NBER WORKING PAPER SERIES

FOOLING OURSELVES: EVALUATING THE GLOBALIZATION AND GROWTH DEBATE

Juan Carlos Hallak
James Levinsohn

Working Paper 10244
http://www.nber.org/papers/w10244

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 2004

The authors thank President Ernesto Zedillo for suggesting the topic and for helpful comments. The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research.

Fooling Ourselves: Evaluating the Globalization and Growth Debate
Juan Carlos Hallak and James Levinsohn
NBER Working Paper No. 10244
January 2004
JEL No. F1

ABSTRACT

This paper evaluates how much of the economics profession has evaluated the evidence on the relationship between international trade and economic growth. The paper highlights the basic approaches to the trade and growth question that the literature has adopted. The case is made that more attention needs to be paid to the mechanisms by which trade impacts growth and that future research should move away from a focus on outcomes and look instead at these mechanisms.

Juan Carlos Hallak
Department of Economics
University of Michigan
Ann Arbor, MI 48109
hallak@umich.edu

James Levinsohn
Gerald R. Ford School of Public Policy
University of Michigan
Ann Arbor, MI 48109
and NBER
jamesl@umich.edu

Fooling Ourselves:
Evaluating the Globalization and Growth Debate

1. Introduction

Does a more open trade policy promote growth? This paper is about *how* much of the economics profession has evaluated the evidence on this question.

The question being asked is an important one. Broadly defined, that question is whether countries that trade more grow faster. Although it might seem obvious, it's equally important to ask just why one might care about this question. If a country's level of trade were somehow immutable and god-given, economists might still find the relationship between trade and growth of intellectual interest. It would not, though, be the hot topic that it has in fact become. The reason most observers care about the relationship between trade and growth is because of its implications for policy. It is the idea that governments might somehow adjust their trade policies so as to enhance growth. Looked at from this vantage point, there is a behavioral aspect to the issue, not just a statistical relationship. If countries change their policies in certain ways, are they likely to experience higher growth?

The question begs for empirical evidence. Economic theory is informative but the predictions flowing from the theoretical literature are not unanimous. There are sound theoretical arguments supporting a move to more liberalized trade, but there are also sound theoretical arguments that support protection from international competition for some industries. In this paper, we provide an overview of how most researchers have generated the empirical evidence. Our emphasis is less on the particular results that a

particular researcher obtained, and more on the overwhelming methodological problems that the literature has apparently chosen to ignore. Indeed, this paper does not provide a comprehensive overview to the trade and growth debate since our premise is that much of the evidence on which that overview would be based is inherently flawed. As the title suggests, the search for confirmatory results has too often ignored some very basic problems.

The debate on how trade policy affects growth has centered on the results of an influential body of empirical research that, even though not unanimous in its findings and policy recommendations, shares a similar methodological approach. This approach consists primarily of looking at cross-country evidence at the macroeconomic level. This literature attempts to identify the empirical relationship between the degree of openness to international trade and economic performance using standard econometric methods on country-level measures of these two variables. The preferred choice of variables and the exact econometric techniques employed have evolved over time. Each has improved. However, despite numerous studies and these considerable improvements, the literature as a whole has not produced a set of results that provide informed and convincing recommendations for trade policy.

We review this literature, but the review is neither extensive nor complete. Rather, we try to highlight the basic approaches to the trade and growth question that branches of the literature have adopted. We then argue that virtually none of these approaches really addresses the trade *policy* question. When we ask whether the results are informative for the practice of trade policy, we conclude that the answer is "no." We instead argue that it is more important to focus research on the ways in which trade policy

might impact growth. By researching the mechanisms through which trade impacts growth instead of correlations in outcomes, researchers will be better able to evaluate when trade policy will be development policy. We conclude with a cautionary note on the increasing irrelevance of the measures of trade policy used in the studies of trade and growth.

2. Lessons from the currently available evidence

The discussion of the existing literature is organized around three questions. First, what was the literature that initiated the empirical debate on trade and growth and what was wrong with that first pass? Second, as newer research has attempted to address the shortcomings of the initial studies, what have we learned? Third is the "So what?" question. Here we ask how relevant these newer results are for the practice of trade policy.

i. The early evidence

A natural first approach to the estimation of trade policy's effect on economic performance is to look at the statistical relationship between measures of openness to trade and measures of economic success. If openness to trade promotes economic development, one should observe that countries that are more open grow faster and attain higher levels of income than countries that hinder international trade. This is the exercise performed by a large fraction of the early literature. Examples include Dollar (1992), Sachs and Warner (1995), Harrison (1996), and Edwards (1998). Measures of openness to trade include policy variables such as the level of tariff protection, the coverage of non-tariff barriers, distortions in the exchange rate market, and whether the government

monopolizes the exports of commodities. Economic performance is usually measured with income per capita or the growth rate of GDP. These studies usually find that in the post-war period, countries with more open trade policies have tended to grow faster.[1]

Open trade policies might have a direct effect on growth, but the effect might also be indirect. Open trade policies may promote growth because they lead to a greater intensity of international trade (usually measured by the ratio of trade to GDP). Countries with more trade then grow faster. However, it is not only policy-induced trade barriers that determine the extent or intensity of trade with the rest of the world. Geographic factors such as the size of the country and its distance to other countries are also important determinants of trade intensity. Hence, if what matters is the role of trade (as opposed to just trade policy) in the calculus of economic growth, the extent of a country's government intervention in foreign trade may not be the best measure of its overall trade intensity. In that case, it is a measure of the latter variable that should be considered. A number of studies [among them, Dollar (1992), Levine and Renelt (1992), Harrison (1996)] use measures of trade intensity instead of measures of trade policy as the relevant variable determining growth. Measures of trade intensity, though, capture more than just the influence of policy-induced trade barriers.[2] These studies, then, are measuring the impact of openness—here, trade intensity—without special regard for whether openness is due to policy or geography. They typically find, as do the studies measuring openness with policy variables, that more open countries tend to grow faster and/or have higher per capita incomes.

[1] A recent paper by Wacziarg and Welch (2002), however, reproduces the methodology of perhaps the most influential of these papers [Sachs and Warner (1995)] for the 1990's and finds that the positive relationship between trade and growth no longer holds during this period.

[2] We follow Rodriguez and Rodrik's (2001) classification of trade barriers as either policy-induced or geography-induced.

The early evidence is fairly suggestive of a positive relationship between openness and growth. But there are fundamental problems that permeate all of the studies, casting serious doubts on the validity of the estimation results. In particular, the empirical methodology is subject to two severe econometric problems: endogeneity and omitted variable bias.[3]

The endogeneity bias arises because trade policy is endogenous to economic performance. The usual story is that more openness causes more growth. But causality might run the other direction; countries with lousy economic performance might have a propensity to close their borders to international trade. This might occur, for example, when countries increase tariffs to supplement faltering tax revenue. In the data, one would observe bad economic performance correlated with higher protection, but the causality would run opposite the typically assumed direction. In this case, economic performance would cause trade policy (and thus trade intensity) and not the reverse.

The omitted variable bias arises if variables omitted from the regression are those really driving the relationship between openness and growth. For example, it could be that countries with good institutional infrastructure grow faster. Good institutions may happen to be correlated with open trade policies, but it may be that it is the quality of the institutions that really drives growth. Unless one somehow measures and controls for the quality of institutions, the observed correlation between trade and growth might be misinterpreted as a causal relationship between the two.

Ordinary Least Squares regression, the tool used in most of the early studies on trade and growth, yields biased estimates of the coefficient of interest—the impact of

[3] Most individual papers are also subject to particular conceptual and empirical criticisms. See Edwards (1993) and Rodriguez and Rodrik (2001) for detailed assessments of some of these papers.

openness on growth—in the presence of endogeneity or omitted variables. The examples above—and others the reader might think of—strongly suggest that endogeneity and omitted variable bias are not likely to be minor technical quibbles; they might be driving the results.

Acknowledging these shortcomings, the literature evolved in two directions. First, it introduced instrumental variables estimation to deal with the endogeneity bias. Second, it introduced other relevant control variables to deal with the omitted variable bias. After several papers and methodological improvements, the results confirm the suspicion that the early results were driven by these biases. Once they are properly addressed, the positive relationship between openness and growth seems to vanish. We review this work next.

ii. The recent evidence

The trade intensity of a country depends on both policy-induced and geography-induced barriers to trade. A problem with policy-induced barriers to trade, as noted above, is that they are influenced by both economic performance (the endogeneity problem) and other factors omitted from the usual growth regressions (the omitted variables problem). Geography-induced trade barriers, such as distance to other countries, proximity to oceans, and population are instead (plausibly) neither affected by economic performance nor by any omitted variable that also affects economic performance.[4] Frankel and Romer (1999) base their estimation strategy on the exogenous character of geography-induced barriers to trade, which they use to instrument for trade intensity. The instrumental variables approach then essentially uses the relationship

[4] Omitted variables may still be correlated with geography-induced trade barriers, even though they do not affect them.

between geography-induced barriers to trade and economic performance to infer the impact of policy-induced barriers to trade. Frankel and Romer (1999) find that the geography-induced component of trade does in fact influence economic performance: an increase of ten percentage points in the share of trade in GDP increases income per capita by a magnitude of between ten and twenty percent. This result is consistent with the earlier results, which thus appear robust to the instrumentation of trade intensity with geographic (predetermined) variables. However, as we discuss next, once other relevant (omitted) variables are included as controls in the empirical specification, the estimated positive effect of trade on growth disappears.

A theoretical cause for concern about the extent to which a result such as Frankel and Romer's could serve as guidance for policy is the implicit assumption that both geography-induced and policy-induced barriers to trade impact growth in a similar way. Frankel and Romer (1999) acknowledge this problem noting that "differences in trade resulting from policy may not affect income in precisely the same way as differences resulting from geography." Rodriguez and Rodrik (2001) make the stronger point that "to the extent that policy is targeted on market failures, trade restrictions can augment incomes (or growth rates) even when indiscriminate barriers in the form of geographical constraints would be harmful." Moreover, even if policy-induced and geography-induced barriers to trade had the same impact on income at a particular point in time, it is also assumed that the ways they impact trade change over time similarly, which is even more unlikely. For example, information technology has changed the role of distance compared to what it was only 20 years ago. Similarly, the way in which, say, tariffs impact trade has changed over time as foreign direct investment and outsourcing have

become more popular. The instrumental variables approach basically forces these changes over time in how the different barriers to trade work to change in the same way.

In any event, the result on the positive effect of trade is not robust to alternative empirical specifications that control for omitted variables. Two groups of omitted variables have been considered. The first group includes variables related to the geographic location of a country. Here, geography is thought of as a *direct* determinant of long-run growth. A typical example is the distance of a country from the equator. Easterly and Levine (2003) point to the fact that "…compared to temperate climates, tropical environments tend to have poor crop yields, more debilitating diseases, and endowments that cannot effectively employ production technologies developed in more temperate zones" to motivate the inclusion of "distance from the equator" in the empirical specification. Rodriguez and Rodrik (2001) and Irwin and Terviö (2002) include this variable as an additional control in the Frankel and Romer framework, and find that the effect of trade on income per capita is substantially reduced and is no longer significant. Other geographic variables, such as the percentage of a country's land area that is in the tropics or a set of other regional dummies, are alternatively considered. The inclusion of these variables have similar effects on the estimation results: the positive and significant effect of trade on growth disappears.

A second group of variables relates to the institutional development of a country. The inclusion of these variables in a regression explaining cross-country differences in per-capita income is suggested by a literature that focuses on the role of institutions in economic development [Hall and Jones (1999), Acemoglu, Johnson, and Robinson (2001)]. The "institutions and growth" literature is subject to most of the same

weaknesses that plague the trade and growth literatures. Once again, there are the issues of endogeneity and omitted variables. In the case of the former, do institutions cause growth or does growth cause good institutions? As in the trade and growth literature, researchers have searched for instruments. Acemoglu, Johnson, and Robinson (2001) propose a creative instrument for institutional development—the mortality rates of settlers in the colonial period. They argue that the feasibility of European settlement influenced the type of colonization and the type of institutions created by the European colonizers. In areas with low rates of settler mortality, European settlers "tried to replicate European institutions with strong emphasis on private property and checks against government power." Instead, where settler mortality was high, colonizers created extractive states, with institutions that did not protect private property and did not provide checks and balances against government expropriation. Using settler mortality as an instrument for institutions, these authors find that institutions matter for growth. Rodrik, Subramanian, and Trebbi (2002) combine the trade and institutions theories into a unifying framework that allows them to estimate the partial effect of each of these forces. They find that while the effect of institutions on income per capita is robust to the inclusion of trade as an explanatory variable, the effect of trade is not robust to the inclusion of institutions. Dollar and Kraay (2003) perform a similar exercise, but they argue that, due to the correlation between the variables capturing "openness" and "institutions", and also between the instruments typically used for these two variables, the identification of the partial effects is weak. However, they do not challenge the failure to identify a positive effect of trade on growth.

iii. What do we learn?

This literature attempts to identify the impact of openness on growth from cross-country evidence at the macroeconomic level. The final verdict may have to wait for further work using alternative datasets, variables, instruments, and empirical specifications. But the available body of empirical work shows that, once earlier methodological problems such as endogeneity and omitted variable bias are addressed, there is no further evidence of a significant causal connection between openness and growth. The results might seem disappointing. After all, they fail to provide an answer to the question that motivated the literature in the first place. However, we next argue that there is in fact something important to learn from this literature. We learn that the question: "Does trade openness promote growth?" does not have a simple and unconditional answer. As formulated, this is not the question we should be asking.

3. The limits of the typical macro-evidence regression

Suppose researchers figured out a completely convincing set of solutions to the endogeneity and omitted variables problems that are outlined above. There are still limits to the typical regression run using macroeconomic data. Put another way, even if these regressions were executed to perfection, they would still have at least two flaws. One problem with every trade and growth regression we have examined is that trade policy is always summarized by a uni-dimensional index. The other problem is that these regressions do not allow for a state-dependent impact of trade policy.

Even a quick review of how trade policy might work suggests that both of these modeling decisions are puzzling. First, there are many channels through which trade

policy might affect economic performance. For example, trade policy might affect the degree of product-market competition, and therefore also mark-ups and firms' incentives to innovate and increase efficiency. Trade policy influences the volume of trade, and thus the extent of learning that might occur in international transactions. Trade policy also stimulates the expansion or contraction of different sectors, thus increasing total output to the extent that firms in sectors that expand generate positive externalities, and reducing output to the extent that resources are inefficiently reallocated.

Second, there are many instruments of trade policy. These include import restrictions such as tariffs, quotas, and import licenses, and export incentives such as export subsidies and subsidized credit to exporters. There are additional policy instruments closely related to international trade, such as policies on foreign direct investment, and technology transfer. Any of these instruments can be applied selectively or across the board, over short or long periods of time.

Third, the partial effect of a particular policy instrument operating through a specific channel may also depend on the characteristics of the economic environment. A country may be developed or less developed, it may or may not have a well-functioning financial sector, it may have public servants chosen primarily for their knowledge and technical skills or instead for their political loyalty.

The effect of trade policy on growth is the combined result of many policy instruments operating through many channels in a particular economic environment. Given this diversity, it is strange that the typical trade and growth regression virtually always consists of a linear or log-linear regression of a measure of growth on a single

measure of openness—and other controls. This empirical framework seems unable to uncover the relevant mechanism through which trade affects growth.

This framework implicitly imposes two restrictions. The first restriction is that the combined impact of the different aspects of the commercial policy of a country can be reasonably represented with a single variable, which captures the degree of "openness" to foreign trade. Examples of this uni-dimensional representation of trade policy are the openness index created by Sachs and Warner (1995) and the traditional trade intensity index (volume of trade divided by GDP) used by Frankel and Romer (1999) and several other papers. This representation, by design, rules out any differential impact of alternative policy options that result in the same level of measured "openness".

In addition, the linear framework imposes a monotonic relationship between the single measure of trade policy and growth. Hence, it not only assumes that trade policy can be properly represented with a single variable, but also that the direction in which it affects economic performance is state-independent. This is a very restrictive assumption. What works for a poor country may be inappropriate for a rich country (or for when that same poor country becomes richer), and what works for a country with a government captured by interest groups may not work for a country with a government that has disciplinary power over those groups. More generally, the economic environment under which trade policy is conducted may matter. The linear framework as always employed in the literature is not flexible enough to capture state-dependent effects of trade policy.

Consider the following simplified characterization of two views about the distinguishing features between the export-led strategy of several East Asian countries and the import-substitution strategy of many Latin American countries. The first view is

that the East Asian countries succeeded because they kept their economies open. This view is based on the underlying belief that open trade policies promote growth. The second view is that it is not the overall level of protection but *how* protection was implemented that explains the differing experiences of these two groups of countries. For example, the Korean government provided protection and import licenses to selected firms and sectors with the condition that they fulfilled pre-established objectives such as export targets. According to this view, as important as the protection itself was the fact that Korean firms expected the government to enforce this *quid pro quo*. In contrast, the disciplinary role of the government was mostly absent in the Latin American experience, where high levels of protection perpetuated inefficient industries. How do these two views fit into the typical trade and growth regression framework? The first view fits reasonably well. The hypothesized positive effect of trade on growth maps directly into a prediction on the sign of a coefficient estimate. The second view, however, cannot be as easily accommodated into the framework. For example, the uni-dimensional index of openness is unable to capture the disciplinary role of the government or the appropriateness of the particular selection of firms or sectors to protect. Similar levels of overall protection may in fact disguise enormous differences in incentives facing firms.

Despite these problems, the restrictive nature of the empirical framework would not necessarily prevent us from finding an answer to the question: Does trade openness promote growth? If every trade restriction is harmful regardless of the policy instrument, the mechanism through which it operates, and the environment in which it is implemented, then the linear framework would be a reasonable simplification of the true underlying relationship between trade policy and development. In that case, the above

concerns would be unimportant quibbles missing the big picture, and the connection between openness and growth would easily show up in the estimated coefficients of macro-level regressions. However, this is not what we find. This implies that, despite the appeal of the linear regression with a single measure of trade policy, this simple framework is too restrictive to capture the underlying relationship between trade policy and development. It implies that the question "Does trade openness promote growth?" does not have a simple and unconditional answer. It implies that we need to change the type of questions that we ask and the type of answers that we look for if we want to understand the effect of trade policy on growth.

Because we believe the typical cross-country regression simply cannot capture the nuanced ways in which trade policy might impact growth, we turn now to some possible alternative approaches.

4. Focusing on Mechanisms: Using the microeconomic data

Thus far, we have focused mostly on what the previous literature has (and has not) done. We have concluded that this literature, at the end of the day, is quite inconclusive. The fact that clear answers have not been forthcoming does not mean the question is unimportant. To the contrary, we want to know "Does the free trade mantra really work?" Does a more liberal trade policy, appropriately implemented, promote growth? As important as these questions are, the cross-country growth regression framework, the workhorse of the entire literature, is the wrong tool for the job. We argue below that this framework has consistently used the wrong sort of data. We further argue that the literature's focus on outcomes instead of mechanisms is responsible for the

ambiguous conclusions of the literature. Furthermore, this focus on outcomes severely limits the policy relevance of the existing trade and growth literature. We proceed by first advocating a change in the type of data that researchers interested in the trade and growth nexus might use. We then attempt to make a case for shifting the research focus from outcomes to a more careful examination of the mechanisms through which more liberal trade policies might enhance growth.

- *Data Issues*

The existing trade and growth literature has consistently used country-level macroeconomic data. The problem with country-level data, in a nutshell, is that they are not sufficiently informative. Countries do not produce anything and countries do not trade with one another. Firms and consumers do these things. Exactly how one intended or expected to measure the impact of trade on incomes without any reference to firms and/or households is something of a puzzle. The idea behind using national-level data is presumably that, in some sense, it gets it right on average. That while some firms gain and others lose, that while some households benefit and others suffer, and that while some industries thrive under more liberal trade while others contract, national-level data somehow averages all this out. Furthermore, the national-level data gets these averages right not just for a given country but for all countries. While all this could be true, we are unconvinced. Instead, perhaps the national-level data have been used because they are easy to use, because they are mostly readily available, and because they make it pretty easy to sit at one's computer and run STATA do-files until one's eyeballs glaze over. That it is easy doesn't make it right.

Country-level data leads one to author papers that seem to address the big questions—questions like "Does trade enhance growth: a 162 country study of the world since 1972." We suggest below, though, that more progress might be made by asking "smaller" questions and writing papers such as "The impact of trade liberalization on groundnut farmers in Senegal and Gambia." Some of this is of course a matter of taste, but perhaps we as a profession risk our longer-run credibility when we make grand claims that might appear in the *Economist*'s "Economics Focus" page, but which over-reach. Country-level data, while informative for some issues, simply are not granular enough to capture how trade impacts firms and households around the globe.

- *Mechanisms*

The aggregated nature of the data often seems appropriate because the question being posed is sufficiently general. Asking whether trade makes a country richer cries out for country-level data on trade and income. At the heart of the problem is the focus on outcomes instead of mechanisms. Researchers ask whether more liberal trade enhances growth without explicitly asking *why* this might be true. These authors presumably have an economic model in the back of their minds. They seldom, if ever, get around to writing it down. This turns out to matter. A well specified model could help answer the following sort of questions.

- Which variables need to be in the model and what role do these variables play in the trade growth nexus? Relatedly, are the variables for which data are available reasonable proxies for what really ought to be included in the econometric work?
- Which variables are omitted and hence are captured in the disturbance term of the regression? When this question is explicitly addressed in a model, one can then

evaluate whether the usual assumptions about the residual in OLS (or otherwise) make economic sense. This relates closely to the next question.

- Which variables are exogenous and which are not? As it relates to estimation and whether one needs to use instrumental variables, this is an econometric issue. Namely, are included regressors correlated with the disturbance term? To sensibly answer this econometric concern, though, one really needs an economic model, not just plausible stories. For example, while "institutions" has an endogenous sort of ring to it, exactly why are institutions (somehow measured) correlated with the economic phenomena that are aggregated into the residual?
- Through exactly which avenues does trade enhance growth? This is explored further below. Addressing this question is key if the results are going to be policy-relevant. As noted in section 3, there are many ways in which trade and growth could interact, and they don't all result in a linear regression of growth on a uni-dimensional index of trade or globalization.
- What are the dynamics? It is important to understand and model how the relationship(s) between trade and growth change over time. This is likely to address two related issues. First, how might the particular relationship between trade and growth vary depending on a country's stage of development? For example, the disciplining role of imports may be stronger (and hence have a greater impact on growth) for a newly emerging economy than for a well-developed one. Similarly, policies that open an economy to FDI may be more relevant in middle income countries than in very poor ones. The general issue here relates to the state-dependence of the impact of policy. *How* a policy

impacts growth may depend on *when* it is implemented. Second, even if there is no state-dependence to policy, the role of fundamentals like transport costs and information technology—issues that may explain how trade and growth interrelate—may change over time. Even without state-dependence, it is important to model how (non-state-dependent) relationships change over time. In short, a model forces the researcher to think about just why trade might enhance growth. In so doing, it overcomes one of the problems with the traditional country-level approach. A focus on mechanisms rather than just outcomes provides insight into choosing among the different flavors of trade policy. Conversely, without a model, it is hard to convincingly answer any of the above questions.

The main benefit of a model is that it allows researchers to start to explore the ways in which trade might enhance growth and investigate the empirical validity of particular avenues. A secondary benefit is that when the econometrics are more closely tied to a well-specified model of economic behavior, one can engage in the iterative process in which if the data do not support a particular prior, one can examine just where the theory fails to find support in the data and then re-visit the model. That process allows one to ask if there are perhaps more reasonable modeling assumptions that have more empirical support.

If the trade and growth literature went in this direction instead of the current country-level growth regression direction, the "trade and growth" literature would include the following:

- Detailed plant-level studies investigating whether more competition from abroad makes domestic markets more competitive (by reducing price-cost margins) hence leading to a more efficient allocation of resources and higher real incomes.
- Detailed plant-level studies investigating whether international competition somehow forces domestic firms to be more productive. Higher productivity would be expected to contribute to greater growth.
- Studies examining the spillover effects of international trade. Goods trade may facilitate the transmission of knowledge, and knowledge accumulation may lead to higher growth.
- Studies examining the spillover effects of foreign direct investment (FDI). Perhaps knowledge is transmitted by watching how foreign-owned plants produce. This knowledge accumulation might also contribute to higher growth.
- Studies investigating who works at new FDI plants. In the presence of substantial unemployment, FDI, even absent spillover effects, might increase employment and hence incomes. Do these new FDI plants increase employment and/or raise the wages of the already employed?

This list is illustrative, not complete. There is, in short, a reason why so many economists believe globalization might be good for growth. In fact, there are many such reasons and the policy implications clearly differ across them. For example, in South Africa, it may be the employment effects of FDI that most contribute to growth while the potential for knowledge spillovers through goods trade is limited. Such an instance would point toward encouraging FDI but with more regard to whether the new investment requires substantial labor and less regard to technology transfer issues. In

Venezuela, it could be that a protected and collusive domestic market would respond positively (from a social viewpoint) to liberalized imports but that more FDI would just add another player in the collusive domestic market with little impact on net welfare. The list could go on. There are, though, three main lessons to take from this discussion.

First, by modeling how trade and growth (or incomes) relate, researchers will be better placed to choose among policy options. It is a lot easier and more intellectually sound to draw policy implications when we know how trade and growth inter-relate. Second, as a profession, we know how to do the sorts of studies we advocate. This is not especially new or path-breaking research. The literature is full of studies looking at all of the examples listed above. Consider, for example, studies looking at the role of trade on productivity in Chile, the role of foreign ownership on plant productivity in Venezuela, and the role of trade on market discipline in Turkey. All have been completed. Third, moving in the direction that we advocate almost surely means that broad and generalized answers will be rare. Rather, the trade and growth nexus may vary depending upon the policy instruments and the prevailing circumstances. The answers will be more specific and limited in scope. But they will be more informative and reliable as a basis for policy.

5. The Changing Nature of Trade Policy

Whether one uses the traditional country-level regression approach or the more idiosyncratic approach we advocate, it is still necessary to somehow measure trade policy. A country-level study, for example, may measure trade policy as an average tariff rate or the average of the coverage rate of non-tariff barriers when the average is taken across all industries. A study of the effect of import competition on price cost margins in the Mexican textile industry would typically condition on the average tariff Mexico

places on textile imports. Tariffs and quotas (usually measured by a coverage rate) are, after all, the typical instruments of trade policy. In the past, countries have used these policy instruments as important components to their development and industrialization strategies. Their inclusion in a growth regression or in an industry study, then, was sensible. That is changing. The traditional tools of trade policy, and hence the measures that appear in trade and growth regressions (broadly construed), are becoming less and less relevant.

One reason they are becoming less relevant is that bilateral, regional, and multilateral trade agreements have limited just what countries can do with these trade policies. For example, export subsidies and national content requirements are becoming prohibited under the WTO, and preferential trade agreements typically include strong restrictions on the ability of countries to conduct unilateral trade policy. Another reason is that the very process of globalization has itself made these traditional tools of trade policy less appealing, as they are less often regarded as the proper tools for fostering domestic industries in an integrated world. With the tremendous fragmentation of production, traditional trade policies are simply less relevant. This has implications for the interpretation of the empirical results of studies examining how trade policies, as once practiced, impact growth. For example, the results of studies using data from the 1960's through the 1990's may not apply in a world with substantial FDI and outsourcing. Other policies, as those described below, might have a stronger impact.

If traditional measures of trade policy are no longer quite as relevant, what sorts of policy tools are used and how do these relate to the trade and growth literature? Many of the newer instruments of trade policy are focused on export promotion and FDI

attraction. Examples of the former include trade missions, trade fairs, providing information about external markets, and encouraging multinationals to assist local suppliers to become competitive at the global level. Examples of the latter include tax incentives and other investment incentives, production sharing schemes, support for supplier network formation, provision of infrastructure requirements, and sharing the costs of training the labor force. To the extent that these are important current policy tools (and we suspect their role will only grow in the future), three issues arise.

First, as noted above, the disconnect between today's policies and the sorts of policies that were in previous empirical work means that one needs to be very careful about extrapolating the results of the existing literature. It *may* be that export promotion and FDI attraction policies have the same impact on growth as a reduction in tariffs and quotas since each plausibly increases openness. But this, at this point, is a matter of faith and not evidence. Second, incorporating these newer tools of trade policy into the growth debate is a splendid idea, but it presents challenges. It is a good idea because it is important to know, for example, whether tax incentives to attract FDI enhance growth. It's a challenge, though, because these newer tools of trade policy are hard to measure. Third, while tariffs and quotas are often sector-specific, these newer tools of trade policy are even more so. Because they are often fairly narrow, they may not be well-suited for the sort of macro studies of trade and growth that populate the literature. As we peer into the future, the next wave of the trade and growth literature will need to confront the issues posed by these newer instruments of trade policy. In this regard, the jury is not just out; it has not even convened.

6. Conclusions

Does trade policy promote growth? As economic policy questions go, this one is important. Unfortunately, the attempts of a long literature looking at cross-country evidence have failed to provide a convincing answer. Several studies find an empirical connection between openness and growth, but they tend to suffer from basic methodological shortcomings. Recent studies address these shortcomings but, once they do, they no longer find a robust empirical relationship between openness and growth. We interpret this to mean that the linear regression framework typically used is too simplistic to capture the true underlying relationship between trade policy and growth—a relationship that is full of nuances and dependent on mechanisms and circumstances. A different approach seems more promising. This approach looks at micro-economic evidence instead of at macro-economic evidence. It focuses on and models the specific mechanisms through which trade or trade policy operate instead of looking directly at the macroeconomic outcomes. It takes into account other elements that might influence the impact of policy measures instead of restricting this impact to be state-independent. This comes at a cost. This approach is more limited in scope. In particular, it does not provide a simple answer to the original question. Instead, it can only provide (conditional) answers to partial aspects of it. Whether one is comfortable with this more limited approach is a matter of taste. Because we believe that there are in fact no general answers to the trade and growth question, we are comfortable with investigating the smaller questions whose answers provide a more reliable basis for policy recommendation. Others will surely beg to differ.

References

Acemoglu, D., S. Johnson, and J. Robinson (2001), "The colonial origins of comparative development: An empirical investigation," *American Economic Review*, 91, 5, 1369-1401.

Dollar, D. (1992), "Outward-oriented developing economies really do grow more rapidly: Evidence from 95 LDCs, 1976-85," *Economic Development and Cultural Change,* 523-544.

Dollar, D. and A. Kraay (2003), "Institutions, trade, and growth: Revisiting the evidence," World Bank Policy Research Paper #3004.

Easterly, W. and R. Levine (2003), "Tropics, germs, and crops: How endowments influence economic development," *Journal of Monetary Economics*, 50, 3-39.

Edwards, S. (1993), "Openness, trade liberalization, and growth in developing countries, *Journal of Economic Literature*, XXXI(3), 1358-1393.

Edwards, S. (1998), "Openness, productivity, and growth: What do we really know?," *Economic Journal*, 108 (March), 383-398.

Frankel, J. and D. Romer (1999), "Does trade cause growth?," *American Economic Review*, 89(3), 379-399.

Hall, R. and C. Jones (1999), "Why do some countries produce so much more output per worker than others," *Quarterly Journal of Economics*, 114, 1, 83-116.

Harrison, A. (1996), "Openness and growth: A time-series, cross-country analysis for developing countries," *Journal of Developing Economics*, 48, 419-447.

Irwin, D. and M. Terviö (2002), "Does trade raise income? Evidence from the twentieth century," *Journal of International Economics*, 58, 1-18.

Levine, R. and D. Renelt (1992), "A sensitivity analysis of cross-country growth regressions, *American Economic Review*, 82(4), 942-963.

Rodriguez, F. and D. Rodrik (2001), "Trade policy and economic growth: A skeptic's guide to cross-national evidence," in Bernanke, B. and K. Rogoff (eds.), *NBER Macroeconomics Annual 2000*, MIT Press, Cambridge, MA, 2001.

Rodrik, D., Subramanian, A., and F. Trebbi (2002), "Institutions rule: The primacy of institutions over geography and integration in economic development," manuscript.

Sachs, J. and A. Warner (1995), "Economic reform and the process of global integration," *Brooking Papers on Economic Activity*, 1, 1-118.

Wacziarg, R. and K. Welch (2003), "Trade Liberalization and Growth: New Evidence," NBER Working Paper #10152.