

Trade Liberalization and Growth: New Evidence

Romain Wacziarg and Karen Horn Welch

A new data set of on openness indicators and trade liberalization dates allows the 1995 Sachs and Warner study on the relationship between trade openness and economic growth to be extended to the 1990s. New evidence on the time paths of economic growth, physical capital investment, and openness around episodes of trade policy liberalization is also presented. Analysis based on the new data set suggests that over the 1950–98 period, countries that liberalized their trade regimes experienced average annual growth rates that were about 1.5 percentage points higher than before liberalization. Postliberalization investment rates rose 1.5–2.0 percentage points, confirming past findings that liberalization fosters growth in part through its effect on physical capital accumulation. Liberalization raised the average trade to GDP ratio by roughly 5 percentage points, suggesting that trade policy liberalization did indeed raise the actual level of openness of liberalizers. However, these average effects mask large differences across countries. JEL codes: F1, F4, O4

Many developing countries have embarked on programs of external economic liberalization in recent decades. In 1960, just 22 percent of all countries, representing just 21 percent of the global population, had open trade policies, in the sense defined by Sachs and Warner (1995). By 2000, some 73 percent of countries, representing 46 percent of the world's population, were open to international trade (figure 1).¹

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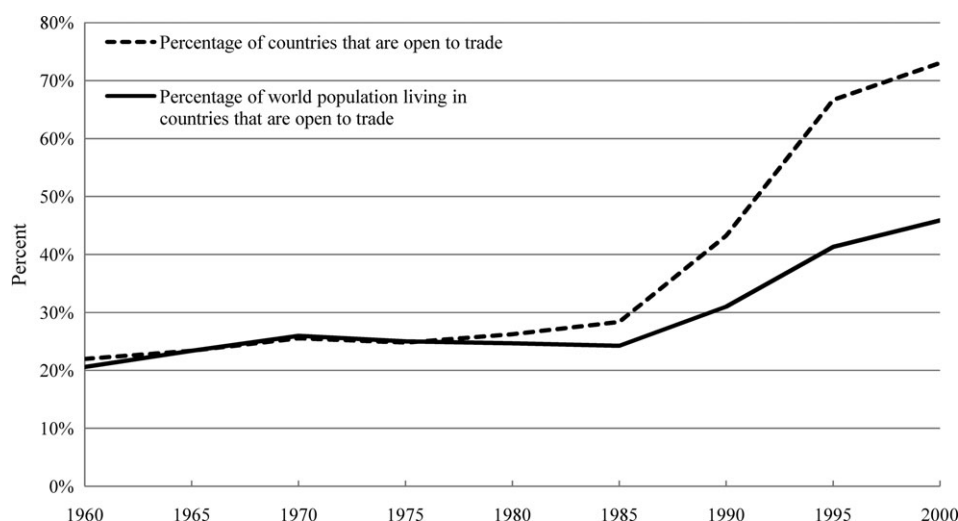
1. The main reason for the discrepancy between the share of countries that are open and the share of the world's population living in open countries is that as of 2000, the world's two largest countries, China and India, remained essentially closed. Sachs-Warner (1995) classify India as open as of 1994. The authors revisited this issue and could not confirm their finding. In fact, in terms of both policy indicators and trade volumes, China appears to be twice as open as India. This issue is discussed later in the article and in an appendix to the working version of this paper (Wacziarg and Welch 2003). For an in-depth comparison of the trade regimes of India and China, see Wacziarg (2003).

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FIGURE 1. Openness to Trade, 1960–2000 *Note:* Openness is defined according to the Sachs and Warner (1995) criteria. Sample includes 141 countries.



Source: Authors' analysis based on data described in the text.

The effect of this trend toward greater trade policy openness on per capita income growth is the topic of a large body of research. Until recently, a growing academic consensus had emerged that both trade policy openness and higher ratios of trade volumes to gross domestic product (GDP) were positively correlated with growth, even after controlling for a variety of other growth determinants. Attempts to establish a causal link also suggested a positive impact of trade.² In a sweeping critical survey of this literature, Rodríguez and Rodrik (2000) argue that these findings are less robust than claimed, because of difficulties in measuring openness, the statistical sensitivity of the specifications, the collinearity of protectionist policies with other bad policies, and other econometric difficulties. Further research on this important topic is called for in view of the doubts their study created about the linkages between trade openness and growth.³

Taking over where Rodríguez and Rodrik (2000) left off, the article pursues three goals. The first goal is to update the Sachs-Warner classification by

2. Particularly noteworthy are the contributions of Edwards (1992), Dollar (1992), Ben-David (1993), Sachs and Warner (1995), Ales and Glaeser (1999), and Alesina, Spolaore, and Wacziarg (2000). Among studies trying to establish a causal link running from openness to growth or income levels, see Frankel and Romer (1999), who measure openness by trade volumes, and Wacziarg (2001), who captures openness by using a composite trade policy index.

3. Harrison and Hanson (1999) also criticize the Sachs-Warner classification, in a spirit similar to that of Rodríguez and Rodrik. Their criticisms are revisited in detail later in the article.

presenting a comprehensive cross-country database of trade indicators (tariffs, nontariff barriers, and other measures of trade restrictions) and policy liberalization dates for the 1990s. The second goal is to extend the Sachs-Warner empirical results on outward orientation and growth to the 1990s. The third, and most important, goal is to exploit the timing of liberalization in a within-country setting to identify the changes in growth, investment rates, and openness associated with discrete changes in trade policy.

The availability of almost 50 years of data makes it possible to compare the performance of countries under liberalized and nonliberalized regimes across time. The main empirical analysis presents estimates for the within-country response of per capita income growth, the investment rate, and the ratio of imports plus exports to GDP to trade liberalization, controlling for country and time effects. New evidence is presented on the within-country path of growth in relation to the date of major trade policy changes. Evidence from the large sample is supplemented by a discussion of several developing countries' experiences with trade reform.

The cross-sectional results confirm recent criticisms of the Sachs-Warner findings by showing that these were sensitive to the openness classification used in the 1970–89 period and do not hold for the 1990s. The vast majority of countries in the sample used here are classified as having been open during the 1990s; a simple dichotomous indicator of openness no longer discriminates between slow- and fast-growing countries. The findings here suggest that researchers should exercise caution when using simple dichotomous policy indicators such as the Sachs-Warner dummy variable. However, the dates of trade liberalization—collected by Sachs-Warner from a comprehensive survey of a broad country-specific case literature and updated here to the late 1990s—can be used to estimate the within-country growth and investment effects of trade policy liberalization. In contrast to the cross-sectional findings presented here, the results based on within-country variation suggest that over time the effects of increased policy openness within countries are positive, economically large, and statistically significant.

The article examines a subsample of developing countries for which detailed information was collected on the broader economic and political context of trade reform. It then interprets the large sample results in the context of these country case studies. This effort reveals two lessons. First, the extent to which per capita income growth changed after trade reforms varied widely across countries. While the average effect obtained in the large sample is positive, roughly half of the countries experienced zero or even negative changes in growth following liberalization. Second, generalizations about the factors that may explain these differences are difficult to draw. The institutional environment of countries, the extent of political turmoil, the scope and depth of economic reforms, and the characteristics of concurrent macroeconomic policies all seem to have a role to play, to varying degrees in different countries. While this article paints a picture that is highly favorable to outward-oriented policy

reforms on average, it cautions against one-size-fits-all policies that disregard local circumstances.

The article is organized as follows. Section I presents an updated data set of liberalization dates and policy openness indicators and uses the data to replicate the Sachs-Warner growth regressions. Section II presents within-country evidence on trade liberalization, growth, investment, and trade volumes and discusses the timing of these effects. Section III examines 13 country cases of trade liberalization in order to illustrate the country-specific complexities that underlie the results from the larger sample. The last section provides some concluding remarks.

I. TRADE LIBERALIZATION IN THE 1990s

This section updates the Sachs-Warner classification and results. It also addresses the Rodríguez and Rodrik critique of their study.

The Sachs-Warner Criteria

An update of the Sachs-Warner classification is called for not only because of the problems with their classification of open and closed countries but also because the underlying data—on tariffs, nontariff barriers, exchange rate black market premia, socialist economic systems, and export marketing boards—are of independent interest. This section presents a comprehensive database of these variables for the 1990s. It also presents the results of a painstaking check of the Sachs-Warner classification of openness and updates their data on trade policy openness through 2000.

Sachs-Warner constructed a dummy variable for openness based on five individual dummy variables for specific trade-related policies. A country was classified as closed if it displayed at least one of the following characteristics:

- (1) Average tariff rates of 40 percent or more (TAR).
- (2) Nontariff barriers covering 40 percent or more of trade (NTB).
- (3) A black market exchange rate at least 20 percent lower than the official exchange rate (BMP).
- (4) A state monopoly on major exports (XMB).
- (5) A socialist economic system (as defined by Kornai 1992) (SOC).

Tariff and nontariff barriers restrict trade directly. A black market premium (BMP) on the exchange rate could have effects equivalent to formal trade restrictions. If, for example, exporters have to purchase foreign inputs using foreign currency obtained on the black market but remit their foreign exchange receipts from exports to the government at the official exchange rate, the BMP acts as a trade restriction. On the basis of Lerner symmetry between import tariffs and export taxes, Sachs-Warner also included the state monopoly on exports criterion as a trade restriction. The socialist regime dummy variable accounts for the trade-limiting aspects of centrally planned economies.

It is important to distinguish the Sachs-Warner dummy variable for openness, which pertains to the 1970s and 1980s, from the Sachs-Warner liberalization dates, which extend from 1950 to 1994 and were compiled independently using a different methodology. While the Sachs-Warner dummy variable was based on the five criteria cited above, the dates of liberalization were obtained from a comprehensive survey of country case studies of liberalization. Where possible, the criteria used to construct the cross-sectional dummy variable for the 1970s and 1980s were used to establish the date of liberalization. Data limitations and lack of consistency in the definitions of the available measures of trade restrictions across time periods, however, prevented Sachs-Warner from using their five criteria to establish the dates of liberalization.⁴ The Sachs-Warner methodology was followed as closely as possible in the update presented here.

An Openness Dummy Variable for the 1990s

The sample is based on the 118 countries included in the Sachs-Warner data set.⁵ The sample also includes the new data on 23 Eastern European countries and former Soviet republics included in version 6 of the Penn World Tables (Heston, Summers, and Aten 2002). The openness dummy variable (*OPEN90–99*) was based on the five criteria Sachs-Warner use, in order to maintain as much consistency as possible between their data set and the data used here. Data limitations made it impossible to update their dummy variable to the 1990s based on exactly the same data, however.⁶

The main differences between the two data sets include the following:

- (1) Because of data availability problems, unweighted tariff data were used here; Sachs-Warner used own import-weighted data. Countries that exceed the *TAR* threshold in the new data set based on unweighted data could conceivably not exceed the threshold based on weighted average data. This is unlikely to be a big problem, however, because the use of unweighted rather weighted tariffs does not result in countries being classified differently in the subsample in which both measures are available.
- (2) Nontariff barrier data comparable to those used by Sachs-Warner are hard to obtain. Sachs-Warner used average nontariff barrier data for 1985–88 from the Barro-Lee data set, itself based on data from the United Nations Conference on Trade and Development (UNCTAD). Their data cover only 29 countries for the period 1995–98. Where

4. As Sachs-Warner write (p. 24), “Our choice of dating is surely subject to further refinement. . . . We relied on a wide array of secondary sources, which sometimes contradicted each other.” The appendix to their article describes how they compiled their dates of liberalization and identifies the corresponding data sources for each country in their sample. A similar appendix for the updated dates is available in the working paper version of this study (Wacziarg and Welch 2003).

5. Sachs-Warner characterized the openness status of only 111 of these countries.

6. The data sources are detailed in Wacziarg and Welch 2003. The full data set is available in electronic format at www.stanford.edu/~wacziarg/papersum.html. Table 1-A displays the data used to construct the updated openness indicator.

comparable data on nontariff barriers were missing, the countries were classified based only on the other four Sachs-Warner criteria. The limited availability of nontariff barrier data for the 1990s based on a consistent definition required the compilation of an additional nontariff barrier data set, which may be independently useful to researchers. In addition to the 1995–98 average core nontariff barrier data used in the analysis, the data set contains average core nontariff barrier data for 1989–94 and 1999 data for all nontariff barriers.⁷

- (3) Sachs-Warner relied on an export marketing index from a World Bank study of African countries (Husain and Faruquee 1994) as the basis for their *XMB* variables and on the Kornai (1992) classification of socialist countries as the basis for their *SOC* dummy variable. In the absence of updated indices from single sources, the same methodology could not be used with the updated data. The *XMB* and *SOC* dummy variables were therefore obtained from a comprehensive review of country case studies. The *XMB* criterion is no longer confined to African countries (as it was in Sachs-Warner), but applies to all countries in the updated data. The definition of an export marketing board was expanded to encompass any form of state monopoly over major exports.⁸
- (4) Data on the BMP from Easterly and Sewadeh (2002), the primary source for updating these data, are missing for Belarus, Tajikistan, and Uzbekistan, and only very limited data are available for Armenia, Azerbaijan, Georgia, the Kyrgyz Republic, and Moldova. All are classified as open based on the overall index drawing on limited data. Whenever BMP data were available for former Soviet republics, the data indicate that in 2001 all of these countries except Latvia and Lithuania were closed.
- (5) Sachs-Warner deviated in some cases from their self-imposed classification rules. Some adjustments were meant to capture the fact that some countries had undergone changes in trade policy only mid-period, so that a classification based on period averages could be misleading. Other adjustments were made for others' reasons, described in their article. Lacking objective reasons to deviate from stated rules, the updated classification presented here abstains from any such adjustments.

Several features of the new data are worth noting. (The underlying data used to construct the openness status dummy variable for the period 1990–99 are displayed in table A-1.) First, 46 countries that were classified as closed by Sachs-Warner in the 1970–89 period are classified as open in the 1990s.

7. The difference in the definitions reflects the 1999 change in UNCTAD's reporting. Before 1999, UNCTAD collected data on core nontariff barriers, including quotas, licensing, prohibitions, and administered pricing. In 1999, it began reporting all nontariff barriers, which also include technical measures and automatic licensing.

8. Wacziarg and Welch (2003) provide additional details and country-specific sources on export marketing boards and the political transitions from socialism.

Sachs-Warner characterized nine of these countries as closed based on their dates of liberalization. Second, 30 countries were not classified in the Sachs-Warner study, including 23 Eastern European countries and former Soviet republics.⁹ Ten of these countries remained closed in the 1990s. Third, of the 111 countries Sachs-Warner classify, 78 were closed and 33 were open in the 1970–89 period. In the 1990s, 32 countries were closed and 79 open. Of the 141 countries classified in the new data set, 42 were closed and 99 open during the 1990s. No country that was classified as open by Sachs-Warner in 1970–89 was classified as closed in the updated data set.

An important and often overlooked drawback of the Sachs-Warner openness dummy variable is that it is based on averages of BMP data over each of two decades (1970–79 and 1980–89), averages of nontariff barriers and tariffs (TAR) over the last years of their sample period (1985–88), and end-of-period data for the export marketing board (XMB) and socialist (SOC) dummy variables. In the new data set, the XMB and SOC variables are based on their 1999 values rather than beginning-of-period or decade-long data, in order to maintain as much consistency as possible with the Sachs-Warner methodology.¹⁰ Similarly, the nontariff barrier data are available only for 1995–98; decade averages of the tariff data, which are available, are therefore used. As a result, some countries classified as closed could conceivably have become open late in the decade, and some countries classified as open could have been closed over most of the period. Decade dummy variables thus provide only a rough characterization of a country's outward orientation, especially in a decade in which many countries actively engaged in liberalization. A better approach is to rely more on liberalization dates, as is done below.

Trade Liberalization Dates since 1994

In principle, the liberalization date is the date after which all of the Sachs-Warner openness criteria are continuously met (data limitations often imposed reliance on country case studies of trade policy). The choice of liberalization dates was based on primary-source data on annual tariffs, nontariff barriers, and BMPs. A variety of secondary sources was also used, particularly to identify when export marketing boards were abolished and multiparty governance systems replaced Communist Party rule. Because of data limitations, the European Bank for Reconstruction and Development (EBRD 1994) classification and standards of

9. The other seven countries are Cape Verde, Iceland, Lesotho, Liberia, Malta, Panama, and Swaziland. Because of lack of data, Sachs-Warner did not classify these and four other countries (Comoros, Fiji, Seychelles, and Suriname). The new data set did not allow for the determination of the openness status of these four countries in the 1990s.

10. Sachs-Warner's XMB indicators are based on data from 1991; the SOC indicators are based on data from 1987. Using 1999 data is thus consistent with their approach, however questionable that approach may be. Most countries that abolished export marketing boards in the 1990s did so during the first half of the decade. However, relying on end-of-period SOC data means that some Eastern European countries and former Soviet republics are classified as open.

openness were used for several transition economies, just as they are in Sachs-Warner. Table A-2 presents the dates of trade liberalization.¹¹

Despite the clear criteria stated above, Sachs-Warner's dates of liberalization could not conform to their five formal criteria for openness, because comparable data were lacking for many time periods. Hence, there is much scope for disagreement with the Sachs-Warner classification, especially in light of new data published since their study. Systematic review of the Sachs-Warner dates since 1990 raised questions about the liberalization status or dates for several countries.¹² Sixteen countries labeled as closed at the end of the Sachs-Warner sample period (1994) liberalized between 1995 and 2001 (table 1).¹³ The dates of liberalization cited by Sachs-Warner differ in five countries (Côte d'Ivoire, the Dominican Republic, Mauritania, Niger, and Trinidad and Tobago).

Thirty-five countries remained closed as of 2001, including five that were not classified in the Sachs-Warner study and four (Belarus, Croatia, Estonia, and India) for which the authors disagree with Sachs-Warner's assessment (table 2). Of 141 countries in the sample, 18 liberalized between 1995 and 2001 and 35 remained closed as of 2001.

The Rodríguez and Rodrik Critique

Rodríguez and Rodrik (2000) find that the *BMP* and *XMB* variables played a major role in the classification of countries as open or closed. They state that a dummy variable for openness based on the *BMP* and *XMB* criteria alone leads to the classification of countries as open or closed that is much closer to that generated by *OPEN* (the Sachs-Warner dummy variable) than one based on the *SOC*, *TAR*, and *NTB* dummy variables alone. They show that the *BMP* and *XMB* criteria generate a dummy variable that differs from the Sachs-Warner dummy variable in only six cases, while the *TAR*, *NTB*, and *SOC* criteria used jointly generated a dummy variable that differs from the Sachs-Warner dummy variable in 31 cases. Hence, they argue that the Sachs-Warner dummy variable for 1970–89 largely reflected the *BMP* and *XMB* criteria. Moreover, they argue that the *XMB* criterion affected only the African countries (many of which were classified as closed based on this criterion alone) and therefore amounted to an Africa dummy variable.¹⁴

11. The working paper version of this study (Wacziarg and Welch 2003) provides detailed country summaries of liberalization episodes, along with an explanation of the dates chosen.

12. Wacziarg and Wallack (2004) systematically checked the Sachs-Warner liberalization dates before 1990 in a subset of their sample, uncovering little disagreement.

13. Table 1 also presents data for Cape Verde and Panama, which were not classified in the Sachs-Warner study.

14. Sachs-Warner based the *XMB* criterion entirely on the Husain and Faruquee's (1994) study of African countries that had been involved in a World Bank or International Monetary Fund structural adjustment program between 1987 and 1991. Rodríguez and Rodrik (2000) noted that Sachs-Warner classify all but one of the Sub-Saharan African countries as closed based on the *XMB* criterion, which is not applied to any other region. This study gathered and used *XMB* data for countries other than African ones.

TABLE 1. Liberalization Dates of Countries That Differ from or Were Not Included in Sachs-Warner List

Country	Date of liberalization
Cape Verde	1991
Dominican Republic	1992 ^a
Trinidad and Tobago	1992 ^a
Côte d'Ivoire	1994 ^a
Niger	1994 ^a
Armenia	1995
Azerbaijan	1995
Egypt, Arab Rep. of	1995
Mauritania	1995 ^a
Mozambique	1995
Tanzania	1995
Bangladesh	1996
Ethiopia	1996
Georgia	1996
Madagascar	1996
Panama	1996
Tajikistan	1996
Venezuela, R.B. de	1996
Burkina Faso	1998
Burundi	1999
Pakistan	2001
Serbia and Montenegro	2001
Sierra Leone	2001

^aYear differs from that in Sachs and Warner (1995) (see text for explanation).

Source: Authors' analysis based on data described in the text.

TABLE 2. Countries that Remained Closed as of 2001

Algeria	India ^a	Russian Federation
Angola	Iran, Islamic Rep. of	Rwanda
Belarus ^a	Iraq	Senegal
Central African Republic	Kazakhstan	Somalia
Chad	Lesotho ^b	Swaziland ^b
China	Liberia ^b	Syrian Arab Republic
Congo, Dem. Rep. of	Malawi	Togo
Congo, Rep. of	Malta ^b	Turkmenistan
Croatia ^a	Myanmar	Ukraine
Estonia ^a	Nigeria	Uzbekistan
Gabon	Papua New Guinea	Zimbabwe
Haiti		

^aDisagreement with Sachs and Warner (1995) (see text for explanation).

^bNot classified in Sachs and Warner (1995).

Source: Authors' analysis based on data described in the text.

To what extent are the updated Sachs-Warner data subject to the Rodríguez and Rodrik critique? *BMP* was the sole criterion on the basis of which 26 of

42 countries were classified as closed in the 1990s; *XMB* was the sole criterion on which nine countries were classified as closed. Three countries were classified as closed based on both the *BMP* and *XMB* criteria, leaving just four countries (Bangladesh, China, India, and Pakistan) classified as closed based on the other three criteria. Bangladesh was classified as closed based on both the *TAR* and *BMP* criteria. China was classified as closed based on the *BMP* and *SOC* criteria. India was classified as closed because of its tariff and nontariff barriers. Pakistan was classified as closed because of tariffs.

The *BMP* and *XMB* criteria generated a dummy variable that differs from the 1990–99 updated Sachs-Warner dummy variable in only two cases, while the *TAR*, *NTB*, and *SOC* criteria used jointly generate a dummy variable that differs from the updated Sachs-Warner dummy variable in 38 cases.¹⁵ The openness status dummy variable for 1990–99 is thus subject to the same criticisms Rodríguez and Rodrik lodged against the Sachs-Warner classification for the 1970–89 openness dummy variable.

The Rodríguez and Rodrik critique is valid in terms of country status based on the *OPEN90–99* dummy variable. It is less valid for the liberalization dates. As most countries were classified as closed based on the *XMB* and *BMP* criteria, not surprisingly, when they open up these variables change. The *XMB* and *BMP* variables determined the year of liberalization in many countries that opened up during the 1990s. The exceptions tend to be Eastern European countries and former Soviet republics, which opened based on the *SOC* criterion (general reforms related to liberalization). The *TAR* criterion was not a decisive factor in assigning a liberalization date for any country; *NTB* was the determining factor only in Panama. However, policy changes that reduced the *BMP* or removed *XMBs* were generally accompanied by changes in the levels of other types of trade barriers, such as tariff and nontariff barriers, that had initial values below the Sachs-Warner thresholds of 40 percent. Hence, liberalization dates do not simply capture changes in the *BMP* and *XMB* variables, but they also reflect broader liberalization. Given that the dates of liberalization in the new data set were cross-checked against a case study literature of outward-oriented reforms in developing countries, it is likely that they reflect important shifts in trade policy.¹⁶

Updating the Sachs-Warner Results

The Sachs-Warner study attracted considerable attention in part because their estimated effect of the cross-sectional dummy variable for openness in explaining annual growth between 1970 and 1989 was very large (about 2 percentage

15. Among the countries in which the *TAR*, *NTB*, and *SOC* dummy variables and the updated Sachs-Warner dummy variable disagree, 20 are in Africa and 10 are Eastern European countries or former Soviet republics. These countries were classified as closed based on either the *XMB* criterion or the *BMP* criterion, or both.

16. Wacziarg and Wallack (2004) show that the Sachs-Warner liberalization dates are good indicators of the timing of major trade policy changes by thoroughly checking these dates against the case study literature of trade liberalization in 25 developing countries.

points). The updated data on trade policy openness make it possible to extend the Sachs-Warner regressions through the late 1990s. As this is not the main focus of this article, these results are reported only briefly.

As a consistency check, the Sachs-Warner regression was first replicated for 1970–89 (column 1 in table 3 replicates column 7 in Sachs-Warner's table 11). The only difference is that the new calculations are based on a newer release of the Penn World Tables data (version 6 instead of version 5). The openness dummy variable for 1970–89 enters highly significantly, with a magnitude of 1.98 percentage points of annual growth. This result is consistent with the results in Sachs-Warner, who find a coefficient of 2.2. In contrast, the updated Sachs-Warner dummy variable enters insignificantly in the same specification for the 1990s (column 2 of table 3).

The cross-sectional effect of openness on growth was estimated by constructing openness indicators based on the dates of liberalization. The openness status for 1980, for example, takes on a value of 1 if a country had liberalized by 1980 and a value of 0 otherwise. Subsequent growth (after 1980) can then be regressed on this variable and other controls. Dummy variables were constructed for each decade (1970, 1980, and 1989) in this fashion. An advantage of this method over the period-specific dummy variables is that the period-specific dummy variables are based partly on information from the end of the period (*TAR*, *NTB*, *XMB*, and *SOC*) and partly on period averages (*BMP*). Constructing openness indicators based on the dates of liberalization instead isolates only the countries that were open at the beginning of a period.

The econometric specification is identical to that in Sachs-Warner; it restricts the time span of each regression to a single decade. The effect of the liberalization status in the 1970s is weaker and smaller than in the 1980s but positive and significant at the 90 percent level. The Sachs-Warner results were likely driven by the strong effect of liberalization on growth in the 1980s (columns 3 and 4 of table 3). This effect is positive but statistically indistinguishable from zero in the 1990s when countries are grouped according to their liberalization status as of 1989. These results suggest that the Sachs-Warner cross-sectional findings are highly sensitive to the decade under consideration and that the updated openness indicator can no longer effectively distinguish fast-growing from slow-growing countries.¹⁷

II. WITHIN-COUNTRY LIBERALIZATION DYNAMICS

This section argues that better use can be made of data on the dates of liberalization. With almost 50 years of data on growth and openness, it is possible to

17. Wacziarg and Welch (2003), who conduct many more replications of the initial Sachs-Warner cross-sectional findings, conclude that no matter how the liberalization dummy variable was defined, the results for the 1990s show an insignificant effect of the updated dummy variable on growth. This result is in sharp contrast with the results for the 1970–89 period.

TABLE 3. Replication of Sachs-Warner Cross-sectional Regressions

Variable	(1) Growth 1970–89	(2) Growth 1989–98	(3) Growth 1970–80	(4) Growth 1980–89	(5) Growth 1989–98
Real GDP per capita (t)	–1.5929 (4.89)	–1.150 (1.95)	–1.292 (2.83)	–1.397 (3.84)	–1.261 (2.13)
Sachs-Warner openness dummy variable(1970–89 or 1990–98 periods)	1.9845 (3.87)	0.136 (0.21)			
Openness status based on liberalization dates (t)			1.387 (1.86)	2.574 (4.17)	0.521 (0.84)
Secondary-school enrollment rate (t)	0.8059 (0.68)	4.689 (2.43)	0.169 (0.10)	1.822 (1.40)	4.872 (2.52)
Primary-school enrollment rate (t)	1.4003 (1.65)	1.381 (0.86)	2.455 (2.01)	–0.139 (0.11)	1.616 (0.99)
Government Consumption to GDP ratio ($t, t + X$)	–0.0844 (3.02)	–0.063 (1.32)	–0.005 (0.19)	–0.065 (2.51)	–0.059 (1.26)
Number of revolutions per year ($t, t + X$)	–0.4359 (0.58)	–0.986 (1.08)	–1.238 (1.12)	–0.211 (0.21)	–1.030 (1.13)
Number of assassinations per capita per year ($t, t + X$)	0.0296 (0.13)	0.483 (1.56)	0.276 (0.94)	0.188 (0.54)	0.473 (1.54)
Deviation of the price level of investment (t), as in Sachs-Warner	–0.1709 (0.53)	–0.734 (1.24)	–0.476 (0.99)	0.350 (0.87)	–0.721 (1.23)
Gross domestic investment/ real GDP ($t, t + X$)	0.0757 (2.64)	0.051 (1.01)	0.076 (2.02)	0.103 (2.30)	0.040 (0.76)
Extreme political repression (from Sachs-Warner)	–0.6974 (1.66)	0.165 (0.28)	–0.907 (1.47)	–0.780 (1.51)	0.224 (0.38)
Population density ($t - 10$)	0.0006 (0.90)	0.0009 (1.40)	0.001 (0.60)	0.001 (0.87)	0.001 (1.49)
Intercept	12.2482 (4.87)	7.752 (1.81)	9.334 (2.84)	10.635 (3.86)	8.288 (1.92)
Adjusted R^2	0.546	0.211	0.35	0.53	0.32
Number of observations	91	89	99	97	89

Note: Numbers in parentheses are t -statistics. The beginning date of each period (1970 in columns 1 and 3, 1980 in column 4, and 1989 in columns 2 and 5) is denoted by t . ($t, t + X$) denotes the average computed between dates t and $t + X$ ($X = 20$ in column 1 and 10 in columns 2–5). The dependent variable is defined as the real annual per capita growth rate of GDP in the relevant period.

Source: Authors' analysis based on data described in the text. Growth, income, and investment data are from Heston, Summers and Aten (2002).

assess the within-country effects of discrete changes in trade policy openness.¹⁸ This section compares the means of economic growth and other variables of interest, such as physical capital investment rates and trade volumes, under liberalized and nonliberalized regimes.

Liberalization and Growth

Fixed-effects regressions of growth on a binary liberalization indicator, defined by the dates of liberalization, were run to assess the within-country effect of growth on liberalization. The regressions amount to difference regressions in growth or difference-in-difference regressions in log income:

$$(1) \quad \log y_{it} - \log y_{it-1} = \alpha_i + \beta LIB_{it} + \varepsilon_{it}$$

where y_{it} is per capita income in country i at time t and $LIB_{it} = 1$ if t is greater than the year of liberalization and no reversals of the trade policy reforms have occurred, and 0 otherwise. The sample was not restricted to countries that underwent reforms. The residual term is modeled as $\varepsilon_{it} = \nu_i + \eta_t + \mu_{it}$ and in all regressions, the ν_i terms are treated as country fixed effects and η_t terms as fixed effects.

Over the sample period 1950–98, 31.7 percent of country-year observations occur in a liberalized regime ($LIB_{it} = 1$) (table 4). The conditional mean of annual growth of per capita GDP given that a country is liberalized is 2.71 percent, while the mean is 1.18 percent in a nonliberalized regime, a difference of 1.53 percentage points of annual growth. These simple conditional means are based on both cross-sectional and within-country variation.

Panel (1) of table 5 displays country and time fixed-effects regressions of growth on the liberalization indicator, in order to isolate within-country variation. The regression for 1950–98 indicates a within-country difference in growth between a liberalized and a nonliberalized regime of 1.42 percentage points (column 1). This coefficient is estimated with a high level of statistical precision (the t -statistic exceeds 5).¹⁹ The estimated within-country

18. Sachs and Warner provide some within-country evidence on liberalization and growth for a sample of 37 reformers, presenting estimates for one fixed-effects regression of growth on dummy variables for three time periods around liberalization episodes. They show that average growth was depressed by 0.88 percentage points in the three years before liberalization, rose 1.09 percentage points a year in the three years following liberalization, and rose 1.33 percentage points a year thereafter relative to growth in the three years before liberalization. These limited results are of the same order of magnitude as the more detailed research presented here, which investigates the robustness of these estimates, extends them in time (the sample period spans 1950–98 rather than 1966–93) and space (the sample includes up to 133 countries rather than 37), and presents new evidence on investment and openness.

19. This effect was estimated allowing for first-order autocorrelation of the residuals, using the Baltagi-Wu fixed-effects method. The coefficient on liberalization was 1.32, with a t -statistic of 4.14, in line with the fixed-effects results reported here. The simpler fixed-effects estimates, with t -statistics based on robust standard errors, are reported here because of concerns over the small T properties of the Baltagi-Wu estimator, particularly when the sample is restricted to specific decades.

TABLE 4. Summary Statistics for Variables Used in Fixed-Effects Regressions

Variable	Number of observations	Mean	Standard deviation	Minimum	Maximum
Liberalization	7,191	0.317	0.465	0.0	1.0
Investment rate (percent)	5,078	15.291	9.128	-3.590	52.880
Openness ratio	5,078	60.505	42.880	3.110	473.860
Growth (annual percent)	4,936	1.784	6.153	-48.732	43.754
Per capita GDP (purchasing power parity US\$)	5,072	5,739.380	5,826.636	276.000	39,129.000

Source: Authors' analysis based on data described in the text.

TABLE 5. Fixed-Effects Regressions of Growth, Investment, and Openness on Liberalization Status, 1950–98

Item	(1) 1950–98	(2) 1950–70	(3) 1970–90	(4) 1990–98
<i>Dependent variable: Growth</i>				
Liberalization	1.417 (5.05)	0.611 (1.29)	1.787 (3.11)	2.547 (2.39)
Number of observations	4,936	1,728	2,312	1,116
Number of countries	133	108	112	133
Adjusted R^2	0.05	0.03	0.04	0.04
<i>Dependent variable: Investment rate</i>				
Liberalization	1.937 (9.06)	2.545 (7.57)	1.237 (2.91)	0.762 (2.16)
Number of observations	5,078	1,844	2,321	1,140
Number of countries	136	110	117	136
Adjusted R^2	0.04	0.10	0.11	0.02
<i>Dependent variable: Openness</i>				
Liberalization	5.531 (7.42)	2.302 (1.89)	4.097 (3.74)	-1.803 (0.83)
Number of observations	5,078	1,844	2,321	1,140
Number of countries	136	110	117	136
Adjusted R^2	0.22	0.02	0.14	0.08

Note: Numbers in parentheses are robust t -statistics. Regressions are based on the specifications in equations (1)–(3). All regressions include time and country fixed-effects (estimates not reported).

Source: Authors' analysis based on data described in the text.

effect increases over time, reaching its maximum in the 1990s (column 2–4). These results stand in sharp contrast to the cross-sectional results: countries that liberalized in the 1990s experienced a larger postliberalization increase in growth than countries that liberalized in any other decade. Indeed, the estimated difference in growth in the 1990s is roughly 2.55 percentage points.

Liberalization and Investment

The empirical literature on trade and growth suggests that the effects of liberalization on economic growth are mediated largely by the rate of physical capital investment. Several researchers, including Levine and Renelt (1992), Baldwin and Seghezza (1996), and Wacziarg (2001), suggest that the investment rate is an important channel linking trade and growth. This finding is based largely on cross-country findings. Fixed-effects regressions of investment rates on the liberalization indicator were run in order to investigate this issue in a within-country context:

$$(2) \quad \frac{I_{it}}{Y_{it}} = \eta_i + \phi LIB_{it} + \omega_{it}$$

where I_{it} is physical capital investment and Y_{it} is GDP in country i at time t , and ω_{it} captures country and year effects.

Panel (2) of table 5 reports the estimates of such regressions. The within-country evidence confirms past cross-country findings. For the period 1950–98, countries with liberalized regimes experienced average rates of physical capital investment that were 1.94 percentage points higher than those of countries with nonliberalized regimes. This represents 20 percent of this variable's standard deviation in the pooled sample. The effect is largest in the initial period of the sample (1950–70).

Fixed-effects regressions of growth on the investment rate were run in order to get a rough notion of how much of the effect of trade policy openness on growth can be attributed to the investment channel. The coefficient on investment in the baseline 1950–98 regression was 0.15 percentage points, with a t -statistic of 8.05.²⁰ The effect of liberalization on investment in the corresponding regression was 1.94 percentage points. Multiplying the two yields an estimate of the effect of liberalization on growth through investment of roughly 0.29 percentage points, about 21 percent of the total effect of liberalization on growth. The analysis provides suggestive evidence that investment constitutes an important channel through which trade-centered liberalization affects growth within countries.

Liberalization and Openness

Is trade policy liberalization followed by a break in the volume of trade, as measured by the ratio of imports plus exports to GDP? If this is the case, it suggests that liberalization did increase the level of openness of the economy. Determining this effect is important, because announced reforms may be poorly implemented or counteracted by alternative trade barriers. If trade liberalization is associated

20. The full results are presented in the working paper version of this study (Wacziarg and Welch 2003).

with increases in trade volumes, one could be more confident that it actually raised the level of exposure of the reforming country to the world economy.²¹

This issue is examined by running the following regression:

$$(3) \quad \frac{X_{it} + M_{it}}{Y_{it}} = v_i + \delta LIB_{it} + w_{it}$$

where X_{it} denotes exports and M_{it} denotes imports. The results suggest that liberalization raises openness by 5.53 percentage points of GDP for the full sample period (Panel (3) of table 5). This effect is indistinguishable from zero in the 1990–98 time period, however, perhaps because more time is needed to observe the effects of recent liberalizations on trade volumes. In most periods, however, trade liberalization is associated with sustained and large increases in the effective level of exposure of the typical reforming country to the world economy.

Timing of Effects

The simple average difference between growth in nonliberalized and liberalized regimes may mask important timing issues. It provides no information on how soon the effects occur or whether they cease to be felt a few years after reform. This subsection examines the time path of growth, investment, and openness for an average country before and after liberalization.

Average annual growth rates, investment rates, and openness ratios are displayed in figures 2 through 4 for 20 years before and 20 years after liberalization in a sample of 81 countries that underwent permanent liberalizations (that is, liberalizations that were not reversed as of 2000). As several countries had varying numbers of years of data before and after their liberalization, the average at each point in time is based on different samples of countries.²²

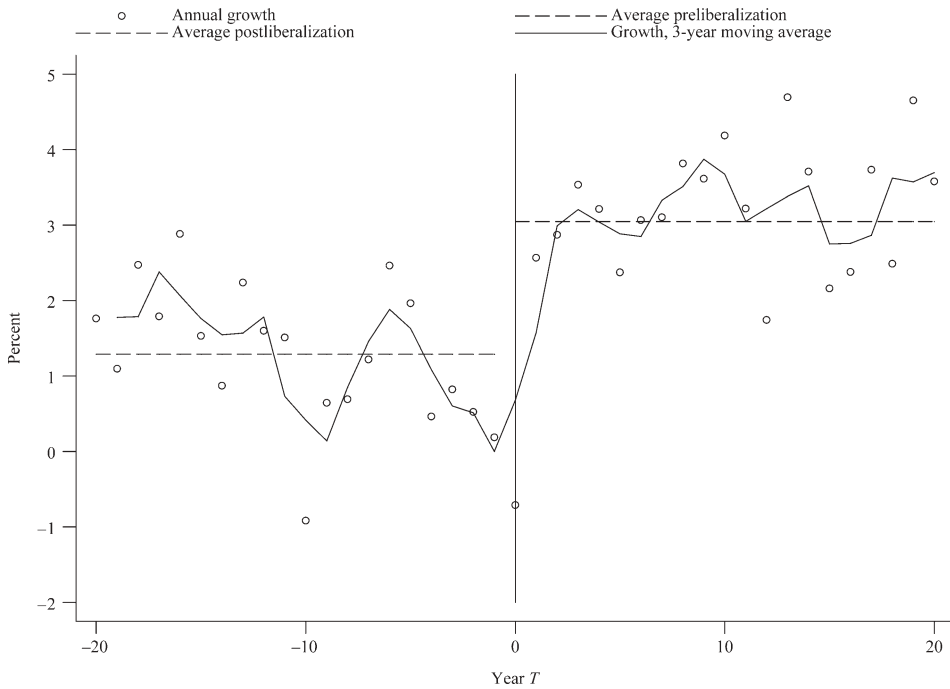
Several observations can be made about the figures. First, despite not controlling for any fixed effects, the increase in growth following liberalization is remarkably similar to that shown in table 5: growth before trade-centered reforms averages 1.5 percent and rises to roughly 3 percent postreform (figure 2). Second, there does not seem to be a strong time pattern: the effects appear to be immediate and do not die out after a few years. Third, the few years immediately preceding liberalization are low-growth years: reforms are often preceded by downturns or crises.

The investment rate seems to take off during the 10 years following liberalization and remain high thereafter (figure 3). The plotted effect seems larger than that uncovered in the fixed-effects regressions. Openness follows a more or less

21. Even absent effects on actual openness, liberalization could still have effects on growth and investment, through pro-competitive effects or technological transfers, for example.

22. The figures did not look different when the sample was restricted to countries with continuously available data. The availability of data forced a reduction in the time span to eight years before and after liberalizations and in the country coverage to 39 countries. These figures are available in the working paper version of this study (Wacziarg and Welch 2003).

FIGURE 2. Sample Means for Growth before and after Liberalization



Source: Authors' analysis based on data described in the text.

linear upward trend, without an apparent break at the date of liberalization (figure 4). More formal tests based on fixed effects did reveal an effect attributable to liberalization, even after controlling for time fixed effects, however.

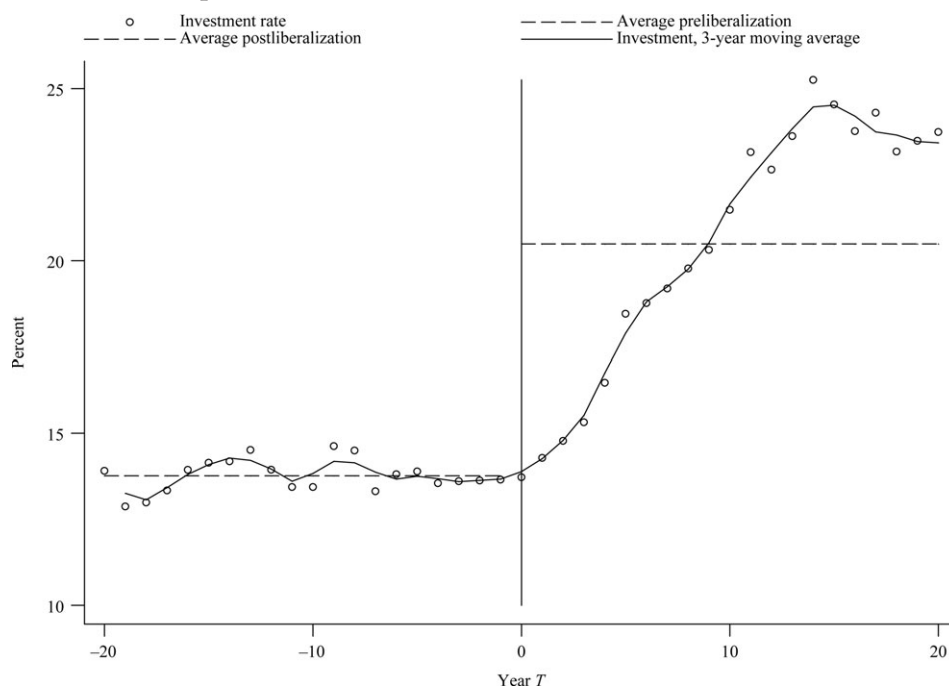
Dummy variables for four (nonoverlapping) periods surrounding the reforms were defined in order to further examine the timing of the growth, investment, and openness responses to liberalization. Fixed-effects regressions were then run on growth, investment, and openness. The specification is as follows:

$$(4) \quad \log y_{it} - \log y_{it-1} = \alpha_i + \beta_1 D_{1it} + \beta_2 D_{2it} + \beta_3 D_{3it} + \beta_4 D_{4it} + \varepsilon_{it}$$

where $D_{1it} = 1$ if $T - 3 \leq t \leq T - 1$ and zero otherwise; $D_{2it} = 1$ if $T \leq t \leq T + 2$; $D_{3it} = 1$ if $T + 3 \leq t \leq T + 6$, and $D_{4it} = 1$ if $t > T + 6$; and T denotes the date of liberalization. The coefficients on these dummy variables capture the average difference in growth between these years and the period preceding three years before liberalization (the baseline period). The corresponding specifications for the investment rate and openness ratio were also run (table 6).²³

23. Countries that experienced policy reversals or multiple liberalizations, for which definitions of the dummy variables are not straightforward, had to be dropped. Dropping these variables reduced the size of the sample for the growth regression from 133 to 118 countries.

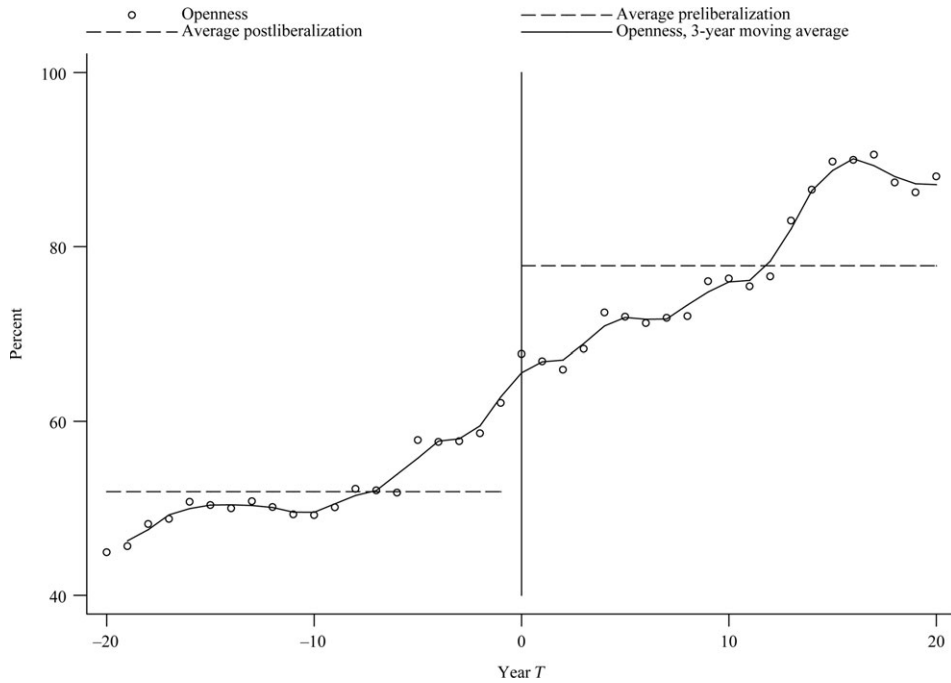
FIGURE 3. Sample Means for Investment before and after Liberalization



Source: Authors' analysis based on data described in the text.

The results are consistent with the observations made about figures 2–4. Countries that liberalize often do so following periods of economic turmoil: growth is depressed by 0.55 percentage points in the three years before liberalization relative to the preceding years. Tornell (1998) shows that 60 percent of episodes of economic reform, including trade reform, occur in the aftermath of a domestic political or economic crisis. Measuring growth differences relative to “early prereform” outcomes prevents falsely attributing to reforms growth differences that stem from depressed economic circumstances in the years immediately preceding the reforms. In the three years following liberalization, growth rises slightly (by 0.30 percentage points), but the effect is statistically indistinguishable from zero. Sustained growth differences become apparent three years after reform, with annual increases in growth of 1.44 points in period $T + 3$ to $T + 6$ and of 1.0 percentage point after that relative to the baseline period. The typical timing pattern revealed by these regressions shows growth to be slightly depressed before liberalization and to increase 1.0–1.5 percentage points three years after reforms. A similar pattern applies to investment and openness. These estimates reflect sample averages and may mask interesting country-specific differences, as discussed below.

FIGURE 4. Sample Means for Openness before and after Liberalization



Source: Authors' analysis based on data described in the text.

TABLE 6. Fixed-Effect Regressions: Timing of the Effects of Liberalization on Growth, Investment, and Openness

Item	(1) Growth	(2) Investment	(3) Openness
D_1	-0.555 (1.14)	-1.040 (2.88)	-1.979 (1.32)
D_2	0.300 (0.61)	-0.160 (0.41)	0.795 (0.63)
D_3	1.438 (3.27)	1.197 (2.98)	3.606 (2.21)
D_4	1.015 (2.30)	2.129 (5.47)	13.371 (9.17)
Number of observations	4,230	4,357	4,357
Number of countries	118	121	121
Adjusted R^2	0.04	0.08	0.26

Note: Number in parentheses are robust-statistics. Regressions are based on the specification in equation (4). All regressions include time and country fixed-effects (estimates not reported). Definition of dummy variables, where T represents the date of liberalization, is as follows: $D_1 = 1$ if $T - 3 \leq t \leq T - 1$ and zero otherwise. $D_2 = 1$ if $T \leq t \leq T + 2$ and zero otherwise. $D_3 = 1$ if $T + 3 \leq t \leq T + 6$ and zero otherwise. $D_4 = 1$ if $t > T + 6$ and zero otherwise.

Source: Authors' analysis based on data described in the text.

Concurrent Policies

It is difficult to attribute differences in growth purely to trade liberalization. Countries carrying out trade reforms often simultaneously adopt policies favoring domestic deregulation, privatization, and other microeconomic reforms and macroeconomic adjustments, making it difficult to interpret the coefficient on liberalization in a within-country growth regression as the total effect of trade liberalization per se.²⁴ A more realistic interpretation of these estimates is that they capture the impact of trade-centered reforms more broadly. In what follows, we describe our efforts to address this important concern.

SCOPE OF REFORMS. The working paper version of this study (Wacziarg and Welch 2003) distinguishes countries that carried out overall reforms from those that carried out external sector reforms in relative isolation from other domestic reforms. Wacziarg and Wallack (2004) examine 22 episodes of trade liberalization, most of them in developing countries in the 1980s. Fourteen of these episodes were accompanied by market-oriented domestic reforms; eight occurred in relative isolation from major shifts in domestic policy. The distinction between pure trade reforms and overall reforms was based largely on whether the countries implemented a substantial program of privatization and deregulation at the same time as trade reforms.

Isolating the sample of countries that were part of the Wacziarg and Wallack (2004) study and examining whether the within-country effects of liberalization on growth differed between trade reformers and overall reformers reveal several noteworthy findings. First, even though the sample was restricted to 22 countries, the estimates were remarkably similar to those obtained for the full sample of 133 countries. Second, the estimates of the impact of trade liberalization in countries that carried out trade reforms in isolation were similar to the corresponding estimates for countries that also reformed their domestic sectors, despite the crude nature of the distinction between overall reformers and pure trade reformers. While the interpretation of these suggestive results requires caution, a plausible conclusion is that the effect of trade-centered reforms is in large part attributable to an external reform component. This issue is further addressed below in the context of individual country experiences.

OTHER EXTERNAL REFORMS. Trade reforms are sometimes associated with other types of external reforms, such as capital market liberalization. To the extent such reforms are adopted simultaneously, estimates may capture the impact of these financial reforms rather than trade reforms. This argument is frequently invoked to criticize the type of estimates presented above.

24. An analogous point is often made in a cross-country context. Rodríguez and Rodrik (2000) and other observers suggest that “bad” government policies tend to go together, making it difficult to disentangle the effects of protectionist trade policy from those of poor macroeconomic management, poor governance, or poor institutions in general.

This issue is investigated by looking at data on the timing of financial reforms. Bekaert, Harvey, and Lunblad (2001) examine the impact of capital market liberalization on economic growth in a panel context, using both cross-sectional and within-country time variation. Using data from Bekaert and Harvey (2000) on the dates of official regulatory reforms pertaining to financial markets, they find robust positive effects of financial liberalization.²⁵ Their dates are compared with the dates of trade liberalization in the data set used here.

Bekaert and Harvey (2000) characterize the date of official financial liberalization for 40 of the 106 countries in the sample that had liberalized by 2001.²⁶ Of these, only two (Brazil and Turkey) have exactly the same year of official financial regulatory reform and trade liberalization. Only nine countries implemented financial sector reforms within three years before and after the date of trade liberalization, and just 17 did so within five years before and after. Many countries that enacted trade reforms never enacted financial liberalization, so the numbers cited above overstate the extent of coincidence between financial and trade liberalization dates. There is thus little evidence that trade reform and financial market liberalization occur concurrently and that the estimates may confound the effects of the two types of reform.

III. COUNTRY CASE STUDIES

The econometric results presented above summarize the effect of trade liberalization on growth and other variables for a sample of very diverse countries. Fixed-effects regressions allow all time-invariant country characteristics to be controlled for. The estimated coefficients on liberalization are not country-specific, however; they represent average responses. The reaction of individual countries to reforms is likely to vary, especially as the depth and scope of reforms differed across countries.

Much can be learned from the considerable heterogeneity in the response of growth to trade reform. This section examines specific cases of reform in countries representative of the broader sample for which enough data on growth, investment, and openness are available before and after reforms. The goal is to get a sense of the subtleties of reform in specific cases and to illustrate the economic mechanisms that give rise to the average estimated effects. The time paths of growth, investment, and openness are first examined for a subsample of 24 developing countries for which data are available for at least eight years before and after liberalization. A more detailed discussion then focuses on 13 of these countries.

25. Henry (1999, 2000) uses data on economic and political reforms for a smaller set of 18 developing countries.

26. Details of the comparison between the Bekaert and Harvey (2000) dates and the dates presented here are available on request.

The average difference in growth, investment rates, and openness ratios between the pre- and postliberalization periods is shown for 24 countries (table 7). The countries were chosen from the sample of 39 countries for which at least eight years of data are available on either side of the date of liberalization, restricting the sample to emerging markets, the main focus of this study. The data reveal positive growth differences in 13 of the 24 countries and negative differences in six of them; the remaining five countries exhibit an effect close to zero. Postliberalization growth effects appear large in Mauritius, Indonesia, Uruguay, Republic of Korea, Chile, Taiwan (China), and Uganda. Among countries that experienced positive differences, the magnitude of the growth increase ranged from 0.83 percentage points of per capita income growth in Poland to 3.62 points in Mauritius. The range of growth decline was of a similar magnitude.

Before and after comparisons of investment rates and openness also reveal large variations across countries. The postliberalization surge in investment rates was particularly strong in the Republic of Korea, Taiwan (China), Indonesia, Jordan, and Guinea-Bissau. About half of the 24 countries exhibited zero or negative differences in investment rates.

TABLE 7. Mean Growth, Investment, and Openness Changes in 24 Countries

Country	Growth difference	Investment difference	Openness difference	Year of liberalization	Sample period
Mauritius	3.62	0.34	35.90	1968	1951–98
Indonesia	3.32	9.80	25.96	1970	1961–98
Uruguay	3.08	–1.01	11.22	1990	1951–98
Korea, Rep. of	3.02	18.44	43.40	1968	1954–98
Chile	2.80	–1.12	26.33	1976	1952–98
Taiwan	2.29	9.91	55.77	1963	1952–98
Uganda	2.24	1.63	–6.60	1988	1951–98
Ghana	1.99	–3.91	9.13	1985	1956–98
Guinea	1.85	–2.74	7.28	1986	1960–98
Guyana	1.80	–7.49	84.49	1988	1951–98
Benin	1.74	1.64	8.72	1990	1960–98
Mali	1.19	0.86	15.68	1988	1961–98
Poland	0.83	–4.30	3.35	1990	1971–98
Paraguay	0.42	2.01	49.71	1989	1952–98
Cyprus	0.34	–4.05	29.13	1960	1951–96
Colombia	0.18	0.48	5.91	1986	1951–98
Tunisia	–0.30	–5.58	31.94	1989	1962–98
Philippines	–0.40	1.03	39.54	1988	1951–98
Israel	–0.96	–6.10	21.42	1985	1951–98
Botswana	–1.99	3.98	22.27	1979	1961–98
Mexico	–2.16	–4.59	17.56	1986	1951–98
Hungary	–2.41	–1.19	–4.17	1990	1971–98
Guinea-Bissau	–2.95	5.59	9.89	1987	1961–98
Jordan	–4.28	5.75	40.61	1965	1955–98

Source: Authors' analysis based on data described in the text.

Closer examination of postliberalization changes in growth, investment, and openness for a restricted sample of developing countries thus reveals considerable heterogeneity in their experiences with reform. The following case studies develop hypotheses that could account for these differences.

From the sample of 24 developing countries for which there are at least eight years of data on either side of liberalization, a subsample of 13 countries was selected to study in greater detail. A set of countries was chosen that was small enough to allow their preexisting conditions, overall policy environment, and macroeconomic circumstances to be examined while maintaining a geographically diverse sample reflecting the range of country-specific growth effects identified above. The goal was to uncover patterns that could explain cross-country differences in individual countries' responses to liberalization and suggest directions for future research.

The subsample was selected to include a geographically diverse set of countries that experienced growth effects of liberalization in roughly the same proportions as the 24 countries discussed above. It includes 13 countries, seven of which experienced higher mean growth rates following liberalization (Indonesia, Republic of Korea, Chile, Taiwan (China), Uganda, Ghana, and Poland). The growth difference was negative in four countries (Israel, Botswana, Mexico, and Hungary). In two countries, Colombia and the Philippines, liberalization was associated with roughly zero difference in their mean growth rates. Table A-3 describes all countries' concurrent reforms, macroeconomic environment, and political context.

Examination of these case studies suggests that the packaging and timing of reforms are important factors in explaining differences in postliberalization growth patterns. Countries that followed through by deepening trade reforms over time did better than countries that did not. Neither active governmental disengagement from industrial policy nor broad-based reforms were necessary conditions for success. Countries that counteracted short-lived programs of external liberalization with domestic interventions and countries that adopted tight macroeconomic policies, faced unfavorable terms of trade shocks, or suffered from political instability did not perform as well as other countries.

Sustained Reforms

In the majority of countries that experienced higher growth following liberalization, trade reforms were not strictly limited to the period of liberalization; these countries continued to deepen trade reform after liberalization. Chile, for example, which liberalized in 1976, recovered from the Latin American debt crisis and continued to grow during the late 1980s. During this period, it decreased tariffs and implemented several bilateral free trade agreements. Both Korea and Taiwan (China), which liberalized in the 1960s, continued to lower tariffs and remove nontariff barriers, particularly during the mid-1980s and

1990s. Indonesia sustained the initial reforms of 1970 with reductions in export duties in 1976 and additional trade-centered liberalization throughout the 1980s. In Uganda, the 1988 liberalization was followed by a second wave of external reforms in 1993–94.

Scope of Reforms

Whether trade reforms were part of a package of other domestic reforms or occurred in relative isolation does not seem to help predict the effect on growth. Among countries that implemented broad-based reforms, and in which postliberalization growth increased, Chile and Poland stand out as prototypical success stories of reform. Both implemented broad-based domestic reforms, of which trade liberalization was only a part. In Colombia, Hungary, and Mexico, which Wacziarg and Wallack (2004) classify as broad-based reformers, average growth following liberalization actually fell. Political instability is probably at the heart of Colombia's lack of increased growth. In Hungary, the decline may have occurred because the domestic portion of the reform program (banking sector reforms, privatizations) was in large measure delayed until 1995. To the extent that external and domestic reforms are complementary, the full effects for Hungary may not be apparent in the growth data, which extend only to 1998.

The case of Mexico is more complex. The privatization program began before trade liberalization, in 1984, with the sale of small- and medium-sized businesses, and continued after 1986, with the sale of larger enterprises, such as the national telephone company, parts of the banking industry, and the national airline. While Mexico maintained large government oligopolies that prevented broad industrial restructuring and resource reallocation, one can hardly argue that its entry into the General Agreement on Tariffs and Trade (GATT) in 1986 and the concurrent reduction in external barriers occurred in isolation from other domestic reforms.

The flip side of this coin is a country like Ghana, which, according to Wacziarg and Wallack (2004), implemented trade reforms in relative isolation (privatization, for instance, did not begin until the early to mid-1990s). It experienced a 2 percentage point increase in mean growth after the 1985 liberalization.

Other interesting cases are the success stories of Southeast Asia, where many economies, including Korea and Taiwan (China), implemented policies aimed at increasing foreign direct investment (FDI) at the same time or after external liberalization. Indonesia, Korea, and Taiwan (China) pursued growth strategies with widespread government involvement in the economy. In Indonesia, government involvement increased during the 1970s, after external liberalization began. Both Korea and Taiwan (China) adopted activist industrial policies, with the government involved in "picking winners." That the growth performance of these countries was unprecedented the 1998 Asian crisis shows that government disengagement from the economy is not a necessary condition for successful trade reforms. What all these countries shared was an

outward-oriented development model in which increasing exports was a central pillar of the growth strategy.

One cannot point to the breadth of reform as an unambiguous criterion explaining differences in the growth response to liberalization. The picture that emerges is far from simple. The set of economies that experienced higher growth following liberalization includes both those that maintained heavy government involvement in the economy (Indonesia, Korea, and Taiwan [China]) and those that actively reduced the role of government (Chile and Poland). The set of countries that experienced negative or zero growth differentials after liberalization includes Colombia, Hungary, and Mexico, countries that actively disengaged the government from domestic economic activity at the time of trade reforms.

Counteractive Policies

Some of the 13 countries in the sample implemented policies that actively counteracted the effects of trade reform and as a result did not experience increases in growth rates.²⁷ In Israel, social pacts based on broad coalitions of labor, government, and industry set the patterns for prices, wages, and the exchange rate in ways that mitigated the effects of trade openness on domestic producers. In the Philippines, trade liberalization was accompanied by a large increase in the share of state-owned enterprises in the economy, including a doubling of the share in GDP of financial transfers from the government to state-owned enterprises between 1987 and 1989. Such interventions, designed partly to protect domestic producers in the face of increased import competition, may have precluded the realization of gains from trade.

Macroeconomic Factors

Countries that did not experience growth increases after liberalization often suffered from mitigating circumstances, associated in particular with restrictive macroeconomic policies or terms of trade shocks. In Hungary and Mexico, two countries in which growth fell following liberalization, trade reform was followed by tight monetary policies involving high interest rates, which depressed growth. In Mexico, currency overvaluation undid the effects of trade liberalization in the late 1980s and early 1990s.

In Botswana, terms of trade considerations account for the absence of a postliberalization growth surge. Volatility on world diamond markets increased shortly after Botswana implemented trade reforms in 1979. The weak diamond market caused a recession in 1981–82 that resulted in a postliberalization growth rate that was about 2 percentage points lower than the preliberalization rate. Thus, terms of trade considerations are essential in accounting for the absence of a postliberalization growth surge in Botswana.

27. Wacziarg and Wallack (2004) discuss some of these cases in greater detail.

Political Instability

Several countries suffered from severe forms of political instability, preventing realization of the gains from trade liberalization. A prime example is Colombia, where instability persisted throughout the 1990s. Other examples include Israel and the Philippines. In contrast, economies that seem to have experienced higher growth following reform also witnessed periods of relative political stability. Taiwan (China) is a case in point, as are Chile, Indonesia, and Korea, where liberalization coincided roughly with the rise to power of authoritarian regimes, resulting in a degree of lasting political stability following periods of political unrest.

IV. CONCLUSION

This article presents an updated data set of trade policy indicators and liberalization dates. It revisits the evidence on the cross-country effects of Sachs-Warner's simple dichotomous indicator of outward orientation on economic growth, confirming the pitfalls of this indicator first identified by Rodríguez and Rodrik (2000). It shows that the Sachs-Warner dichotomous indicator effectively separates fast-growing from slow-growing countries in the 1980s and to a lesser extent in the 1970s, but fails to do so in the 1990s. Simple dichotomous indicators of outward orientation are too crude to capture the complexities of trade policy.

Instead, liberalization dates that capture episodes of discrete shifts in trade policy can be useful for estimating within-country growth responses. The Sachs-Warner dates of liberalization were painstakingly checked and updated, based on quantitative data and a thorough review of country-specific case studies of reform. The new and robust evidence indicates that these dates of liberalization mark breaks in growth, investment, and openness within countries. Over the 1950–98 period, countries that liberalized their trade regimes experienced average annual growth rates that were about 1.5 percentage points higher than before liberalization. Postliberalization investment rates rose 1.5–2.0 percentage points, confirming past findings that liberalization fosters growth in part through its effect on physical capital accumulation. Liberalization raised the average trade to GDP ratio by roughly 5 percentage points, after controlling for year effects, suggesting that trade policy liberalization did indeed raise the actual level of openness of liberalizers. Trade-centered reforms thus have significant effects on economic growth within countries.

These within-country estimates represent the average effect of liberalization on growth, investment, and openness; they mask differences in the individual responses of countries to trade liberalization. Restricting the sample to 13 countries sheds light on the sources of these differences. Countries that experienced positive effects tended to deepen trade reforms. But active industrial policies, such as those implemented in Southeast Asia, did not preclude growth

gains from trade liberalization, and broad-based reforms appear to be neither a necessary nor a sufficient condition for reaping these gains. Countries that experienced negative or no effects on growth tended to have suffered from political instability, adopted contractionary macroeconomic policies in the aftermath of reforms, or undertaken efforts to counteract trade reform by shielding domestic sectors from necessary adjustments. Future research should seek to clarify the factors accounting for heterogeneity in the growth effects of trade reform.

APPENDIX

TABLE A-1. Trade Policy Variables for Economies in Sample, 1990s

Economy	OPEN90-99 (1 = open) ^a	Average tariff, 1990- 99 (percent) ^b	Core nontariff barrier coverage rate (percent), 1995-98 ^c	Average BMP, 1990-99 (percent) ^d	Export Marketing Board (1 = country has exporting board) ^e	Socialist (1 = country is socialist) ^e
Albania	1	15.90	—	7.53	0	0
Algeria	0	23.97	—	177.91	0	0
Angola	0	—	—	23.62	0	0
Argentina	1	12.54	2.1	9.30	0	0
Armenia	1	—	—	0	0	0
Australia	1	7.91	—	0	0	0
Austria	1	6.91	—	0	0	0
Azerbaijan	1	—	—	0	0	0
Bangladesh	0	43.70	—	83.27	0	0
Barbados	1	15.58	—	2.31	0	0
Belarus	0	12.63	—	—	1	0
Belgium	1	6.91	—	0	0	0
Benin	1	28.61	1.0	1.93	0	0
Bolivia	1	10.34	—	1.49	0	0
Botswana	1	20.55	—	7.82	0	0
Brazil	1	17.32	21.6	13.76	0	0
Bulgaria	1	17.37	—	7.44	0	0
Burkina Faso	1	29.13	—	1.98	0	0
Burundi	0	7.40	—	29.55	0	0
Cameroon	1	18.43	—	1.98	0	0
Canada	1	6.81	—	0	0	0
Cape Verde	1	22.05	—	0	0	0
Central African Republic	0	12.80	—	1.55	1	0
Chad	0	15.80	—	1.98	1	0
Chile	1	11.33	5.2	9.84	0	0
China	0	31.06	—	35.89	0	1
Colombia	1	14.30	10.3	8.87	0	0
Congo, Dem. Rep. of	0	25.47	—	34.67	1	0
Congo, Rep. of	0	17.97	—	1.98	1	0
Costa Rica	1	10.60	6.20	5.37	0	0
Côte d'Ivoire	1	22.00	30.90	1.98	0	0
Croatia	0	—	—	37.76	0	0
Cyprus	1	10.64	21.60	2.16	0	0

(Continued)

TABLE A-1. Continued

Economy	OPEN90-99 (1 = open) ^a	Average tariff, 1990- 99 (percent) ^b	Core nontariff barrier coverage rate (percent), 1995-98 ^c	Average BMP, 1990-99 (percent) ^d	Export Marketing Board (1 = country has exporting board) ^e	Socialist (1 = country is socialist) ^e
Czech Republic	1	6.08	—	0.22	0	0
Denmark	1	6.91	—	0	0	0
Dominican Republic	1	16.70	6.20	16.31	0	0
Ecuador	1	11.29	—	9.34	0	0
Egypt, Arab Rep. of	1	30.23	—	12.45	0	0
El Salvador	1	9.38	5.20	13.59	0	0
Estonia	0	1.12	—	25.09	0	0
Ethiopia	0	22.55	—	111.43	0	0
Finland	1	6.91	—	0	0	0
France	1	6.91	—	0	0	0
Gabon	0	19.87	—	1.98	1	0
Gambia, The	1	13.55	—	4.69	0	0
Georgia	1	—	—	0	0	0
Germany	1	6.91	—	0	0	0
Ghana	1	14.93	—	2.96	0	0
Greece	1	6.91	—	1.24	0	0
Guatemala	1	10.27	—	6.03	0	0
Guinea	1	—	—	3.99	0	0
Guinea-Bissau	1	—	—	0	0	0
Guyana	0	13.70	—	28.23	0	0
Haiti	0	10.00	—	81.12	0	0
Honduras	1	8.90	—	9.21	0	0
Hong Kong (China)	1	—	2.10	-0.02	0	0
Hungary	1	12.11	—	5.40	0	0
Iceland	1	3.98	—	1.24	0	0
India	0	48.65	93.80	7.45	0	0
Indonesia	1	16.27	31.30	7.10	0	0
Iran, Islamic Rep.	0	—	—	1,199.31	0	0
Iraq	0	—	—	138,935.90	0	0
Ireland	1	3.98	—	2.50	0	0
Israel	1	7.80	—	2.09	0	0
Italy	1	6.91	—	0	0	0
Jamaica	1	14.68	—	15.46	0	0
Japan	1	5.98	—	-0.35	0	0
Jordan	1	15.83	—	3.37	0	0
Kazakhstan	0	—	—	55.34	0	0
Kenya	1	27.47	—	15.94	0	0
Korea, Rep. of	1	11.28	25.00	0.03	0	0
Kyrgyz Republic	1	—	—	—	0	0
Latvia	1	5.73	—	7.29	0	0
Lesotho	1	17.40	—	3.49	0	0
Liberia	0	—	—	2,306.86	0	0
Lithuania	1	4.33	—	7.45	0	0
Luxembourg	1	6.91	—	0.38	0	0
Macedonia, FYR	1	—	—	18.45	0	0
Madagascar	1	7.13	—	5.93	0	0
Malawi	0	19.80	—	28.83	0	0
Malaysia	1	11.70	19.60	1.35	0	0

(Continued)

TABLE A-1. Continued

Economy	OPEN90-99 (1 = open) ^a	Average tariff, 1990- 99 (percent) ^b	Core nontariff barrier coverage rate (percent), 1995-98 ^c	Average BMP, 1990-99 (percent) ^d	Export Marketing Board (1 = country has exporting board) ^e	Socialist (1 = country is socialist) ^e
Mali	1	15.66	—	1.98	0	0
Malta	1	7.23	—	1.20	0	0
Mauritania	1	28.23	—	1.55	0	0
Mauritius	1	27.00	16.70	5.25	0	0
Mexico	1	12.53	13.40	2.24	0	0
Moldova	1	—	—	0	0	0
Morocco	1	23.75	13.40	3.54	0	0
Mozambique	1	16.25	—	6.87	0	0
Myanmar	0	5.70	—	2,280.77	0	0
Nepal	0	15.28	—	24.23	0	0
Netherlands	1	6.91	—	0	0	0
New Zealand	1	6.35	—	2.50	0	0
Nicaragua	1	9.90	—	9.98	0	0
Niger	1	18.30	—	1.87	0	0
Nigeria	0	29.74	11.50	151.32	0	0
Norway	1	4.87	—	0	0	0
Pakistan	0	54.73	—	9.74	0	0
Panama	1	10.67	—	0	0	0
Papua New Guinea	0	16.67	—	16.57	1	0
Paraguay	1	10.91	0.00	11.83	0	0
Peru	1	16.80	—	8.75	0	0
Philippines	1	19.09	—	4.36	0	0
Poland	1	12.46	—	2.42	0	0
Portugal	1	6.91	—	2.04	0	0
Romania	0	13.50	—	104.30	0	0
Russian Federation	0	11.24	—	50,979.69	1	0
Rwanda	0	38.40	—	50.78	0	0
Senegal	0	13.05	—	1.98	1	0
Sierra Leone	0	30.25	—	61.47	0	0
Singapore	1	0.32	2.10	0.80	0	0
Slovak Republic	1	7.35	—	5.34	0	0
Slovenia	1	10.60	—	10.06	0	0
Somalia	0	—	—	246.55	0	0
South Africa	1	9.05	8.30	3.46	0	0
Spain	1	6.91	—	1.71	0	0
Sri Lanka	1	24.34	22.70	7.84	0	0
Swaziland	1	15.10	—	7.62	0	0
Sweden	1	6.91	—	0.00	0	0
Switzerland	1	1.38	—	0.00	0	0
Syrian Arab Republic	0	16.00	—	279.97	0	0
Taiwan (China)	1	9.85	—	0.95	0	0
Tajikistan	1	—	—	—	0	0
Tanzania	0	25.12	—	22.17	0	0
Thailand	1	29.54	17.50	1.80	0	0
Togo	0	15.25	—	1.98	1	0
Trinidad and Tobago	1	14.86	—	13.22	0	0
Tunisia	1	28.25	—	3.67	0	0
Turkey	1	15.28	19.80	1.15	0	0

(Continued)

TABLE A-1. Continued

Economy	OPEN90-99 (1 = open) ^a	Average tariff, 1990- 99 (percent) ^b	Core nontariff barrier coverage rate (percent), 1995-98 ^c	Average BMP, 1990-99 (percent) ^d	Export Marketing Board (1 = country has exporting board) ^e	Socialist (1 = country is socialist) ^e
Turkmenistan	0	—	—	42.86	1	0
Uganda	1	14.37	3.10	19.33	0	0
Ukraine	0	9.73	—	9.02	1	0
United Kingdom	1	6.91	—	0.00	0	0
United States	1	5.96	—	0.00	0	0
Uruguay	1	14.00	0.00	9.88	0	0
Uzbekistan	0	—	—	Dual exchange rate	0	0
Venezuela	1	14.31	17.70	4.13	0	0
Yemen, Re. of	1	20.00	—	8.34	0	0
Serbia and Montenegro	0	—	—	106.44	0	0
Zambia	0	18.43	1.00	62.55	0	0
Zimbabwe	0	20.43	—	132.81	0	0

— not available.

^aBased on application of Sachs and Warner (1995) criteria; see Wacziarg and Welch (2003) for details.

^bUnweighted average tariff, 1990-99, based on data from UNCTAD (2001), World Bank (2000), and WTO (various years).

^cCoverage rate of core nontariff barriers (quotas, licensing, prohibitions, and administered pricing) on capital good and intermediates, based on data from Michalopoulos (1999).

^dFigures represent [(parallel exchange rate/official exchange rate) - 1] *100, based on data from Easterly and Sewadeh (2002).

^eBased on literature reviews; see Wacziarg and Welch (2003) for details.

Source: Author compilation.

TABLE A-2. Liberalization and Openness Dates for Countries in Sample

Economy	Period of temporary liberalization (where applicable)	Year uninterrupted openness began ^a	
		Sachs and Warner (1995)	Wacziarg and Welch (2003)
Albania		1992	1992
Algeria		Closed	Closed
Angola		Closed	Closed
Argentina		1991	1991
Armenia		Closed	1995
Australia		1964	1964
Austria		1960	1960
Azerbaijan		Closed	1995
Bangladesh		Closed	1996
Barbados		1966	1966
Belarus		1994	Closed

(Continued)

TABLE A-2. Continued

Economy	Period of temporary liberalization (where applicable)	Year uninterrupted openness began ^a	
		Sachs and Warner (1995)	Wacziarg and Welch (2003)
Belgium		1959	1959
Benin		1990	1990
Bolivia	1956–79	1985	1985
Botswana		1979	1979
Brazil		1991	1991
Bulgaria		1991	1991
Burkina Faso		Closed	1998
Burundi		Closed	1999
Cameroon		1993	1993
Canada		1952	1952
Cape Verde		n.a.	1991
Central African Republic		Closed	Closed
Chad		Closed	Closed
Chile		1976	1976
China		Closed	Closed
Colombia		1986	1986
Congo, Dem. Rep. of		Closed	Closed
Congo, Rep. of		Closed	Closed
Costa Rica	1952–61	1986	1986
Côte d'Ivoire		Closed	1994
Croatia		1993	Closed
Cyprus		1960	1960
Czech Republic		1991	1991
Denmark		1959	1959
Dominican Republic		Closed	1992
Ecuador	1950–82	1991	1991
Egypt, Arab Rep.		Closed	1995
El Salvador	1950–61	1989	1989
Estonia		1992	Closed
Ethiopia		Closed	1996
Finland		1960	1960
France		1959	1959
Gabon		Closed	Closed
Gambia, The		1985	1985
Georgia		Closed	1996
Germany		1959	1959
Ghana		1985	1985
Greece		1959	1959
Guatemala	1950–61	1988	1988
Guinea		1986	1986
Guinea-Bissau		1987	1987
Guyana		1988	1988
Haiti		Closed	Closed
Honduras	1950–61	1991	1991

(Continued)

TABLE A-2. Continued

Economy	Period of temporary liberalization (where applicable)	Year uninterrupted openness began ^a	
		Sachs and Warner (1995)	Wacziarg and Welch (2003)
Hong Kong (, China)		Always open	Always open
Hungary		1990	1990
Iceland		n.a.	n.a.
India		1994	Closed
Indonesia		1970	1970
Iran, Islamic Rep. of		Closed	Closed
Iraq		Closed	Closed
Ireland		1966	1966
Israel		1985	1985
Italy		1959	1959
Jamaica	1962–73	1989	1989
Japan		1964	1964
Jordan		1965	1965
Kazakhstan		Closed	Closed
Kenya	1963–67	1993	1993
Korea, Rep. of		1968	1968
Kyrgyz Republic		1994	1994
Latvia		1993	1993
Lesotho		n.a.	Closed
Liberia		n.a.	Closed
Lithuania		1993	1993
Luxembourg		1959	1959
Macedonia, FYR		1994	1994
Madagascar		Closed	1996
Malawi		Closed	Closed
Malaysia		1963	1963
Mali		1988	1988
Malta		n.a.	Closed
Mauritania		1992	1995
Mauritius		1968	1968
Mexico		1986	1986
Moldova		1994	1994
Morocco	1956–64	1984	1984
Mozambique		Closed	1995
Myanmar		Closed	Closed
Nepal		1991	1991
Netherlands		1959	1959
New Zealand		1986	1986
Nicaragua	1950–60	1991	1991
Niger		Closed	1994
Nigeria		Closed	Closed
Norway		Always open	Always open
Pakistan		Closed	2001
Panama		n.a.	1996

(Continued)

TABLE A-2. Continued

Economy	Period of temporary liberalization (where applicable)	Year uninterrupted openness began ^a	
		Sachs and Warner (1995)	Wacziarg and Welch (2003)
Papua New Guinea		Closed	Closed
Paraguay		1989	1989
Peru	1948–67	1991	1991
Philippines		1988	1988
Poland		1990	1990
Portugal		Always open	Always open
Romania		1992	1992
Russian Federation		Closed	Closed
Rwanda		Closed	Closed
Senegal		Closed	Closed
Serbia and Montenegro		Closed	2001
Sierra Leone		Closed	2001
Singapore		1965	1965
Slovak Republic		1991	1991
Slovenia		1991	1991
Somalia		Closed	Closed
South Africa		1991	1991
Spain		1959	1959
Sri Lanka	1950–56; 1977–3	1991	1991
Swaziland		n.a.	Closed
Sweden		1960	1960
Switzerland		Always open	Always open
Syrian Arab Republic	1950–65	Closed	Closed
Taiwan (China)		1963	1963
Tajikistan		Closed	1996
Tanzania		Closed.	1995
Thailand		Always open	Always open
Togo		Closed.	Closed
Trinidad and Tobago		Closed.	1992
Tunisia		1989	1989
Turkey	1950–53	1989	1989
Turkmenistan		Closed	Closed
Uganda		1988	1988
Ukraine		Closed	Closed
United Kingdom		Always open	Always open
United States		Always open	Always open
Uruguay		1990	1990
Uzbekistan		Closed	Closed
Venezuela, R.B. de	1950–59; 1989–93	Closed	1996
Yemen, Rep.		Always open	Always open
Zambia		1993	1993
Zimbabwe		Closed	Closed

Note: n.a. means not classified. Closed denotes countries closed as of 1994 in the Sachs-Warner column and closed as of 2000 in the Wacziarg-Welch column.

^aBased on the Sachs and Warner (1995) criteria and broader literature review. See Wacziarg and Welch (2003) for details.

TABLE A-3 Trade Liberalization and Concurrent Events in Subsample of 13 Countries

Country (year of liberalization)	Sample period	Concurrent events
<i>Countries that experienced negative or zero growth after liberalization</i>		
Botswana (1979)	1961–98	Since gaining independence in 1966, Botswana has had one of the fastest growth rates in the world (IMF 2002), growing at an annual rate of 7.7 percent between 1965 and 1998 (Rodrik 2003). Income per capita (in purchasing parity power-adjusted terms in 1998) was four times the African average. Botswana experienced a mean growth difference of –1.99 percent in the years before and after liberalization. This differs that despite trade liberalization and an export-oriented economy, government intervention has been high in Botswana, where the public sector accounts for a large share of the economy. Botswana's economy expanded when diamond mining began in 1971. The recession of 1981/82 was partly a result of a weak world diamond market. The late 1980s were a period of new mining activity and strong demand that supported overall economic growth. During the early to mid-1990s, recessionary conditions on the world diamond market led to a severe economic slump in Botswana. Because diamond exports account for 70 percent of Botswana's export earnings and more than a third of its GDP, volatile diamond prices have had a significant impact on the country's overall economic growth. Despite volatility, growth remained positive throughout most of the sample period, however (EIU various years; IMF 2002).
Colombia (1986)	1951–98	In December 1990, Colombia was unable to repay its debt principal payments; it was unable to refinance its debt until April 1991. In the wake of this crisis, Colombia pursued a variety of market-oriented reforms in addition to further trade liberalization. Price controls were lifted, a financial sector reform was implemented, the exchange control system was liberalized, the regulatory framework was modernized, and some industries were privatized (Wacziarg and Wallack 2004). Throughout the 1990s, substantial trade reforms were implemented, including bilateral trade agreements with other Latin American countries in 1993/94 (Henry 1999). The rise in civil unrest beginning in 1992 and the political instability that persisted throughout the 1990s likely limiting postliberalization economic growth.

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
Hungary (1990)	1971–98	Hungary experienced a period of declining growth and poor economic conditions between 1971 and 1991. In 1988–89, the leader of the majority party changed after 30 years, and a period of political uncertainty ensued. In 1989, the new government implemented a stabilization program that included higher taxes, tighter monetary policy, and the devaluation of the currency (World Bank 1995). In 1990/91, Hungary implemented an IMF restructuring program. In 1995, it implemented structural reforms, including currency devaluation, a new exchange rate mechanism, a tight wage policy in the public sector, and fiscal measures to enhance revenues and cut expenditures. Hungary accelerated privatization efforts, restructuring enterprises (including major commercial banks) and implementing financial sector and public finance reforms in the mid-1990s. Significant improvements were also made in the legal and regulatory framework of the financial sector (Wacziarg and Wallack 2004). Economic recovery began in 1992/93. During the mid-1990s, Hungary adhered to the IMF plan and experienced gradual stabilization and recovery. Growth did not return to the levels seen before liberalization, however. Persisting high levels of debt and current account deficits may have limited the gains from trade liberalization. In addition, in 1993 the government tightened monetary policy and increased interest rates, which likely dampened the economic recovery (World Bank 1995). While structural reforms were implemented in 1995, the full effects may not have been evident before the end of the study period (1998).
Israel (1985)	1951–98	The wars of 1967 and 1973 limited economic growth. In 1977, both tariff and currency barriers were relaxed; in 1979, the government approved a five-year plan to reduce inflation and customs rates. In January 1980, tariffs were further reduced on imports from the European Economic Community. Israel invaded Lebanon in June 1982; roughly a year later it entered a deep economic crisis, characterized by triple-digit inflation, a widening trade gap, rapidly mounting foreign debt, and significant real exchange rate appreciation. In July 1985, the government implemented an emergency economic stabilization plan in order to stop hyperinflation; it also signed a free trade agreement with the United States (Henry 1999). Inflation dropped significantly in late 1985 and 1986, and the IMF announced its support of Israeli reform efforts. In 1986, Israel fixed the exchange rate to a trade-weighted currency basket. In January 1987, it devalued the currency 19 percent and implemented other changes affecting the tax system and money markets.

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
		Despite devaluations of the currency in 1988 and 1989, the interest rate increased, because of currency volatility. In 1991, Israel implemented a crawling band exchange rate system. The shekel was devalued by 6 percent in order to boost the economy, which was suffering as a result of the Gulf War. In November 1995, a free trade area treaty affirming Israel's special trade status with the European Union was signed (Henry 1999). Despite trade reforms implemented throughout the period, Israel's heterodox stabilization program may have offset the effects of trade liberalization. Social pacts based on broad coalitions of labor, government, and industry set the patterns for prices, wages, and the exchange rate (Wacziarg and Wallack 2004). In addition, inflation, currency volatility, and high interest rates in the late 1980s and early 1990s reduced Israel's competitiveness and the gains from trade.
Mexico (1986)	1951–98	The 1940s–1960s was a period of political and social stability and relatively rapid economic growth in Mexico (Tornell 2002). In the early 1970s, expansionary fiscal and monetary policy led to increasing levels of debt, escalating prices, and an overvaluation of the exchange rate. By 1976, inflation was increasing and private investment decreasing. In August 1976, the government was forced to devalue the peso and decrease government expenditure (Gonzalez 1994). The discovery of oil in 1977 stimulated the economy between 1978 and 1982: in 1981, oil accounted for three-fourths of Mexico's exports. Government spending, financed by international borrowing, increased, however, resulting in the overvaluation of the peso. By mid-1981, the international price of oil had fallen; by 1982, Mexico declared itself unable to service its debt. The government devalued the peso by 30 percent in February 1982 and implemented a two-tiered foreign exchange system in August 1982. Mexico experienced a severe recession during the Latin American debt crisis of 1982–83 (Gonzalez 1994).

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
		In 1984, Mexico pursued a policy of privatization and liberalization in order to attract FDI (Henry 1999). In 1985, it implemented a program of stabilization and structural adjustment, including trade liberalization. It joined GATT in 1986 and significantly reduced import restrictions and tariff barriers. A debt-rescheduling agreement was signed in August 1985. In July 1986, an IMF agreement was implemented, facilitating additional debt restructuring. Further trade liberalization measures were implemented in August 1987 (Henry 1999). Mexico also pursued a privatization program during the 1980s, which continued into the 1990s, with the privatization of the banking industry (Henry 1999; Wacziarg and Wallack 2004). An economic and fiscal crisis occurred again in 1994–95. It was accompanied by a period of political unrest, including the Chiapas uprising and the assassination of several PRI figures (Henry 1999). In December 1994, Mexico devalued the peso and implemented a floating exchange rate regime. In 1995, it received a bailout, which prevented it from defaulting on its debt and granted it continued access to international capital markets (Tornell 2002). Despite the economic recovery and trade liberalization that occurred in the late 1980s, Mexico never recovered to its precrisis levels of growth. The persisting macroeconomic instability and lack of additional structural reforms appear to have been key factors in limiting the gains from trade liberalization by preventing economic restructuring and reallocation of resources. According to the IMF (1999), further banking sector reforms and continued economic restructuring were necessary to sustain economic growth. The macroeconomic environment was hindered by the volatile price of oil, uncertainty regarding debt negotiations, and speculative attacks on the peso. As the government decreased expenditure under the structural adjustment program, domestic demand fell. During the late 1980s and early 1990s, the currency became overvalued again, effectively offsetting trade liberalization measures. Nontrade barriers to competition also existed, in the form of government monopolies and oligopolies, which limited restructuring. The high interest rate, aimed at preventing speculative attacks and attracting foreign capital, limited domestic demand and restructuring (Gonzalez 1994). The economy improved between 1995 and 1998 as a result of the implementation of structural reforms and the success of the floating exchange rate in mitigating the effect of external shocks (IMF 1999).

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
Philippines (1988)	1951–98	During the 1960s the Marcos regime increased trade barriers, which remained in effect until the 1980s. During the 1983–86 economic crisis, the inflation rate increased significantly. The currency was devalued by 50 percent in 1984, and expansionary monetary policy limited capital inflow and economic growth. The Philippines secured debt rescheduling agreements between 1985 and 1988, and the IMF approved a stabilization plan in 1989. In 1986 (the end of the Marcos era) the Philippines implemented trade liberalization measures, including the lifting of import restrictions. Despite these reforms government investment in state enterprises roughly doubled during the sample period, as did state enterprises' percentage of total economic activity, employment, and net financial flows (Wacziarg and Wallack 2004). The Philippines implemented capital market liberalization, including reform of the foreign exchange rate, in 1992. The IMF approved the country's economic performance and rescheduled additional debt. Further trade reforms, including the removal of quantitative restrictions, were also implemented during the early 1990s (Henry 1999). Despite further trade liberalization measures, the Philippines has not witnessed the increased economic growth experienced in other countries following liberalization, possibly because of limited structural reforms and the high level of government involvement in state enterprises. Pritchett (2003) cites the institutional uncertainty that arose from political instability in the Philippines following liberalization as a factor that may have limited investment and economic growth.
<i>Countries that experienced positive growth increased after liberalization</i>		
Chile (1976)	1952–98	When Salvatore Allende assumed power in 1970, he nationalized Chile's copper mines, banks, and other enterprises. Government expenditure increased dramatically: the country's budget deficit rose from 2.7 percent of GDP to 25.0 percent between 1970 and 1973. The black market currency premium exceeded 600 percent in 1972; inflation exceeded 100 percent in 1973 (Easterly and Sewadeh 2002; Stallings and Brock 1993).

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
		In 1973, Augusto Pinochet overthrew President Allende in a military coup. Between 1975 and 1982, structural changes to liberalize the financial system were implemented. Quantitative restrictions were eliminated in 1973; tariffs were significantly reduced between 1973 and 1979, when they were set at a uniform rate of 10 percent. In 1979, the exchange rate was fixed to the U.S. dollar, capital controls reduced, the tax system simplified, and privatization pursued (Stallings and Brock 1993). Trade reform in the early years of the pro-market Pinochet administration was accompanied by privatization, elimination of the fiscal deficit, and the lifting of price and interest rate controls. Liberalization of the labor market also facilitated overall economic restructuring (Wacziarg and Wallack 2004). In 1980/81, Chile privatized its social security system and implemented banking reforms. It experienced an economic crisis during the Latin American debt crisis, during which it was unable to access credit markets and the government assumed control of troubled banks. In 1982, GDP fell 14 percent and inflation doubled. Between 1982 and 1985, the peso was devalued, tariff rates were raised to 35 percent, and privatization efforts were reversed (Stallings and Brock 1993). In 1985, the peso was gradually depreciated with a crawling peg, tariffs were reduced to 15 percent, and privatization resumed. During the mid- to late-1980s, Chile decreased tariffs, rescheduled its debt, and reprivatized the banking sector. During the 1990s, it signed free trade agreements with Colombia and Mexico and engaged in substantial capital market liberalization (Henry 1999).
Ghana (1985)	1956–98	Upon gaining independence in 1957, Ghana pursued a strategy of import substitution. It implemented a series of restrictive trade policies, including tariffs, nontariff barriers, and exchange rate controls. It also established a variety of state enterprises. By 1966, Ghana's currency was overvalued and a cycle of political instability (including military coups) began. Rising inflation followed by currency devaluations ensued during the late 1960s and 1970s (Leith and Lofchie 1993).

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
		Ghana experienced another economic crisis in 1982, during which inflation increased and foreign exchange reserves dropped to very low levels. In 1983, the government launched a four-year economic recovery program that included restructuring the country's physical infrastructure and economic institutions and reducing inflation through prudent monetary, fiscal, and trade policies. The 1985 trade liberalization program was part of the Rawlings administration's World Bank- and IMF-supported economic recovery program. Multiple exchange rates implemented to promote exports were later replaced with unified rates and subjected to a series of devaluations. Public sector employment (including in state enterprises) was cut and distortions in wages reduced (Wacziarg and Wallack 2004). Ghana continued to implement trade and capital market reforms through the late 1980s and 1990s.
Indonesia (1970)	1961–98	Indonesia suffered an economic crisis during the early 1960s, during which budget deficits rose and annual inflation reached 640 percent. Under pressure from the army, in March 1966 President Sukarno transferred some power to Suharto; in March 1967 Suharto was named president. A five-year development plan to stabilize the economy and promote growth was implemented that successfully stabilized the economy. Capital market liberalization occurred in 1970. In February 1976, the government reduced the 10 percent export duty on a wide range of commodities. During the 1970s, government intervention increased despite the implementation of trade liberalization reforms. The government increased its control of state-owned banks and other enterprises. Oil revenue was significant during the 1970s; economic growth weakened in the early 1980s, partly as a result of falling oil prices. However, the impact was mitigated by the country's rapid adjustment and a relatively low debt burden (Temple 2003). In June 1983, the government announced a series of bank liberalization reforms, followed by further reforms in 1988 when credit subsidies were removed (Temple 2003). Devaluations occurred in 1983 and 1986.

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
Korea, Rep. of (1968)	1954–98	During 1984/85, Indonesia entered into bilateral trading agreements with the Soviet Union, the United States, and several other countries. In May 1986, the government announced new measures to attract foreign investment. The oil market crashed in the second quarter of 1986. During 1986, further trade and investment liberalization measures were implemented, with the gradual removal of qualitative restrictions and nontariff barriers. The government implemented a large-scale privatization program during the late 1980s and early 1990s. Between 1991 and 1995, it implemented banking reforms to strengthen the system; to stimulate lending, it later weakened these regulations. During 1991–95, capital market reforms aimed at improving stock exchange were implemented (EIU various years; Henry 1999). Political turmoil in Korea in the late 1950s forced President Syngman Rhee's resignation in 1960. A military coup followed in 1961, along with continued political unrest. Inflation increased and foreign exchange reserves decreased significantly before Korea stabilized and started its slow transition to democratic rule in 1964 (Haggard, Cooper, and Moon 1993). Korea transitioned from a policy of import substitution to export-oriented growth during the mid-1960s. Tariffs and nontariff barriers were reduced, and the government created export-processing zones and adopted other mechanisms for increasing FDI (Sakurai 1995). The currency was devalued, the tax system and interest rates reformed, and capital markets liberalized. In 1965, the Export Development Committee was established; in 1966, quantitative restrictions were eliminated. Liberalization was not universal, however; certain sectors remained protected, and government involvement in the economy remained pervasive. The assassination of President Chung-Hee Park in November 1979 unleashed a year of political and economic crisis. In 1980, significant banking reforms were announced; in 1981, a five-year economic plan of structural adjustment was initiated. Economic growth was dampened during the Asia financial crisis of 1982–84.

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
		Capital and banking sector reforms were implemented in 1984. Further trade reforms, including reductions in tariffs and nontariff barriers, were implemented in the mid- to late-1980s. Banking and capital market reforms were deepened in 1991 in an effort to attract FDI. In 1993, a five-year plan for reform and further financial system regulation was adopted (Henry 1999).
Poland	1971–98	Poland's economy collapsed during the 1970s. In August 1980, the Solidarity movement began, and a period of political unrest ensued. Martial law remained in effect through December 1982. In 1986, Poland was accepted into the IMF and began to pursue debt restructuring. In 1989, hyperinflation impeded economic growth, causing Poland's debt to reach 74 percent of GDP (de Menil 2003). In 1990, the government implemented a swift and comprehensive set of market reforms, including trade liberalization, in order to stabilize the economy. The Balcerowicz Plan included removal of price controls, reduction of government expenditure and investment, devaluation of the exchange rate, and removal of subsidies for energy (Wacziarg and Wallack 2004). Trade liberalization measures included the liberalization and elimination of exchange controls and the abolition of state trading monopolies and nearly all quotas and tariffs. The currency was devalued by more than 50 percent in January 1990 and then gradually depreciated based on a crawling peg until 1995 (de Menil 2003). Despite a deep recession in 1991, Poland persisted in its liberalization program, implementing a new IMF plan in 1993 that included tax reform and continued privatization. During the mid-1990s, Poland continued to implement reforms, including currency reform, privatizations, and policies, to promote FDI. It applied for EU membership in 1994 and became a member of the Organisation for Economic Co-operation and Development in 1996. According to de Menil (2003), productivity gains appear to have been the primary factors in Poland's growth during the 1990s. He believes that comprehensive structural reforms facilitated economic transformation, the reallocation of resources, and the rapid adoption of Western principles of management and standards of efficiency.

(Continued)

TABLE A-3 Continued

Country (year of liberalization)	Sample period	Concurrent events
Taiwan (China) (1963)	1952–98	Most of the economies in this subsample implemented trade liberalization in the wake of economic and often political crises. In contrast, Taiwan had a stable economic environment and relatively low tariff rates at the time of liberalization. Trade liberalization in the early 1960s involved further tariff reductions as well as incentives, such as the creation of export-promotion zones, to attract FDI (Sakurai 1995). Between 1985 and 1987, Taiwan further reduced tariffs and nontariff barriers. In 1985, it implemented policies to promote FDI and liberalize the foreign exchange market. In 1987, it tightened capital controls. In 1988, it implemented capital market reform measures along with additional trade reform measures. In 1989–92, it implemented banking reforms and privatization measures (Henry 1999).
Uganda (1988)	1951–98	Between independence (in 1962) and 1980, Uganda experienced economic devastation, as a result of mismanagement and war. Capital was destroyed, and manufacturing operated at extremely low capacity. In 1981, Uganda implemented an IMF reform program that included floating the currency, removing price controls, and imposing fiscal austerity. The reform program was initially successful, but success was not sustained and the IMF withdrew its support in 1984, a year that marked the beginning of a period of economic collapse and civil war. In 1985, Uganda implemented policies to promote FDI and liberalize the foreign exchange market. A new economic recovery program was launched in 1987. Political unrest led to a tightening of the capital market, however. In 1988, further trade and capital market liberalization measures resumed, followed by banking reforms and privatization between 1989 and 1992. In 1993–94, further trade and capital market liberalization measures were implemented, including the liberalization of the interest rate. A variety of currency regimes was implemented between 1988 and 1992; the currency was pegged to the U.S. dollar and a composite of other currencies before a flexible exchange rate system was adopted in 1996 (Amvouna 1998).

Source: Author compilation.

REFERENCES

- Ades, Alberto F., and Edward L. Glaeser. 1999. "Evidence on Growth, Increasing Returns and the Extent of the Market." *Quarterly Journal of Economics* 114(3):1025–45.
- Alesina, Alberto, Enrico Spolaore, and Romain Wacziarg. 2000. "Economic Integration and Political Disintegration." *American Economic Review* 90(5):1276–96.
- Amvouna, Anatolie Marie. 1998. "Determinants of Trade and Growth Performance in Africa: A Cross-Country Analysis of Fixed versus Floating Exchange Rate Regimes." African Economic Policy Discussion Paper 16. USAID Equity and Growth through Economic Research (EAGER) Project. U.S. Agency for International Development, Washington, D.C.
- Baldwin, Richard, and Elena Seghezza. 1996. *Testing for Trade-Induced, Investment-Led Growth*. NBER Working Paper 5416. Cambridge, Mass.: National Bureau of Economic Research.
- Bekaert, Geert, and Campbell R Harvey. 2000. "Foreign Speculators and Emerging Equity Markets." *Journal of Finance* 55(2):565–614.
- Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad. 2001. *Does Financial Liberalization Spur Growth?* NBER Working Paper 8245. Cambridge, Mass.: National Bureau of Economic Research.
- Ben-David, Dan. 1993. "Equalizing Exchange: Trade Liberalization and Income Convergence." *Quarterly Journal of Economics* 108(3):653–79.
- de Menil, Georges. 2003. "History, Policy, and Performance in Two Transition Economies: Poland and Romania." In Dani Rodrik, ed., *In Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton, N.J.: Princeton University Press.
- Dollar, David. 1992. "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs 1976–1985." *Economic Development and Cultural Change* 40(3):523–44.
- Easterly, William, and Mirvat Sewadeh. 2002. Global Development Network Growth Database. World Bank, Washington, D.C.
- EBRD (European Bank for Reconstruction and Development). 1994. *Transition Report: Economic Transition in Eastern Europe and the Former Soviet Union*. London: European Bank for Reconstruction and Development.
- Edwards, Sebastian. 1992. "Trade Orientation, Distortions and Growth in Developing Countries." *Journal of Development Economics* 39(1):31–57.
- EIU (Economist Intelligence Unit). Various years. *Country Profiles and Quarterly Economic Reports*. London.
- Frankel, Jeffrey A., and David Romer. 1999. "Does Trade Cause Growth?" *American Economic Review* 89(3):379–99.
- González, Diana Alarcón. 1994. *Changes in the Distribution of Income in México and Trade Liberalization*. Tijuana, México: El Colegio de la Frontera Norte Press.
- Haggard, Stephen, Richard N. Cooper, and Chung-in Moon. 1993. "Policy Reform in Korea in Political and Economic Interactions." In Robert H. Bates, and Anne O. Krueger, eds., *Economic Policy Reform: Evidence from Eight Countries*. Cambridge, Mass.: Blackwell.
- Harrison, Ann, and Gordon Hanson. 1999. "Who Gains from Trade Reform? Some Remaining Puzzles." *Journal of Development Economics* 59(1):125–54.
- Henry, Peter Blair. 1999. "Chronological Listing of Major Policy Events in Emerging Markets." Working paper. Stanford, Calif.: Stanford University, Graduate School of Business. (<https://faculty-gsb.stanford.edu/henry/Homepage/PDF/Reform%20List.pdf>)
- . 2000. "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices." *Journal of Finance* 55(2):529–64.
- Heston, Alan, Robert Summers, and Bettina Aten. 2002. *Penn World Table Version 6.0*. Center for International Comparisons (CICUP), University of Pennsylvania, Philadelphia.
- Husain, Ishrat, and Rashid Faruquee. 1994. *Adjustment in Africa: Lessons from Country Case Studies*. Washington, D.C.: World Bank.

- IMF (International Monetary Fund). 1999. Press Release 99/28. 7 July.
- . 2002. "IMF Concludes 2002 Article IV Consultation with Botswana." Public Information Notice, 1 November. Washington, D.C.
- Kornai, Janos. 2002. *The Socialist System: The Political Economy of Communism*. Oxford: Clarendon Press.
- Leith, J. Clark, and Michael F. Lofchie. 1993. "The Political Economy of Structural Adjustment in Ghana." In Robert H. Bates, and Anne O. Krueger, eds., *Political and Economic Interactions in Economic Policy Reform: Evidence from Eight Countries*. Cambridge, Mass.: Blackwell.
- Levine, Ross, and David Renelt. 1992. "A Sensitivity Analysis of Cross-Country Growth Regressions." *American Economic Review* 84(4):942–63.
- Michalopoulos, Constantine. 1999. "Trade Policy and Market Access Issues for Developing Countries." Policy Research Working Paper 2214. World Bank, Washington, D.C.
- Pritchett, Lant. 2003. "A Toy Collection, a Socialist Star, and a Democratic Dud: Growth Theory, Vietnam, and the Philippines." In Dani Rodrik, ed., *In Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton, N.J.: Princeton University Press.
- Rodríguez, Francisco, and Dani Rodrik. 2000. "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence." In Ben Bernanke, and Kenneth Rogoff, eds., *NBER Macroeconomics Annual 2000*. Cambridge, Mass.: MIT Press.
- Rodrik, Dani. 2003. *In Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton, N.J.: Princeton University Press.
- Sachs, Jeffrey D., and Andrew Warner. 1995. "Economic Reform and the Process of Global Integration." *Brookings Papers on Economic Activity* 1:1–118.
- Sakurai, Makoto. 1995. "East Asian Agricultural Trade and Protectionism." In Toshihiko Kawagoe, and Sueo Sekiguchi, eds., *East Asian Economies: Transformation and Challenges*. ASEAN Economic Research Unit, Institute of Southeast Asian Studies, Singapore.
- Stallings, Barbara, and Philip Brock. 1993. "The Political Economy of Economic Adjustment: Chile." In Robert H. Bates, and Anne O. Krueger, eds., *Political and Economic Interactions in Economic Policy Reform: Evidence from Eight Countries*. Cambridge, Mass.: Blackwell.
- Temple, Jonathan. 2003. "Growing into Trouble: Indonesia after 1966." In Dani Rodrik, ed., *In Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton, N.J.: Princeton University Press.
- Tornell, Aaron. 1998. *Reform from Within*. NBER Working Paper 6497. Cambridge, Mass.: National Bureau of Economic Research.
- . 2002. "Economic Crises and Reform in Mexico." In Stephen Haber, ed., *Crony Capitalism and Economic Growth in Latin America: Theory and Evidence*. Stanford, Calif.: Hoover Institution Press.
- UNCTAD (United Nations Conference on Trade and Development). 2001. Trade Analysis and Information System (Trains). CD-ROM. Version 8.0. Geneva: United Nations Conference on Trade and Development.
- Wacziarg, Romain. 2001. "Measuring the Dynamic Gains from Trade." *World Bank Economic Review* 15(3):393–429.
- . 2003. "India in the World Trading System." Working paper. Stanford, Calif: Graduate School of Business, Stanford University.
- Wacziarg, Romain, and Jessica Seddon Wallack. 2004. "Trade Liberalization and Intersectoral Labor Movements." *Journal of International Economics* 64(2):411–39.
- Wacziarg, Romain, and Karen Horn Welch. 2003. *Trade Liberalization and Growth: New Evidence*. NBER Working Paper 10152. Cambridge, Mass.: National Bureau of Economic Research.
- World Bank. 1995. *Hungary: Structure Reforms for Sustainable Growth*. World Bank Country Study. Washington, D.C.
- . 2000. International Trade and Development: Data on Import Tariff and NTBs. Washington, D.C. (www1.worldbank.org/wbiep/trade/TR_data.html).
- WTO (World Trade Organization). 1996–2002. *Trade Policy Reviews*. Various countries. Geneva.