Lindgren, Garcia, and Saal, 1996), leading to more inequality between countries.

The burdens of financial crisis are disproportionately borne by a country's poor (Baldacci, de Mello and Inchauste 2002). Since higher income earners have better access to insurance mechanisms that protect them from the fallout of a crisis (including capital flight), macro economic crises lead to a more unequal income distribution within countries (Lustig, 2000; Townsend 2002). Many studies that examine the impact of financial crises on the poor likely understate the true hardships suffered by low income households during times of crisis. Frankenberg, Smith and Thomas (2002) find that many people are forced to reallocate household budgets away from spending on schooling and healthcare, to change their living arrangements, and to liquidate their assets in order to smooth consumption during a crisis.

At the same time that economic crises increase the need for well functioning social safety nets, unfettered capital flows limit governments' abilities to design policies to help the poor when they need it most—in the middle of a crisis. The IMF often opposes increased government expenditures to assist the poor in the hardships of economic crisis, and investors withdraw their funds following increasing government expenditures

(Blecker, 1999). The poor are the first to lose under such fiscal contractions and the last to gain when crises subside and fiscal spending expands (Ravallion, 2002).

Trade liberalization—the complement to deregulated capital markets—also plays a significant role in raising inequality and limiting efforts at poverty reduction. By inducing rapid structural change and shifting employment within industrializing countries that liberalize, trade leads to falling real wages and declining working conditions and living standards (Bannister and Thugge 2001; Mishel, et. al. 2001; Ocampo and Taylor 1998; Taylor 1996). While critics of the view that trade liberalization has led to increasing inequality often contend that a more significant cause of inequality lies in skill-biased technological change, Feenstra and Hanson (2001) have shown that in fact skill-biased change can result from trade liberalization. Measuring the relative size of these effects, therefore, becomes an empirical rather than a theoretical issue.

Removal of trade barriers parlays into lower tariff revenues for developing countries. For example, tariffs generated roughly 40 percent of India's tax revenues through much of the 1980s (Dutt and Rao, 2000). Restructuring tax regimes to offset lost tariff revenues takes time and introduces administrative costs. Even if trade liberalization were growth enhancing in the long-run, in the short-run revenue shortfalls may seriously constrain a government's ability to maintain spending on social services that benefit low-income households.

Trade liberalization also gives teeth to employers' threats to close plants or to relocate or outsource production abroad—where labor regulations are less stringent and more difficult to enforce—and undermines worker attempts to organize and bargain for improved wages and working conditions (Bronfenbrenner, 1997, 2000). This trend fuels a race to the bottom in which national governments vie for needed investment by bidding down the cost to employers (and livings standards) of working people.

The connection between rapid trade liberalization and inequality is wide spread, indicating downward wage pressures and rising inequality following trade liberalization in industrializing and industrialized economies (USTDRC 2000). A report by UNCTAD (1997) found that trade liberalization in Latin America led to widening wage gaps, falling real wages of unskilled workers (often more than 90 percent of the labor force in developing countries) and rising unemployment.

#### **IV. Poverty and Inequality Trends**

The World Bank recently released a rather comprehensive report on globalization and poverty (Dollar and Collier 2001a) lauding the profound impact of increasingly deregulated trade and capital markets in reducing global poverty and inequality. However, the report shows that income inequality between and within countries increased along with deregulation of trade and capital markets. The report, though, raises two issues that supposedly mute the fact of rising intra-country inequality. First, data for China dwarfs observations for all other countries, thereby suggesting that rising inequality in globalizing countries does not exist outside of China (Dollar and Collier, 2001: 47).

However, data for other countries show that growing inequality is indeed a widespread trend. Second, the World Bank also claimed that rising inequality is not a result of increasing poverty, and thus presumably less troubling (WB, 2001a: 48). While this claim may hold true in China, it does not describe the trend in many other parts of the world.

There is a broad consensus that income inequality has risen in OECD countries since 1980. The World Bank reports that there was a “serious...increase in within-country inequality [in rich countries] reversing the trend of [the period 1950-1980]” (Dollar and Collier 2001: 46). Similarly, Gottschalk and Smeeding (1997:636) found that “almost all industrial economies experienced some increase in wage inequality among prime aged males” in the 1980s and early 1990s. Further, data from the Luxembourg Income Study (LIS, 2001) show that among 24 countries, 18 showed increasing income inequality, five (Denmark, Luxembourg, Netherlands, Spain and Switzerland) showed declining inequality; and one (France) saw no change.

Income inequality is also rising in industrializing countries. There has been an unambiguous rise in inequality in Latin America in the 1980s and 1990s (Lustig and Deutsch, 1998; IADB, 1999; UNCTAD, 1997; ECLAC, 1997). Other areas also saw inequality rise in the 1980s and 1990s (Faux and Mishel, 2000; Chen and Ravallion, 1997). Deininger and Squire (1996) found rising inequality in East Asia, Eastern Europe, and Central Asia since 1981, and growing polarization in South Asia. Only sub-Saharan Africa shows a trend towards more income equality since the 1980s.

While a widening gap between the rich and the poor within countries is not universal, it appears to have occurred at least in the majority of countries, and is affecting the income of the majority of people around the globe.

Aside from a widespread increase in inequality, there are also signs that poverty reduction has not been particularly widespread. The World Bank argued that “the long [term] trends of rising global inequality and rising numbers of people in absolute poverty have been halted and perhaps even reversed” (Dollar and Collier 2001:49). However, the purported success in poverty reduction is elusive: the number of poor people is on the rise, relative poverty shares remain high in many parts of the world, and poverty shares are rising in many regions.

In assessing global poverty trends, the World Bank relies on a study that highlights the World Bank’s Global Poverty Monitoring database and provides an overview of poverty trends from 1987 to 1998 (Ravallion and Chen, 2001). The authors themselves, though, conclude that “[i]n the aggregate, and for some large regions, all...measures suggest that the 1990s did not see much progress against consumption poverty in the developing world” (Ravallion and Chen, 2001:18). Also, The IMF (2000, IV:1) reports that “[p]rogress in raising real incomes and alleviating poverty has been disappointingly slow in many developing countries.”

The assessment of poverty trends by the World Bank suffers from several problems. A due consideration of the issues shows that the case for poverty reduction due to more deregulated capital and trade flows does not stand up to scrutiny.

First, measuring poverty is a difficult undertaking. Different measures of poverty exist. The World Bank's Global Poverty Monitoring database, for example, uses an international poverty line of \$1.08 per day in 1993 dollars based on purchasing power parity (PPP) exchange rates (Chen and Ravallion, 2001; WB, 2001b). But absolute poverty lines, such as this one, ignore regional or country-by-country differences.

By using the international poverty line, the share of people living in poverty is probably being understated. Using national poverty lines instead of the international poverty line, we find that on average an additional 14 percent of the population is considered poor (WB, 2001b). An alternative to both the national and international poverty line methods is to use a relative poverty line based on mean consumption or income levels in each country. Using such a relative poverty line instead of the international poverty line, however, shows on average an additional 8 percent of the population to be considered poor (Chen and Ravallion, 2001).

Second, even the poverty reduction gains that the World Bank reports are small and geographically isolated. In 1998, the share of the population living in poverty in industrializing countries was 32 percent using the relative poverty line. Although that percentage was down from 36 percent in 1987, the actual number of people living in poverty increased from 1.5 to 1.6 billion. In 1998, the share of the population in poverty remained very high in some regions: 40 percent in South Asia, 50 percent in Sub-Saharan Africa, and 51 percent in Latin America (Chen and Ravallion, 2001). Since 1987, the share of the poor stayed constant in Sub-Saharan Africa, rose slowly in Latin America, and more than tripled in Eastern Europe and Central Asia.

Third, since the data do not extend beyond 1998, the full impact of the crises in Asia, Latin America, and Russia is not included, which makes it likely that future revisions will show less progress in poverty reduction. Lustig (2000) argues that frequent macroeconomic crises are the single most important cause of rapid increases in poverty in Latin America. Consequently, future revisions to the poverty trends in the late 1990s could show smaller average reductions or larger increases in the crisis stricken areas. Revisions to past data already show less success in poverty reduction than previously assumed. Chen and Ravallion (2001), for example, show that the reduction of people living below the poverty line between 1987 and 1993 was not 4 percentage points, as estimated in 1997 (Ravallion and Chen, 1997), but less than one percentage point.

Finally, the conclusion that the lot of the poor has improved with increasing trade and capital flow liberalization relies substantially on data from China and India. The facts in both of these countries undermine the case for a connection between greater deregulation and falling poverty and inequality. In 1995, SW deemed China a closed economy and China only signed on to the WTO late in 2001. While in China the percentage who are poor has fallen, there has been a rapid rise in inequality (WB, 2001a). Most notably,

inequality between rural and urban areas and provinces with urban centers and those without grew from 1985 to 1995. Claims to poverty reduction in China rely on rising per capita incomes spurred by rapid economic growth and stable population size. However, recently, some have questioned whether China's are exaggerated (Rawski, 2001); consequently, so too would China's successes in poverty reduction be exaggerated.

Despite any gains, a large number of China's workers labor under abhorrent, and possibly worsening, slave or prison labor conditions (USTDRC, 2000; DoS, 2000, 2001). Thus, improvements in China are not universally shared, and leave many workers behind, often in deplorable conditions.

Using India to illustrate the benefits of unregulated globalization is equally problematic since India's progress was accomplished while remaining relatively closed off from the global economy. Total goods trade (exports plus imports) was about 20 percent of GDP in 1998, or 10 percentage points less than in China, and only about one fifth that of such export oriented countries as Korea (IMF, 2001a). Moreover, that the IMF (1999, 2000) continuously recommends further liberalization of India's trade and capital flows - the only large developing economy for which this was the case - suggests that the IMF viewed India as a laggard in deregulating its economy.

The arguments on changes in income inequality between countries take a few perspectives. The World Bank's assertion that "between countries, globalization is mostly reducing inequality" (Dollar and Collier 2001: 1) seems to contrast directly the IMF's assessment that "the relative gap between the richest and the poorest countries has continued to widen" in the 1990s (IMF, 2000, IV:1).

The distribution of world income between countries grew unambiguously in the 1980s and 1990s (Table 1). The median per-capita income of the world's richest ten percent of countries was 77 times that of the poorest ten percent of countries in 1980, 120 times in 1990, and 122 times in 1999. The ratio of the average per capita incomes shows a similar, yet more dramatic increase.

The distribution of world income across people, rather than countries, witnessed some improvement in equality in the 1990s after a dramatic increase in inequality during the 1980s. Regardless of the measure used, the distribution of world income grew increasingly more unequal in the 1980s. While the ten richest percent of the world population had on average incomes that were 79 times higher than those of the poorest ten percent of the world population in 1980, their incomes were 120 times higher in 1990. Despite slow improvements in the 1990s, the ratio of the average incomes of the richest ten percent of the world's population changed only marginally from 118 in 1990 to 117 in 1999. The improvement in equality in the 1990s was somewhat more pronounced when using the ratio of median incomes instead of average incomes (Table 1). Even under the different measure, the distribution of incomes was remarkably more inequitable in 1999 than at the beginning of the period in 1980.

But, the gains in the 1990s come solely from rising incomes in China. If China is excluded, there is an unambiguous trend towards growing income inequality across the remaining world population in the 1980s and 1990s (Table 1). Without China, the richest ten percent of the world population had on average 90 times as much income as the poorest ten percent in 1980, 136 times in 1990, and 154 times in 1999. However, since China's income distribution has become substantially more unequal in the 1990s, including China's per capita GDP in the distribution of world income across all people exaggerates improvements in the world's income distribution in the 1990s.

## V. Empirical Analysis

From the discussion in the previous section, three hypotheses are apparent. First, more deregulated trade flows are likely to hamper income growth at the bottom, and hence help to perpetuate if not to increase poverty and inequality. Put differently, it is not trade per se, but rather unregulated trade flows that are harmful to the poor. Second, greater capital account liberalization results in greater financial and macro economic volatility. And people at the bottom of the income scale are more likely to be adversely affected by increased macro economic instabilities since they do not have the same insurance mechanisms that higher income people have. Consequently, capital account liberalization is harmful to the poor since it raises macro economic instability. Third, both current and capital account liberalization are more likely to be harmful to the poor in the short-run than in the long-run. In comparison, the poor may benefit from increased growth from more trade in a more deregulated environment.

In this section, we test whether greater current and capital account liberalization adversely affect the poor in the short-run. We first need to decide on an appropriate measure for the incomes of the poor. We choose the share of income accruing to the poorest 20% as the dependent variable. This measure has several advantages. First, national poverty lines are not comparable across countries since each country uses its own methodology. Second, absolute poverty lines, such as the \$1-a-day line used by the World Bank can possibly lead to misleading results if the distribution of income is very steep near the poverty line. In this case, distribution-neutral effects will lift a large number of people above the poverty line, without changing relative standards of living. Third, absolute, time-invariant poverty lines pose a problem in that they do not account for changes in the living standards of the poor. Fourth, the share of income accruing to the poorest 20% is also a short-term measure for the difference between average incomes and average incomes of the poor. Since we are interested in analyzing whether the poor are systematically and adversely affected, at least in the short to medium-term, by current and capital account liberalization, this measure seems appropriate<sup>3</sup>.

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<sup>3</sup> Previous research (Dollar and Kraay, 2001a, 2001b) analyzed the long-term relationship between average incomes and average incomes of the poor, and found, not surprisingly, that they tend to grow at the same rate over the long run. The alternative hypotheses that the poor are either benefiting more from or regularly falling behind average income growth seem unreasonable in the long run and across many countries since they would imply that unrealistically high or low levels of income would be received by the bottom 20%.

To arrive at the share of income of the bottom 20% we proceed in several steps. First, for a number of countries we are able to obtain figures for the share of income accruing to the poorest 20% after 1970. We use the UN-WIDER World Income Inequality Database V1.0 (UN-WIDER, 2000) as our primary data source for income shares and Gini coefficients. Second, we add observations on income shares and Gini coefficients from the World Bank's Global Poverty Monitoring Database (2001b). Third, where income shares do not exist outright, we calculate them from the Gini coefficients<sup>4</sup>.

The data set compiled in this manner is a panel of unbalanced and irregularly spaced observations. To avoid that our results are determined by a few countries where many observations are available, we select a subset of observations in the following manner. Since we are interested in seeing how the poorest fared in developing countries, we do not include developed countries. Furthermore, we include observations only after 1970. First, we filter by the unit of analysis by giving preference to surveys of households rather than individuals. Second, we select observations on the basis of income definitions used by prioritizing gross income over expenditures over net income. Third, we select all observations that are based on surveys that cover a country's entire population. Our fourth filter is the area covered by household surveys, whereby observations based on rural or urban areas only are deleted in favor of observations that are based on surveys covering entire countries. Fifth, we filter observations that cover all age groups, rather than just a subset. Sixth, following Dollar and Kraay (2001a), we delete observations such that observations for one country are spaced at least 5 years apart. Last, we select observations on the basis of surveys with the largest sample size.

To test the impact of deregulation on the income share of the poorest 20% in developing countries, we estimate the following regression equation:

$$IS20_{it} = \mathbf{b}_1 + \mathbf{b}_2 X_{it} + \mathbf{e}_{it} \quad (1)$$

where IS20 is the income share of the bottom 20% determined by a set of independent variables, X, and  $\epsilon$  is a randomly distributed, unrelated error term.

In general, a country's income distribution is determined by a number of factors. For one, a rise in income inequality is often associated with a skill-biased technological shift, whereby workers with a certain set of skills see their incomes rise faster than everybody else's. In turn, if the share of formal skills obtained through schooling and other training are more widely dispersed, income inequality should fall. Hence, we include the share of people enrolled in secondary education as an explanatory variable, which should be positively associated with the share of income accruing to the poor.

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<sup>4</sup> Assuming that income is lognormally distributed, and the Gini coefficient is calculated on a scale from 0 to 100, the standard deviation of this distribution is given by

$$s = \sqrt{2} * \mathbf{f}^{-1} \left( \frac{1+G/100}{2} \right), \text{ where } \phi(\cdot) \text{ is the cumulative normal distribution (Aitchison and Brown,}$$

1966). Using the properties of the mean of the truncated lognormal distribution (e.g. Johnston, Kotz and Balakrishnan, 1994) it can be shown that the 20<sup>th</sup> percentile of this distribution is given by

$$\mathbf{f}(\mathbf{f}^{-1}(0.2) - s) \text{ (Dollar and Kraay, 2001a).}$$

Second, income inequality can also be influenced by a set of institutions that raise or lower income inequality. Such institutions include government support, which we proxy by including the ratio of government consumption expenditures relative to GDP. Assuming that higher government consumption expenditures translate into better social safety nets, this ratio should be associated with a greater income share for the poorest 20%. Similarly, to control for the allocation of government resources we include a measure of political freedom since previous research has found that in more democratic societies, people express a desire for more redistribution. Hence, more democracy should also be associated with a larger income share for the poorest 20%.

Further, to control for current account deregulation, we include two different measures of trade openness. Our preferred measure is the composite openness calculated by SW since it captures actual policy variables. Noting the shortcomings of this measure as discussed above, we decide to use it for two reasons. First, it is preferable to a pure volume measure for openness. Second, we can extrapolate the composite openness measure under reasonable assumptions, but not its components.

In addition, we consider the widely used trade ratio of exports plus imports relative to GDP. Although this measure offers a glimpse at a country's participation in the international trade regime, it does not provide any information on the institutional design under which international trade occurs. However, our argument in the previous section pertains exactly to this issue since more deregulated trade, and not more trade per se, is expected to result in rising inequality. Consequently, we would expect that our openness variable has a negative sign, while our trade variable has no effect on the incomes of the poor in the short-run. Finally, we include measures of macro economic stability since greater liberalization is associated with more instability that hurts the poor. More macro economic volatility thus should result in lower income shares of the poor<sup>5</sup>.

To test the impact of greater deregulation on the poor, we estimate regression equation (1). Our results indicate that greater deregulation are harmful for the poorest 20%, and that trade by itself, after controlling for the institutional environment, has no direct effect. Regression (1) in table 2 shows our results using OLS. In particular, all explanatory variables have the expected sign or are insignificant, with the exception of our political freedom variable. Greater deregulation and less schooling lower the income share of the poor, as does more political freedom. If we allow for random effects in our panel, the results remain largely robust as regression (2) shows. The only notable exception is that the macro economic volatility now has also a negative impact on the share of income of the poor. If we used fixed effects instead of random effects, both freedom and school enrollment no longer have statistically significant effects, as shown in regression (3). Only our openness and macro economic instability variables have significant and negative effects on the income share of the poorest 20%. Lastly, we include regional dummies for Africa, Asia, Latin America and the Middle East in regression (4). Again, only openness and macro economic instability have significant and negative effects on the income share of the poorest 20%.

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<sup>5</sup> See the appendix for a detailed list of variables, definitions and sources.

Our macro economic instability measure deserves further attention. It is possible that the five-year standard deviation of the real growth rate does not fully reflect actual instabilities since financial crises may affect economic growth with a lag or only by depressing average growth rates. Consequently, we use a currency crisis index in addition to our macro economic instability variable to measure short-term fluctuations. Currency crises are reflected either in rapid currency devaluations or in quickly depleting official reserves or both. Hence, the index is a weighted average of the rate of change of the exchange rate,  $\Delta_e/e$ , and of reserves,  $\Delta_R/R$ , with weights such that the two components have equal sample volatilities (Kaminsky and Reinhart 1999):

$$I = \frac{\Delta_e}{e} - \frac{s_e}{s_R} * \frac{\Delta_R}{R} \quad (2)$$

A measure three standard deviations above the mean is classified as a currency crisis. Years during which a currency crisis occurs are set equal to one and all others equal to zero. We then average over the five years up to and including the current time period. Consequently, our variable is equal to the likelihood of a currency crisis occurring during the previous five years.

We present regression results using the currency crisis index as additional explanatory variable in table 3. Our openness variable has a consistently negative effect on the share of income of the poorest 20%. In addition, there is some evidence that education has a positive effect. But there is little evidence that financial crises have an effect on the poor per se. In other words, it seems that only after financial crises translate into macro economic instabilities, the poor are being hurt.

Further, it is likely that our results may be influenced by our choice of time period. Since we are interested in short-term changes in the incomes of the poor, we analyze whether the choice of shorter time period averages for our explanatory variables impact our results in a substantial manner. The regression results in table 4 show that our previous results are largely robust. Openness has a generally negative effect on the income share of the poor, although it is not as robust as in the previous regressions. Similarly, greater macro economic instability adversely affects the poor. In addition, democracy by and large adversely affects the income share of the poor. As Przeworski and Limongi (1993) observe, capitalist democracies provide “two mechanisms by which resources can be allocated to uses and distributed among households: the market and the state.” The dynamic tension between the power of the state and market to determine the distribution of resources mean that democracies may be slow to empower the less wealthy. Barro (1999) found that democracy increases with the share of income accruing to the middle class. In other words, there may be a chance that more income is accruing to the middle class, and less to the bottom, or the top, for that matter.

Our regression results indicate that more current and capital account liberalization hurt the poor. This is not because trade is directly harmful for the poor, but because of the institutional design under which trade is conducted. In particular, trade in a more

deregulated environment lowers the income share of the poor, whereas trade in a more regulated environment raises the share of the poor. Specifically, since the estimated coefficient for our openness variable is between 0.6 and 1.0 in most cases, an increase in international deregulation over the past 5 years by one standard deviation, 0.45, reduces the share of income going to the poorest 20% by 0.3 to 0.5 percentage points. Assuming that international deregulation is a linear process, this is equivalent of saying that opening an economy almost half way lowers the share of income of the poor by an amount equal to 4.6% or 7.6% of the average share of income of the poor, 5.9%, in our sample.

While the poor are hurt in the short-run, they may benefit in the long-run from global liberalization. The poor seem to benefit proportionately from stronger growth in the long-run (Dollar and Kraay 2001a). Consequently, if current account liberalization is beneficial for growth, the relative losses of the poorest 20% in the short-run may be offset by faster income growth for the poor in the long-run<sup>6</sup>.

Consequently, we test whether current account liberalization has a positive effect on long-term growth rates using a standard long-run growth model. In general, economic growth is hypothesized to enable economic convergence: countries with lower initial incomes were expected to grow faster than countries with higher initial incomes. To address the fact that the world is still characterized by non-convergence (Romer, 1986), the concept of conditional convergence was ultimately developed (Barro and Sala-I-Martin, 1992, 1996). Under conditional convergence countries differ in their own long-run per capita income levels. Hence, each country tends to grow faster the greater is the gap between its initial per capita income level,  $y_i^*$ , and its own long-run per capita income level,  $y_i$ :

$$\dot{y}_i = \mathbf{b}(y_i^* - y_i) \quad (3)$$

A positive value of  $\mathbf{b}$  is said to signal conditional convergence. Since the long-run per capita income level is unknown, it is proxied by certain structural variables,  $Z_{ji}$ , such as initial levels of human capital. Consequently, the estimation equation becomes:

$$\dot{y}_i = \mathbf{b}(\sum_j g_j Z_{ji} - y_i) \quad (4)$$

Hence, a negative coefficient on initial income signals convergence after proxying for each country's long-run per capita income levels.

As dependent variable, we choose the average growth rates for 20-year periods. For one, we are interested in seeing whether there is potentially a trade-off for the poor between short-term costs and long-run gains. Also, our time frame is long enough to avoid economic bubbles that often arise from deregulation euphoria in the years following liberalization (Arestis and Demetriades, 1999; Weller, 2001). Hence, using

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<sup>6</sup> In addition, we could imagine including capital account liberalization as a factor impacting growth. However, most measures for capital account openness, such as foreign direct investment (FDI) inflows relative to GDP, are only available on a limited basis. We return to this further below.

shorter time periods may yield misleading results if they capture short-term bubbles, instead of long-term growth patterns<sup>7</sup>.

Our dependent variable is the average growth rate of the real local currency per capita GDP for available 20-year periods. This allows us to use more recent data than earlier studies have, which seems particularly pertinent since full liberalization only occurred in the late 1980s and early 1990s for many developing and transition economies.

In choosing our explanatory variables, we follow numerous other studies, but we have to contend with some data restrictions as we expand the time horizon. Thus, we include initial secondary school enrollment, average government consumption expenditures, average private and public investment, average democratic development, and initial population density in addition to initial income levels. Our expectation is that higher human capital endowment, more investment, more democracy, and a greater population density will result in more growth, *ceteris paribus*. In comparison, higher government consumption expenditures are expected to lower long-run growth.

We subsequently add variables for openness and trade to the regression. In particular, we deem countries open if they were open for the entire period under investigation. But this distinction classifies countries that were open for most of the period as closed. Consequently, we alternatively use the 20-year average of the openness index as explanatory variable. Since we are interested to see whether current account deregulation *per se* has an effect on growth, we include the ratio of exports plus imports to GDP as control variable.

Table 5 shows that the hypothesis that openness is beneficial for growth in the long-run finds no robust support. First, we follow Sachs and Warner (1995) and estimate a simple convergence model where long-run average growth is determined solely by initial income. Similar to their findings, we find no evidence for convergence as the estimated parameter is insignificant. Once we split the sample into open and closed economies, the parameter estimate for open economies – regression (3) – suggests convergence, whereas the results for closed economies – regression (2) – do not. Sachs and Warner (1995) used similar findings to draw the tentative conclusion that more openness can help to explain convergence. Next, we expand the regression model to include additional variables that are typically included. Regression (4) is added as a reference point since it includes many of the variables typically added to long-run growth regression, such as government consumption, public and private investment, the initial population density and a measure for political freedom. All variables have the expected signs or are insignificant.

We subsequently add various measures of openness and trade integration to the reference model. Regressions (5) through (8) show that openness and trade integration, either separately or together, do not have a measurable impact on long-run economic growth. Similarly, democratic institutions and initial population density are consistently negative, indicating that more democracy and lower population densities were good for growth. In comparison, the variable that is largely robust is investment, indicating that

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<sup>7</sup> In fact our results further below support this notion.

higher capital formation relative to GDP results in faster economic growth. Similarly, there is some indication that more government consumption expenditures lowers long-run growth rates. Finally, there is some indication that higher initial secondary school enrollment will result in lower growth rates. This may be explained by a high correlation coefficient of 0.73 between initial secondary school enrollment and initial income.

Our primary interest is the effect of openness on long-run economic growth. Using a more medium-term frame of reference, such as 10-year average growth rates offers some advantages. First, it allows us to see how sensitive our results are with respect to the chosen time frame. Second, it permits us to test for differences over time, and third, we can include additional variables, such as a control variable for capital flows.

Table 6 shows our results for 10-year average growth rates. The main finding is that, although we observe some positive effects of openness on growth, these seem to disappear over time. All explanatory variables have the expected sign or are insignificant. The only explanatory variable that is consistently insignificant is the initial population density. Regressions (2) through (4) use different measures for openness and trade separately, and find in each case that openness or trade is beneficial for growth. Regression (5) includes openness and trade together and finds that both variables are positively related to growth.

Some observers have pointed out that the impact of deregulation has slowed growth over time. Consequently, we control for changes over time by dividing our sample into half<sup>8</sup>. The break point hence is 1994. In other words, the first sample spans all 10-year periods ending before or in 1994, whereas the later sample covers all 10-year periods ending after 1994. Regressions (6) and (7) show that openness and trade have a positive impact on growth prior to 1994, but not afterwards<sup>9</sup>. Furthermore, we can now add a measure for foreign direct investment (FDI) to our regression to control for capital account movements in addition to current account trends. The results in regressions (8) through (10) show that openness has only a positive effect during periods prior to 1994, but not afterwards and neither for the entire sample. Since the estimates for the two sample periods are significantly different, our regression results show little support for the hypothesis that global deregulation is good for growth.

## **VI. Conclusion**

In this paper, we look at the short-term and long-run effects of global liberalization on the poor in developing economies. Our results indicate that more current and capital account liberalization hurt the poor. This is not because trade is directly harmful for the poor, but because of the institutional design under which trade is conducted. In particular, trade in a more deregulated environment lowers the income share of the poor, whereas

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<sup>8</sup> Absent other verifiable break points, this methodology appears to be soundest. Choosing decades instead seems rather arbitrary since it would divide the sample into a subperiod with the vast majority of observations, the 1990s, and a subperiod with only few observations, the 1980s.

<sup>9</sup> An F-test for the equality of the parameters for both subperiods rejects the null hypothesis that they are equal at the 1%-level with a calculated F-statistic of 8.10 and 52 and 453 degrees of freedom.

trade in a more regulated environment raises the share of the poor. The short-term effects on the income share of the poor is not offset by faster income growth in the long-run. Our results indicate that global deregulation has no measurable, robust impact on growth rates. Thus, there does not appear to be a trade-off between adverse effects in the short-run and long-run benefits for the poor.

However, our results also indicate that trade and possibly capital flows may have a beneficial effect on growth in the long-run, and no systematic adverse effect on the income share of the poor in a regulated environment. Hence, greater trade and capital mobility in a regulated environment, as was the case for the majority of countries for most of the sample period, appears to be a preferable development choice. More research, though, is needed to identify exactly, which types of regulations are specifically well-suited to reap the benefits from trade and capital flows, while letting the poor share in the gains in the short-term and in the long-run.

**Table 1**  
**Distribution of world income, ratio of top 10% to bottom 10%**

	1980	1990	1999
By countries			
Ratio of average incomes	86.2	125.9	148.8
Ratio of median incomes	76.8	119.6	121.8
By population			
Ratio of average incomes	78.9	119.7	117.7
Ratio of median incomes	69.6	121.5	100.8
By population, excluding China			
Ratio of average incomes	90.3	135.5	154.4
Ratio of median incomes	81.1	131.2	153.2

Note: Distributions are based on per capita GDP in current U.S. dollars (IMF 2001a).  
Source: Author's calculations based on IMF (2001a, 2001b).

**Table 2**  
**Regression Estimates for Determinants of Income Share of Poorest 20%**

Independent Variables	(1) OLS	(2) Random Effects	(3) LSDV	(4) Random Effects
Secondary school enrollment (%)	0.028*** (0.007)	0.024** (0.011)	0.0001 (0.031)	0.016 (0.011)
Govt. consumption expenditures/GDP (%)	-0.042 (0.046)	-0.062 (0.048)	-0.010 (0.083)	-0.062 (0.048)
Freedom	0.486* (0.286)	0.464* (0.271)	0.240 (0.346)	0.223 (0.273)
Openness	-1.597*** (0.417)	-0.930*** (0.373)	-0.937* (0.513)	-0.884*** (0.352)
Exports plus Imports/GDP (%)	0.002 (0.008)	0.006 (0.009)	0.020 (0.017)	0.005 (0.009)
Growth volatility (%)	-0.048 (0.048)	-0.050* (0.028)	-0.060** (0.030)	-0.052** (0.027)
Africa				-2.227*** (0.891)
Asia				-0.919 (0.844)
Latin America				-3.664*** (0.866)
Middle East				-0.393 (1.432)
Constant	4.91*** (0.869)	4.706*** (1.076)	5.144*** (1.983)	7.718*** (1.337)
Country Dummies	No	No	Yes	No
N	144	144	144	144
Adj. R-squared	0.15	n.a.	0.79	n.a.
Wald Chi-squared	n.a.	17.83***	n.a.	47.16***

Notes: All independent variables are five-year averages up to and including the present time period. LSDV indicates least squares with dummy variables. \* indicates significance at the 10%-level, \*\* indicates significance at the 5%-level, and \*\*\* indicates significance at the 1%-level.

**Table 3**  
**Regression Estimates for Determinants of Income Share of Poorest 20%, with Additional Instability Measure**

Independent Variables	(1) OLS	(2) Random Effects	(3) LSDV	(4) Random Effects
Secondary school enrollment (%)	0.024*** (0.008)	0.024** (0.011)	-0.0001 (0.031)	0.016 (0.011)
Govt. consumption expenditures/GDP (%)	-0.046 (0.045)	-0.063 (0.048)	-0.015 (0.085)	-0.064 (0.048)
Democracy	0.435 (0.284)	0.483* (0.278)	0.282 (0.364)	0.255 (0.278)
Openness	-1.324*** (0.434)	-0.961*** (0.387)	-0.970* (0.522)	-0.943*** (0.363)
Exports plus Imports/GDP (%)	0.002 (0.008)	0.006 (0.009)	0.019 (0.017)	0.005 (0.009)
Growth volatility (%)	-0.054 (0.048)	-0.049* (0.028)	-0.059* (0.030)	-0.051* (0.027)
Chance of currency crisis	1.551** (0.776)	-0.195 (0.593)	-0.270 (0.687)	-0.384 (0.571)
Africa				-2.288*** (0.900)
Asia				-0.993 (0.855)
Latin America				-3.743*** (0.878)
Middle East				-0.460 (1.442)
Constant	4.871*** (0.861)	4.712*** (1.08)	5.240*** (2.007)	7.808*** (1.349)
Country Dummies	No	No	Yes	No
N	144	144	144	144
Adj. R-squared	0.171	n.a.	0.788	n.a.
Wald Chi-squared	n.a.	17.81***	n.a.	47.20***

Notes: All independent variables are five-year averages up to and including the present time period. LSDV indicates least squares with dummy variables. \* indicates significance at the 10%-level, \*\* indicates significance at the 5%-level, and \*\*\* indicates significance at the 1%-level.

**Table 4**  
**Regression Estimates for Determinants of Income Share of Poorest 20%, with Alternative Period Averages**

Independent Variables	(1) OLS	(2) Random Effects	(3) LSDV	(4) Random Effects
Secondary school enrollment (%)	0.030*** (0.008)	0.014 (0.010)	-0.241* (0.427)	0.007 (0.010)
Govt. consumption expenditures/GDP (%)	-0.033 (0.042)	-0.055 (0.044)	0.032 (0.067)	-0.050 (0.043)
Democracy	0.493* (0.270)	0.514** (0.241)	0.480* (0.288)	0.331 (0.242)
Openness	-1.304*** (0.414)	-0.646* (0.351)	-0.241 (0.427)	-0.632** (0.327)
Exports plus Imports/GDP (%)	-0.002 (0.008)	0.006 (0.009)	0.022 (0.013)	0.004 (0.008)
Growth volatility (%)	-0.045 (0.049)	-0.048 (0.030)	-0.072** (0.030)	-0.050* (0.029)
Chance of currency crisis	0.221 (0.629)	-0.494 (0.456)	-0.451 (0.512)	-0.494 (0.436)
Africa				-2.753*** (0.878)
Asia				-1.251 (0.840)
Latin America				-3.967*** (0.844)
Middle East				-0.671 (1.412)
Constant	4.756*** (0.870)	4.831*** (1.021)	6.626*** (1.832)	8.132*** (1.274)
Country Dummies	No	No	Yes	No
N	155	155	155	155
Adj. R-squared	0.148	n.a.	0.79	n.a.
Wald Chi-squared	n.a.	14.89**	n.a.	49.62***

Notes: All independent variables are five-year averages up to and including the present time period. LSDV indicates least squares with dummy variables. \* indicates significance at the 10%-level, \*\* indicates significance at the 5%-level, and \*\*\* indicates significance at the 1%-level.

**Table 5**  
**Regression Estimates for 20-Year Average Growth Rates**

Independent variables	(1) Initial income only, full sample	(2) Initial income only, closed economies	(3) Initial income only, open economies	(4) Basic model	(5) Basic model, openness added	(6) Basic model, average openness added	(7) Basic model, trade added	(8) Basic model, openness and trade added
Log of initial income	-1.10 (0.78)	0.37 (1.07)	-4.22*** (0.35)	-0.75 (0.90)	-0.42 (1.03)	-0.79 (0.91)	-0.52 (0.92)	-0.52 (1.04)
Initial secondary school enrollment				-0.04* (0.02)	-0.04 (0.02)	-0.04* (0.02)	-0.05 (0.02)	-0.05** (0.02)
Avg. Govt. consumption expenditures/GDP (%)				-0.26* (0.14)	-0.25* (0.15)	-0.27* (0.15)	-0.22 (0.15)	-0.22 (0.15)
Avg. inv. (public and private)/GDP (%)				0.27*** (0.08)	0.29*** (0.08)	0.27*** (0.08)	0.27*** (0.08)	0.27*** (0.09)
Openness					-0.44 (0.65)			-0.002 (0.78)
Avg. Openness						0.47 (1.00)		
Avg. exports plus imports/GDP (%)							0.03 (0.02)	0.03 (0.03)
Avg. democracy				-0.78 (0.68)	-0.89 (0.70)	-0.73 (0.69)	-0.46 (0.72)	-0.46 (0.82)
Initial population density				0.47 (0.72)	0.34 (0.75)	0.41 (0.74)	0.20 (0.75)	0.20 (0.76)
Constant	8.96 (5.74)	-2.33 (7.80)	36.63*** (2.72)	6.48 (6.78)	4.03 (7.72)	6.80 (6.87)	2.72 (7.43)	2.72 (7.84)
F-test for all country dummies	21.59***	15.27***	258.43	14.33***	12.55***	11.15***	12.68***	10.51***
N	94	80	14	94	94	94	94	94
Adj. R-squared	0.05	0.02	0.04	0.20	0.23	0.21	0.23	0.23
F-statistic	1.99	0.12	147.45***	3.68***	3.18***	3.13***	3.40***	2.91**

Notes: All independent variables are five-year averages up to and including the present time period.\* indicates significance at the 10%-level, \*\* indicates significance at the 5%-level, and \*\*\* indicates significance at the 1%-level.

**Table 6**  
**Regression Estimates for 10-Year Average Growth Rates**

Independent variables	(1) Basic model, full sample	(2) Openness, full sample	(3) Average openness, full sample	(4) Trade, full sample	(5) Openness and trade, full sample	(6) Openness and trade, first subperiod	(7) Openness and trade, second subperiod	(8) Openness, trade and FDI, full sample	(9) Openness, trade and FDI, 1 <sup>st</sup> subperiod	(10) Openness, trade and FDI, 2 <sup>nd</sup> subperiod
Log of initial income	-4.021*** (0.49)	-4.14*** (0.49)	-3.98*** (0.50)	-4.09*** (0.49)	-4.05*** (0.49)	-4.17*** (0.56)	-7.22*** (0.96)	-4.76*** (0.51)	-3.37*** (0.65)	-7.41*** (0.81)
Initial secondary school enrollment	0.02** (0.01)	0.02* (0.01)	0.01 (0.01)	0.02** (0.01)	0.02* (0.01)	-0.01 (0.01)	0.04** (0.02)	0.03** (0.01)	-0.03 (0.02)	0.04** (0.02)
Avg. Govt. consumption expenditures/GDP (%)	-0.08* (0.05)	-0.09** (0.05)	-0.07 (0.05)	-0.07 (0.05)	-0.08* (0.05)	-0.09 (0.07)	-0.14 (0.10)	-0.09 (0.06)	-0.14 (0.10)	-0.12 (0.08)
Avg. inv. (public and private)/GDP (%)	0.26*** (0.03)	0.25*** (0.03)	0.25*** (0.03)	0.23*** (0.03)	0.23*** (0.02)	0.29*** (0.04)	0.11* (0.06)	0.20*** (0.03)	0.38*** (0.05)	0.13** (0.06)
Openness		0.56** (0.24)			0.42* (0.24)	1.39* (0.76)	0.01 (0.24)	0.33 (0.26)	1.18* (0.72)	0.18 (0.21)
Avg. Openness			0.85*** (0.30)							
Avg. exports plus imports/GDP (%)				0.03*** (0.01)	0.03*** (0.01)	0.04*** (0.02)	0.01 (0.02)	0.02*** (0.01)	0.02 (0.02)	0.02 (0.01)
Avg. FDI/GDP (%)								0.28*** (0.10)	0.37 (0.30)	-0.03 (0.09)
Avg. democracy		-0.65*** (0.23)	-0.57*** (0.23)	-0.68*** (0.23)	-0.63*** (0.23)	-0.17 (0.43)	-0.82* (0.45)	-0.34 (0.26)	0.39 (0.56)	-0.44 (0.46)
Initial population density		-0.22 (0.41)	-0.37 (0.41)	-0.46 (0.41)	0.46 (0.41)	0.83 (0.63)	1.51 (0.94)	-1.19 (0.85)	2.17 (1.72)	-0.67 (1.03)
Constant	28.74*** (3.48)	28.62*** (3.47)	27.14*** (3.51)	26.98*** (3.48)	27.06*** (3.48)	24.42*** (4.21)	52.20*** (6.66)	33.35*** (3.81)	16.73*** (5.49)	55.98*** (5.75)
F-test for all country dummies	23.61***	21.58***	20.92***	21.11***	17.17***	15.82***	22.15***	19.67***	16.75***	26.80***
N	510	510	510	510	510	254	256	346	174	172
Adj. R-squared	0.27	0.28	0.29	0.29	0.30	0.47	0.28	0.45	0.60	0.46
F-statistic	28.37***	25.33***	25.86***	26.59***	23.75***	22.47***	9.91***	26.23***	21.24***	26.80

Notes: All independent variables are five-year averages up to and including the present time period.\* indicates significance at the 10%-level, \*\* indicates significance at the 5%-level, and \*\*\* indicates significance at the 1%-level.

## Appendix

**Table A-1**  
**Variables used in regressions**

	Description	Source
Secondary school enrollment	School enrollment, secondary % gross.	(World Bank 2001c)
Government consumption expenditures/GDP (%)	Government consumption (national accounts basis) divided by GDP, both in current local currency.	(IMF 2001a, 2001c)
Democracy	Annual Survey of Freedom.	(Freedom House 2001)
Freedom	Annual Survey of Freedom.	(Freedom House 2001)
Openness	Sachs and Warner's "Background on Country Classifications Appendix," open=1, closed=0.	(Sachs and Warner 1995)
Exports plus imports/GDP (%)	Sum of exports and imports of goods and services (national accounts basis) divided by GDP, both in current local currency.	(IMF 2001a, 2001c)
Investment (public and private)/GDP (%)	Gross fixed capital formation divided by GDP, both in current local currency.	(IMF 2001a, 2001c)
Growth volatility	Five year standard deviation of the real GDP growth rate.	(IMF 2001c)
Chance of currency crisis	Monthly, period-ending local currency per U.S. dollar exchange rate and monthly total foreign reserves minus gold in U.S. dollars.	(IMF 2001c)
Log of initial income	Log of real per capita GDP in U.S. dollars, international pricing.	(Summers and Heston 1991)
Initial population density	Population in 1970 divided by land area.	(IMF 2001c and World Bank 2001c)
Income share of the poor	Income shares and shares imputed from GINI coefficients from UN-WIDER and World Bank data sets.	(UNWIDER 2000; World Bank 2001b)
Average growth rate	Logarithmic average growth rate.	(IMF 2001c)

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