

Estimating the Causal Effect of Economic Policies on Productivity in Latin America and the Caribbean

Motivation

The evidence suggests that on average Latin American countries are underperforming other developing countries in terms of productivity growth. This differential productivity outcome would 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.

Objective

This project has three objectives. The first is to identify the possible causal role of public policies and market failures in the low productivity growth outcome in Latin America and the Caribbean. A second and related objective is to investigate whether market failures or public policies stunt the growth of firms, and/or allow for relatively inefficient producers to operate profitably, which in turn contributes to high dispersion in productivity across plants, and to lower average productivity levels and growth. The aim is to determine whether there is an interrelation between a large share of very small firms, high levels of informality among microenterprises and at the same time, low productivity levels and growth. The third objective is to expand the evidence outside manufacturing, to include sectors such as retail, wholesale trade, transports, hotels, restaurants, construction or agriculture, which employ an increasingly larger share of the labor force, have a large proportion of workers employed in small and/or informal firms, and have experienced low productivity growth.

Methodology

This project is seeking to develop high quality **econometric studies** examining the *causal* effect of public policies, government programs and/or market failures on resource allocation and productivity in Latin American and Caribbean countries. The types of policies or market failures to be studied are, among others:

- Capital market imperfections that constrain the access to capital of small and young firms
- Labor regulations, payroll taxes and social protection policies
- Product market barriers such as licensing constraints (for example preventing access to land for large-scale retail)
- Barriers to entry or registration and barriers to exit
- Tariff and non-tariff trade barriers
- Taxation
- Restrictions to or alternatively, liberalization of, foreign direct investment
- Small firm promotion and assistance

Studies are expected to focus on the causal effect of only one, or perhaps two, policies, programs or market failures, although other aspects of the business environment may

need to be controlled for. As outlined above, an area of particular interest is studying the relationship between firm size, informality and productivity. Studies find a positive relationship between firm size, formality and higher levels of productivity (see for example, Perry et al., 2007), but it is unclear whether less productive, small firms self-select into informality or informality locks firms into low productivity activities of small size.

This project will only finance studies that present a convincing identification strategy to identify causal effects of economic policies or informality on productivity. This may involve exploiting changes in legislation or policies across provinces, states or geographic units, or other sources of variation, which allow constructing control and treatment groups, within one country or groups of countries. The preference is for individual country studies utilizing industry, establishment or firm-level data, but cross-country studies utilizing industry, firm or establishment data will also be considered. Some interesting studies in the literature that provide a model for this type of analysis are: Bertrand and Kramarz (2002) which studies the relationship between regulations that restrict the entry of large scale retail and employment across France's geographical districts; Besley and Burgess (2004); and Autor, Kugler and Kerr (2007), which study the relationship between changes in labor regulations and productivity growth (among other variables) across US and Indian states, respectively.

Another interesting identification strategy is proposed by Syverson (2004a and 2004b). In these papers the author examines whether markets in which it is easier for consumers to switch between suppliers—and therefore where relatively inefficient suppliers find it more difficult to compete—have lower productivity dispersion and higher average productivity. In the first paper, he examines the ready-mixed concrete industry, in which very high transportation costs create geographic variation in product substitutability. In the second paper, he directly tests whether industries that face higher transportation costs also register higher dispersion and lower average productivity, finding evidence that this is indeed the case. In that regard, it would be interesting to adapt Syverson's methodology to relate policies and market failures to the share of less productive, informal producers and to productivity dispersion, level and growth.

A different source of identification may come from differences in the effect of a particular economic policy across different sectors of economic activity. This is the methodology adopted in Rajan and Zingales (1997) or Micco and Pagés (2006). Rajan and Zingales study the effect of financial liberalization on economic growth using industry level data for a large number of countries. They postulate that sectors with higher dependence on external capital will benefit more from capital market development. Based on a measure of financial dependence by sector, they find that sectors with more dependency on external capital grow faster in countries with more developed financial systems. Similarly, Micco and Pagés, postulate that sectors with higher variability in product demand will suffer more from regulations restricting hiring and firing workers. They find evidence that supports these predictions. This difference in methodology could also be applied to individual country studies to assess the differential effects of economic reforms across economic sectors.

Other relevant references relating economic policy to productivity are Hsieh and Klenow (2007), Bartelsman, Haltiwanger and Scarpetta (2004), Eslava, Haltiwanger, Kugler and Kugler (2004), and Petrin and Sivadasan (2006).

Productivity growth may come from productivity gains in existing firms or the reallocation of workers and/or capital to more productive units. Researchers should propose methods to identify these alternative sources of productivity growth with special emphasis on identifying gains from the latter.

A major difficulty is identifying exogenous policy variation. Researchers should propose strategies to deal with the possible endogeneity of policies.

Finally, a key issue is the nature and quality of the data available. Table 1A in the Appendix provides information on establishment and firm-level datasets which are available in Latin America and the Caribbean, although for confidentiality reasons they need to be processed at the dependencies of the statistical offices. The list is not exhaustive, as it only includes datasets that we have already identified.

Contents of the Research Proposals

To participate in this project, **individual researchers** should submit a proposal including:

1. Description of the data to be used in the study (maximum 3 pages). Individual country studies should refer to countries in the Latin American and Caribbean region. While in cross-country studies, preference will be given to studies covering a broad set of countries including countries in the rest of the world. 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.
 - Whether formality status of firms can be identified
 - 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.
 - Measures of policy variables: Time, geographical or industry coverage as well as data sources.
2. A summary of data availability (maximum 2 pages)
3. Survey questionnaire(s)
4. A detailed description of the study and the proposed methodology (4-5 pages)
5. A justification of why the proposed studies are relevant and why the country (countries) is the appropriate one to examine the issue (maximum 1 page per case study)
6. Previous studies available using industry, firm or establishment-level data (1 page)
7. CV of the research team, emphasizing previous relevant experience with industry, firm or establishment level data (maximum 2 pages per researcher). Please note that each researcher is required to sign an agreement with the IDB.
8. A budget (in a separate annex) indicating the time and resources that will be used within the context of a research work plan. If the study is to be carried out by a team of researchers, a break down per researcher is required.

The research papers should be submitted in English. Also, an initial seminar will be held in English.

Proposals will be selected based on the following criteria:

- Quality and feasibility of the proposed econometric exercise (60%)
- Relevance of the topic/policy/sector chosen for understanding productivity growth in Latin America (40%). In this regard, a higher weight will be given to proposals willing to look beyond **manufacturing and on the relationship between policies, firm size, informality and productivity.**
- **Cross-country papers** will be accepted if the econometric exercise is adequately defined and may bring knowledge that cannot be captured through a country case.

Responsibilities and schedule

This project will be coordinated by Carmen Pagés (Research Department, IDB) and Chad Syverson (U. of Chicago)

- Researchers should inform their interest in submitting proposals by **May 23, 2008** (email to: res@iadb.org).
- The deadline for submitting proposals is **June 18, 2008**. Send proposal to: res@iadb.org.
- The IDB will announce selected proposals by **July 3, 2008**.
- An initial one and a half day seminar will be held in Washington, DC, during the week of July 28- August 1, 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 **September 3, 2008**.
- First drafts of research papers are due by **December 17, 2008**.
- Second drafts of research papers are due by **February 25, 2009**.
- Final versions of all papers are due by **March 25, 2009**.

Please note that adherence to delivery dates will be strictly enforced.

Financial Aspects

The allocation for each study is **\$20,000**, 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 the 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.

References

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- Bartelsman, E. J. Haltiwanger and S. Scarpetta (2004), "Microeconomic Evidence of Creative Destruction in Industrial and Developing Countries" World Bank Policy Research Paper No 3464.
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- Besley, T. and R. Burgess (2004) "Can Labor Regulation Hinder Economic Performance? Evidence from India" *The Quarterly Journal of Economics*, Feb. 2004. pp.
- Haltiwanger, J. A. Kugler and M. Kugler (2004) "The Effect of Structural Reforms on Productivity and Profitability Enhancing Reallocation: Evidence from Colombia". NBER Working Paper w10367, Cambridge MA.
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- Rajan, R., and L. Zingales (1998). "Financial Dependence and Growth." *American Economic Review* 88(3): 559-86.
- Syverson, C (2004a). "Market Structure and Productivity: A Concrete Example," *Journal of Political Economy*, December.
- Syverson, C (2004b). "Product Substitutability and Productivity Dispersion," *Review of Economics and Statistics*, May.

Appendix
Table 1. Data Sources by Country

Table 1.A (cont)

| | Source | Type of Data | Frequency | Observation Unit | Sector | | Classification System | Number of Workers | Product Information | Sales Information | Investment Information | Firm Identifier | Agency |
|-----------------------------|---|--------------|--|--------------------------------|---|-----------------------------|--|------------------------------------|--|-------------------------------|---|-----------------|--------|
| Brazil | Economic Census | Census | Last available 1985 | Factory/Establishment and Firm | Manufacturing, Extraction, Services (Commerce and Transport), Construction | Brazil | ISIC-Rev 2, 6 digits | Yes | Yes | Yes | Yes | | IBGE |
| | Commerce Annual Survey (PAC) | Survey | Annual | Firm | ISIC Divisions 50, 51 and 52 | | National Activities Classification, 4 digits (CNAE) | Yes-Permanent Workers | No | Yes | Yes-Equipment and Durables | Yes | IBGE |
| | Services Annual Survey (PAS) | Survey | Annual | Firm | Divisions 55, 61, 62, 63, 64, 67, 71, 72, 74, 90, 93 of the National Activities Classification (CNAE) | | National Activities Classification, 4 digits (CNAE) | Yes-Permanent Workers | No | Yes | Yes-Equipment and Durables | Yes | IBGE |
| | Industrial Firm Annual Survey | Survey | Annual-available from 1960 | Factory/Establishment and Firm | Manufacturing and Extraction | | National Activities Classification, 3 digits (CNAE)-ISIC Rev 3 | Yes-Permanent Workers | No | Yes | Yes-Equipment and Durables | Yes | IBGE |
| | Industrial Product Annual Survey | Survey | Annual | Factory/Establishment | Manufacturing and Extraction | | National Activities Classification, 4 digits (CNAE); No National Level National Activities | No | PRODLIST (product list, CNAE 4 digits) | Yes | No | Yes | IBGE |
| | Industrial Construction Annual Survey | Survey | Annual-available from 1990 | Firm | ISIC 3.1, Division 45 | | Classification, 4 digits (CNAE)-ISIC Rev 3-No National Level | Yes-Permanent Workers | Yes | No | Yes-Equipment and Durables | Yes | IBGE |
| | Informal Economic Survey | Survey | No periodicity-latest available 2003 | Firm | All sectors | | CNAE 1 digit | Yes | Yes | Yes | Yes | | IBGE |
| Brazil-Other Sources | Commerce Monthly Survey (PMC) | Survey | Monthly | | | Brazil-Other Sources | | | | | | | |
| | Technological Innovations Survey | Survey | Monthly-available from 2000, from 2003 it is every two years | | | | | | | | | | |
| | Industrial Production Monthly Survey | Survey | Monthly | | | | | | | | | | |
| | Industrial Employment and Wages Monthly Survey (PIMS) | Survey | Monthly | | | | | | | | | | |
| Chile | Economic Census (agriculture, livestock and forestry) | Census | Every ten years-last available 2008 | Factory/Establishment | Agricultural/Farming | Chile | | Yes | | | Cultivated Surface, Animals, Property and Equipment | | INE |
| | National Industrial Annual Survey | Survey | Annual | Factory/Establishment | Manufacture and Manufacturing Sectors | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Yes-Equipment and Durables | | INE |
| | Small and Medium Enterprises Annual Survey (PYMES) | Survey | Annual | Firm | Manufacturing, Extraction, Services (Commerce and Transport), Construction | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Technology acquisitions, equipment and | Yes-ROL | INE |
| | Commerce Survey | Survey | Annual | Firm | Commerce, Vehicle Repair | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes-Sales, Costs, Expenditure | Yes-Equipment and Durables | Yes-ROL | INE |
| | Service Survey | Survey | Annual | Firm | Real Estate, Housing and other services | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Yes-Equipment and Durables | Yes-ROL | INE |
| | Food Services Survey | Survey | Annual | Firm | Hotels and Restaurants | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Yes-Equipment and Durables | Yes-ROL | INE |
| | Touristic Lodging Services Survey | Survey | Annual | Firm | Hotels and Restaurants | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Yes-Equipment and Durables | Yes-ROL | INE |
| | Cargo Transport Services Survey (Land) | Survey | Annual | Firm | Transportation | | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | Yes | Yes | Yes-Equipment and Durables | Yes-ROL | INE |
| | Cultivated Surface and Production Survey | Survey | Annual | Factory/Establishment | Agricultural/Farming | | CIIU REV 3, 3 digits | | | | | Yes-ROL | INE |

| Table 1.A (cont.) | | | | | | | | | | | | | |
|------------------------|---|--------------|---------------------------------------|--------------------------------|--|------------------------|---|------------------------------------|---|----------------------------------|----------------------------|--------|------|
| Table 1.A (cont.) | | | | | | | | | | | | | |
| | Source | Type of Data | Frequency | Observation Unit | Sector | Classification System | Number of Workers | Product Information | Sales Information | Investment Information | Firm identifier | Agency | |
| Chile-Other Sources | Production and Sales Index (IPVF) | Survey | Monthly | | | | | | | | | | |
| | Electrical Generation Firms Survey | Survey | Monthly | | | | | | | | | | |
| | Electrical Distribution Firms Survey | Survey | Monthly | | | | | | | | | | |
| | Water Distribution Firms Survey | Survey | Monthly | | | | | | | | | | |
| | Natural Gas Distribution Firms Survey | Survey | Monthly | | | | | | | | | | |
| | Mining Production and Metallurgy Statistics | Survey | Monthly | | | | | | | | | | |
| | Consumption Sales Index | Survey | Monthly | | | | | | | | | | |
| | Services Sales Index | Survey | Every three months | | | | | | | | | | |
| | Supermarket Sales Index | Survey | Monthly | | | | | | | | | | |
| | Touristic Lodging Firms Monthly Survey | Survey | Monthly | | | | | | | | | | |
| | Mobile Communication Monthly Survey | Survey | Monthly | | | | | | | | | | |
| | Vehicle Annual Survey | Survey | Annual | | | | | | | | | | |
| | Post Monthly Survey | Survey | Monthly | | | | | | | | | | |
| | Toll Gate Monthly Survey | Survey | Monthly | | | | | | | | | | |
| Railway Annual Survey | Survey | Annual | | | | | | | | | | | |
| Colombia | Economic Census | Census | Latest available 1990, no periodicity | Factory/Establishment | Manufacturing, Commerce and Services | Colombia | CIIU REV 3, 3 digits | Yes | | Yes | | DANE | |
| | Manufacturing Annual Survey | Survey | Annual | Factory/Establishment and Firm | Manufacturing | | CIIU REV 3, 4 digits Adapted for Colombia | Yes-Permanent and Temporal Workers | Yes- CPS, 8 digits Adapted for Colombia | Yes-By type CIIU and product CPS | Yes-Equipment and Durables | Yes | DANE |
| | Services Annual Survey | Survey | Annual | Firm | Hotels, Restaurants, Travel Agencies, Marketing, Postal Services, Telecommunications | | CIIU REV 3, 3 and 4 digits | Yes-Permanent and Temporal Workers | | Yes | Yes-Equipment and Durables | Yes | DANE |
| | Commerce, Industry and Services Micro-establishments Survey | Survey | Every three months | Factory/Establishment | Manufacturing, Commerce and Services | | CIIU REV 3, 3 and 4 digits | Yes-Permanent and Temporal Workers | | Yes-Consumption, Waoes | | No | DANE |
| | Commerce Annual Survey | Survey | Annual | Firm | Commerce | | CIIU Rev 3 | Yes | Yes | Yes | Yes | | DANE |
| Colombia-Other Sources | Commerce Monthly Sample | Survey | Monthly | | | | | | | | | | |
| | Manufacturing Monthly Sample | Survey | Monthly | Factory/Establishment | Manufacturing | Colombia-Other Sources | CIIU REV 3, 3 digits | Yes-Permanent and Temporal Workers | No | Yes- By group CIIU Rev 3 | Yes-Equipment and Durables | Yes | DANE |

