



Latin American Research Network
INTER-AMERICAN DEVELOPMENT BANK (IDB)
Research Department (RES)

Call for Research Proposals

Understanding Productivity Levels, Dispersion and Growth in Latin American and Caribbean Industries

Motivation

On average, Latin American and Caribbean countries are underperforming other developing countries in terms of productivity growth. This differential productivity can explain why the region has shown very modest economic growth in the last 15 years and why, despite unusually favorable international conditions over the last half decade, the region has lagged behind other regions in economic growth.

In recent years, a number of studies have examined differences in productivity at the industry, firm and plant level. These studies reveal that, in addition to investments in technological efficiency made by existing firms, the reallocation of capital and labor from less to more efficient establishments constitutes an important source of productivity growth. While most studies have been done in the context of developed economies, a few studies for Latin America and the Caribbean and other middle and low-income countries suggest that reallocation is also an important source of productivity growth in developing economies.

Studies indicate wide dispersion in productivity levels across firms, even within narrowly defined industries producing rather homogenous goods, suggesting large potential gains from reallocation (Syverson, 2004a, 2004b; Foster, Haltiwanger and Syverson, forthcoming; Eslava, Haltiwanger, Kugler and Kugler, 2004). An important question posed by this evidence regards the nature of the obstacles that prevent highly productive firms from taking market share from less productive ones. Productivity substitution barriers seem to be associated with the ease with which consumers can switch across suppliers. Factors such as high transportation costs, product differentiation, idiosyncratic preferences for products made with less efficient technologies, low exposure to international trade, advertising, differences in services bundled with goods (such as delivery), and specific relationships between producers and consumers can reduce the ability or willingness of consumers to switch across producers, allowing relatively inefficient producers to survive. A recent study for the United States (Syverson, 2004a) finds evidence that industries which face higher transportation costs have higher productivity dispersion and lower median productivity than industries with low transportation costs. The explanation suggested by the author is that high transportation costs isolate firms from competition by geographically distant producers, allowing less efficient producers to survive.

Economic policies may also explicitly or inadvertently favor low product substitution. Policies aimed at protecting ailing firms, or tax regimes favoring small firms, whether with lower tax rates, lower administrative procedures or lower enforcement, may end up favoring less efficient firms, perhaps at the expense of more efficient ones. Subsidized credit, privileged access to capital for certain firms, and restrictions to land access which prevent the entry of high-volume retail, may also be preserving the market share of less productive firms.

Resource misallocation may explain a good share of the productivity gap between developed and developing countries. A study by Hsieh and Klenow (2007) finds that reallocating labor and capital across plants in India and China, within narrowly defined industries, to replicate resource allocation in the United States could yield productivity gains of 24-40% in China and 50-60% in India.

Policies that shield certain firms from the competition of other firms may also reduce firms' incentives to undertake productivity-enhancing investments. Baily and Kirkegaard (2004) show examples of this mechanism in Europe. Based on a series of background studies from the McKinsey Global Institute (MGI) they document a number of instances in which an increase in the level of competition—from foreign firms, potential entrants, or other more efficient firms in the same country—was followed by sharp increases in productivity. Okada (2005) also shows that competition enhances productivity growth in Japan. Similar effects are found by Schor (2004) in Brazil. She shows that increased competition from foreign firms increases productivity growth, although with large heterogeneity of responses across firms.

The above discussion should not be taken to imply that economic policies favoring particular firms or industries are undesirable. In fact, many of such policies may be compensating for failures in credit or other markets, which prevent all firms from having equal access to capital and other resources. In that case, the policies mentioned above could be productivity enhancing.

A related but relatively unexplored issue is whether there is resource misallocation across firm size. A large share of economic activity in developing countries takes place in very small firms (fewer than 5 workers). In this regard, an important question is to what extent the large share of economic activity in small firms is the result of policies, regulations, or market failures that prevent small firms from growing. A related question is how much of the productivity gap between rich and poor countries is due to the inordinate market share of small firms. If productivity in small firms is lower than in larger ones, reallocating labor and capital away from small firms could be productivity enhancing. In this context, it is also worth considering whether the entry of small firms increases market competition for large, established firms. Pagés, Pierre and Scarpetta (2007) find that in Latin American countries (Brazil, Argentina, Mexico, Colombia and Venezuela) the majority of new entrants either remain small or die young, which may imply that they are not much of a threat for existing firms. This may explain their finding that in OECD countries firm entry is correlated with higher productivity growth of incumbent firms, while that relationship does not hold in Latin America countries.

Objectives of the Study

The objectives of this study are twofold. The first is to document the level, dispersion and growth of productivity across firms and industries in Latin America and the Caribbean. The second is identifying the possible role of public policies in this outcome. This study aims to go beyond

manufacturing and study other sectors, particularly those that employ a large share of the labor force, such as commerce, construction, or in some cases, agriculture.

Description of the Studies

1. Documenting Differences in Productivity Level and Growth within and across Industries, Firm Size and Formality Status

The first part of the studies will document labor and total factor productivity differences within and across narrowly defined economic sectors and across small and larger scale establishments within a country, using firm or establishment-level data. Studies will assess:

- Median values and dispersion of labor and total factor productivity *levels* across and within economic sectors and across and within large, medium, small and micro firms. To the extent possible, studies will also document differences in productivity across formal and informal firms.
- Median values and dispersion of labor and total factor productivity *growth* across and within economic sectors and across and within large, medium, small and micro firms. To the extent possible, studies will also document differences in productivity growth across formal and informal firms.
- How the level and dispersion in productivity levels and growth compare to that of reference countries, such United States, Europe, Japan, Korea or other fast-growing East Asian countries.
- How much of the growth in average productivity is due to the growth of productivity of incumbent firms, how much is due to net exit of firms, and how much is due to the reallocation of labor across incumbent firms using decompositions as in Foster, Haltiwanger and Krizan (2001). Decompositions would be within and across establishments, within and across industries narrowly defined, and within and across firm size classes.
- If panel data is available, studies will also analyze market selection. Are exiting firms less efficient than survivors? What is the productivity of entrants relative to the productivity of incumbent firms? Does market selection change across sectors of activity? It is lower in sectors with higher productivity dispersion?

2. Industry Studies Analyzing Possible Obstacles to Product Substitution within Narrowly Defined Sectors

The aim of the industry case studies is to examine the obstacles for the expansion of the market share of the most efficient firms. Industries should be at high levels of disaggregation. Priority will be given to studies analyzing sectors outside of manufacturing, such as retail trade, restaurants and hotels, construction or agriculture; however, studies on manufacturing industries will also be welcome. Case studies should be based on firm or establishment-level data. Ideally, each country study would address more than one sector, with at least one sector outside of manufacturing. Each industry study should aim to document:

- How much heterogeneity exists in labor and total factor productivity across production units within the sector?
- How much of this heterogeneity is explained by firm size, firm age, and other characteristics of firms (foreign-owned, education of the manager, etc.), and how much is explained by differences across sectors at higher level of

disaggregation? What characterizes highly productive establishments in this sector? What characterizes low-productivity establishments?

- How does the distribution of productivity in that sector compare to that of reference countries (i.e., the United States, Western European countries, Japan or Korea)? Are there establishments that achieve world frontier productivity levels in that sector? What characterizes these establishments? Are they national or foreign owned? If no establishments meet world frontier productivity levels, how much do they fall short of the frontier? How far is the lower end of the distribution?
- What are the productivity differences between formal and informal establishments within that sector?
- How does productivity growth in this sector compare with growth in other sectors? Is this a fast-growing or lagging sector?
- What policies, government programs and/or market failures may contribute to impeding the expansion of more productive firms and/or preserving the market share of less productive firms. (Alternatively, if this is a fast-growing sector, can changes in policies be shown to explain the sector's growth in productivity?) Has there been variation in such policies over time and/or geographic areas (state, province) that can be used for identification? The candidates to consider are, among others:
 - Lack of competition caused by:
 - High barriers to entry of national or foreign firms into the market
 - Poor infrastructure
 - Tariff and non-tariff trade barriers
 - Constraints on FDI
 - Administrative barriers that limit access to land (very important in sectors such as high-volume retail)
 - Capital market imperfections that constrain the access to capital of small and young firms and therefore limit their expansion and ability to compete in the same markets as larger, incumbent establishments.
 - Labor regulations, payroll taxes and social protection policies, which may be (i) preventing less efficient firms from shedding labor and/or (ii) favoring some firms at the expense of others due to uneven law enforcement.
 - Human capital bottlenecks.
 - Corporate taxation or other taxation (property taxes, inheritance) that may distort the allocation of resources by favoring some firms at the expense of others due to differences in enforcement or differences in tax schemes across firms.
 - Small firm promotion and assistance.
 - Preferential subsidies or preferential loans to some firms.

Methodology

Part I. Documenting Differences in Productivity Level and Growth within and across Industries, Firm Size and Formality Status

There are a number of methodological issues to consider when measuring productivity differences across firms.

The first relates to whether the data permit distinguishing between physical quantities and revenues. This is important because revenue-based measures mix the effects of plant-specific prices with technological efficiency. Caution should be used in the interpretation of revenue-based measures. (See Foster, Haltiwanger and Syverson, 2007, and Katayama, Lu and Tybout, 2006.)

A second relates to the measurement of MFP and more particularly the measurement of factor elasticities. There are a number of alternative ways of obtaining these estimates. A simple possibility is to follow the approach in Foster, Haltiwanger and Syverson (2007)

A third relates to the importance of outliers when computing central tendency and dispersion measures from firm or establishment-level data. Ordinal measures such as the median and average interquartile range (the difference between the 75th and 25th percentiles) are less prone to be dominated by outliers than the average and standard deviation (Syverson, 2004a).

Part II. Industry Case Studies

The general objective of the industry case studies is to analyze how policy frictions relate to productivity distribution and productivity growth in a given sector. Since factors not driven by policy—such as consumer preferences for certain goods or the degree of product differentiation—may also be impeding the expansion of more productive firms, it may be best to focus on the analysis of relatively homogenous products or services. Sectors of particular interest are: retail, construction, manufacturing of apparel, manufacturing of chemicals and paper publishing; however the analysis of other sectors will also be considered

Proposals should describe which methodology will be used to distinguish among different constraints. Methods may involve: (i) use of auxiliary databases such as the Investment Climate Surveys of the World Bank; (ii) interviews with firms in the industry; (iii) detailed comparisons of how the sector is organized in the country of study relative to countries of reference, relating differences in organization and structure to differences in environment and organization; and (iv) econometric analysis based on variation of business environment across industries, locations, or types of firms. It should be noted that the objective is not so much to achieve sharply focused econometric studies on the factors explaining productivity growth and levels in a particular industry, but rather to create detailed case studies on the nature of obstacles for productivity growth in a given country-sector.

One set of valuable references includes the studies carried by the McKinsey Global Institute (MGI) and summarized by William W. Lewis in his book "The Power of Productivity: Wealth, Poverty, and the Threat to Global Stability". Another valuable reference is a case study by Javorcik, Keller and Tybout (2006) on the Soaps, Detergents and Surfactants industry in Mexico.

One important dimension to consider is firm size. Case studies should attempt to explain the distribution of firms or establishment by plants and document whether smaller plants are more or less efficient than larger plants as the basis to consider whether reallocating workers to larger firms could lead to higher productivity growth. The studies should then focus on understanding why such reallocation is not taking place.

Since size is such an important dimension in these studies, an important methodological point is that researchers should place particular emphasis on including in the analysis smaller establishments (fewer than 15 workers)—which traditionally are not included in establishment-level data—as well as self-employed workers who do not have a fixed establishment (“*ambulantes*” or working from home) but engage in activities classified in that sector. This may involve utilizing household data on self-employed workers to complement establishment or census data.

Proposals should include a description of the industry or industries to be studied, as well as a description of why these are interesting and relevant case studies. Priority will be given to proposals involving instances where: i) particular policies have a large bearing on a sector, ii) a sector possesses characteristics that make it particularly suitable for study, iii) the sector accounts for a large share of employment, or iv) particularly good data are available. Documented access to managers and firm owners in the industry or industries studied will also be also considered an advantage.

Contents of the Research Proposals

To participate in this project, research institutions should submit a proposal including:

1. Description of the data to be used in the study (maximum 3 pages). The proposals should specify:
 - Coverage: Manufacturing versus overall economy, Census or Survey, firm or plant-level data, whether small firms are included, number of observations.
 - Frequency and number of periods available.
 - Whether it is possible to link data across periods and number of periods in which individual observations are followed. Treatment of entry and exit.
 - Definition and summary statistics of available variables.
2. A summary of data availability (maximum 2 pages). Demonstrating access to firm or establishment data is a necessary condition to obtain funding for this project.
3. Questionnaire(s) on the data.
4. A detailed description of which studies (Part I, Industry-Level Studies) are going to be undertaken and the proposed methodology for doing so (4-5 pages).
5. For the industry case studies, a justification of why the proposed case studies are relevant and illustrative (maximum 1 page per case study).
6. Previous studies available using firm or establishment-level data (1 page)
7. CV of the research team, emphasizing previous relevant experience with firm or establishment level data (maximum 2 pages per researcher).
8. A budget (in a separate annex) indicating the time and resources that will be used within the context of a research work plan. The budget proposed by the institution should distinguish between items financed by the IDB (the Bank) contribution and those financed by

the Institution. The budget should additionally distinguish among amounts assigned to professional honoraria, "overhead," and other major categories of research expenditures.

Institutions may present proposals individually or jointly with other institutions in the same country or in the region. For administrative purposes the Bank will request that each institution sign a letter of agreement with the Bank, which will require a separate budget per institution.

The research papers should be submitted in English. Also, the initial and final seminar will be held in English.

Responsibilities and schedule

This project will be coordinated by Carmen Pagés (RES) and James Tybout (Pennsylvania State U.)

- Institutions should inform their interest in submitting proposals by **April 25, 2008** (email to: red@iadb.org).
- The deadline for submitting proposals is **JUNE 06, 2008**. Send proposal to: red@iadb.org.
- The IDB will announce selected proposals by **June 13, 2008**.
- An initial seminar will be held in Washington, DC, on **July 21-22, 2008**, for the purposes of presenting and discussing the data and methodology to be used in the study.
- A revised proposal including the conclusions and recommendations of the seminar is due by **August 20, 2008**.
- First drafts of research papers are due by **November 12, 2008**.
- Results from the study will be discussed in a final seminar on **November 19-20, 2008**, in Rio de Janeiro, before the LACEA Conference.
- Second drafts of research papers are due by **January 23, 2009**.
- Final versions of all papers are due by **March 18, 2009**.

Financial Aspects

Proposals can address different sections depending on data availability. The allocation for each study will depend on the sections/case studies selected. Proposals can be accepted totally, or partially, based on a subset of the proposed studies. The preference is for studies that propose to undertake Part I and two industry case studies for the same country (with at least one case study outside manufacturing).

- (1) **\$12,000** - First part: Documenting productivity differences in the overall economy.
- (2) **\$18,000** - One industry case study (with strong preference for industries outside manufacturing).
- (3) **\$16,000** - Additional industry case study.

Up to \$46,000 per institution, payable as follows:

- 15% within 30 days of signing the formal agreement with the Bank.
- 15% within 30 days of approval by the Bank of revised proposal including the conclusions and recommendations of the initial seminar.
- 30 % within 30 days of approval by the Bank of the first draft of the research paper
- 20% within 30 days of approval by the Bank of the second draft of the research paper.
- 20% upon approval by the Bank of the final research paper.

Note: Fees for unjustified delays at any stage of the project will be charged in the form of a reduction in the corresponding payment of \$200 per day of delay. Failure to comply with any of the terms of the contract will imply a partial return of the funds paid up to the stage at which the failure occurs.

References

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