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Services Firms in the Developing World: An Empirical Snapshot

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Abstract: This paper paints the first empirical portrait of services firms in the developing world. Compared with manufacturers, service providers are smaller, but growing faster. They are more productive, pay higher wages, and invest more heavily than manufacturers, but are less likely to export or to receive inward foreign direct investment. Among service providers, internationalized firms display similar characteristics to internationalized manufacturers: they are larger, employ more workers, pay higher wages, invest more heavily, and grow faster. Although these premia are generally more pronounced for goods exporters than for services exporters, the reverse is often true for foreign-owned firms.

JEL Codes: F14; L80; O24.

Keywords: Services; Developing countries; Trade in services; FDI in services; Firm-level data.

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1 Introduction

Services are becoming more important as a source of economic activity around the world. They already account for the bulk of GDP in the high income countries (75% on average), where the transformation into a services economy has been underway for decades. It is less well-known, however, that services also account for a significant proportion of economic activity in developing countries as well.² As of 2010, all income groups—even the low income countries—had at least 50% of their GDP made up of services. The rate of growth of services as a percentage of GDP has been impressive in all income groups over the last 20 years (figure 1), and on a proportional basis, it has been fastest in the upper middle income countries. The implications of the growth of services for economic development will therefore be a major source of research questions and policy challenges in the coming years.

Despite the importance of services in developing countries, there is as yet no systematic evidence on the characteristics of their services firms, nor is there any rigorous comparison of those characteristics with those of manufacturing firms. Indeed, there has been relatively little analysis of services at all in the growth and development literature (Francois and Hoekman, 2010). Many stereotypes abound. In policy circles in “factory Asia”, for example, it is frequently thought that services are low productivity, low growth activities, and that services jobs tend to be low paying compared with manufacturing. In reality, however, the services sector is notable for its heterogeneity. Just as there are low productivity low wage jobs in personal services and hospitality, so too are there high productivity high wage jobs in information technology, business, and financial services. In the absence of empirical evidence, therefore, it is hard to generalize. Within Asia, the contrast between the two giants of India and China is striking. In the former—which is well known for its success in services, which accounted for 55% of GDP in 2010—productivity growth in services was faster than in any other sector between 1990 and 2006. In higher

² For the purposes of this paper, the term “developing countries” includes all low and middle income countries as defined by the most recent World Bank classification.

income China, by contrast, services only made up 43% of GDP in 2010, and productivity growth over the same period was slower than in manufacturing (Mishra et al., 2011, drawing on Bosworth and Collins, 2008, and Bosworth and Maertens, 2010).

Firm-level evidence on the characteristics of manufacturing firms is now abundant, in particular with regard to their internationalization through trade and investment linkages. Bernard et al. (2007) provide a comprehensive review of this literature. A typical developed country example is Bernard and Jensen (1999) for the USA, and a typical developing country example is Alvarez and Lopez (2005) for Chile. An important stylized fact has emerged: only a small number of firms export, and they tend to be larger, more productive, more capital intensive, and pay higher wages than non-exporters. A similar set of characteristics emerges for foreign versus domestically-owned firms (e.g., Javorcik, 2004). There is thus strong empirical evidence for the existence of export and FDI premia in manufacturing industries in developing and developed countries alike.

Despite the growing importance of services, as set out above, only one paper deals with the characteristics of internationalized services firms. Breinlich and Criscuolo (2011) use data on UK service providers to show that they resemble manufacturing firms in many ways when it comes to internationalization: firms that trade in services are larger, more productive, more capital intensive, pay higher wages, and are more skill-intensive than firms that serve the domestic market only. By comparison with manufacturers, firms that only trade in services are smaller than other traders and less likely to be foreign owned, but there is some evidence that they are more productive and skill intensive than other firms.

The present paper seeks to fill two gaps in the literature. First, it complements the existing literature on trade premia in manufacturing sectors, as reviewed by Bernard et al. (2007), by examining the extent to which similar findings carry over to the services sector, focusing particularly on developing countries.

Second, it builds on and extends Breinlich and Criscuolo (2011) by conducting an analysis that is in some ways similar, but which uses a multi-country database sourced exclusively from the developing world. It therefore provides an opportunity to test the hypothesis that similar trade premia to those found in the case of the UK carry over to developing country service providers as well.

The paper proceeds as follows. The next section presents the dataset used for the analysis, namely the World Bank's Enterprise Surveys data. Section 3 uses those data and descriptive regressions to analyze the differences between services and manufacturing firms in the developing world, focusing on factors such as size, productivity, investment per worker, wages, and the probability of being internationalized (exporting or being foreign-owned). Section 4 conducts further descriptive regressions with the aim of establishing whether trade premia exist for services firms in developing countries, and comparing their magnitude with the premia for manufacturers. The final section concludes, and discusses directions for further research.

2 Data and Preliminary Analysis

This section describes the dataset used for the analysis in this paper. It then conducts a preliminary examination of the data for one developing country, Nigeria, to provide some basic descriptive results that can be compared with previous work for developed countries.

2.1 Data Description

This paper uses firm-level data from the World Bank's Enterprise Surveys project; see Table 1 for a full list of variables. That project now covers over 130,000 firms in 135 countries. I use the current standardized version of the dataset, which includes data from firms in 119 countries over the period 2006-2011; see Table 2 for the full list of countries and survey years included in the dataset.

Various units of the World Bank have been conducting firm-level surveys since 2002. Since 2005-2006, those efforts are centralized in the Enterprise Surveys project. Although country-specific survey instruments are used, responses are also matched to a standardized questionnaire, and the data are made available in a comparable format, free of charge, on the World Bank website (www.enterprisesurveys.org). The World Bank does not conduct the surveys itself, but instead uses private contractors. The identity of survey respondents is kept confidential, due to the sensitive nature of much of the data collected. Each survey typically covers one year of data, but for some key variables—such as sales and employment—firms are asked to provide data for the last fiscal year, and three fiscal years ago. However, even when countries appear more than once in the dataset—as is frequently the case (Table 2)—it is not possible to create a true firm level panel, because anonymous firm identifiers are year specific, which makes it impossible to identify whether a particular firm has been interviewed more than once. The dataset therefore consists of a sample of firms for each country-year in which a survey is administered. The dimensionality of the dataset is important when it comes to using fixed effects in the regression analysis below.

Typically, business owners and top managers are the survey respondents. Sometimes, they call in company accountants and human resource officers to assist. The sampling procedure is carefully controlled. As noted above, manufacturing and services firms are both covered by the survey. Stratified random sampling is applied, with strata corresponding to firm size category, business sector, and geographical region within a country.

Surveys only sample firms in the formal sector with at least five employees. In the developing country context, they therefore probably over-sample larger firms to some extent. The sampling frame is derived whenever possible from the universe of eligible firms as determined by the country's statistical office. In other cases, the list of firms is obtained from tax agencies or business licensing authorities. Alternatively,

business associations or marketing databases are used. In a few cases, the World Bank manually constructs the firm list after partitioning a country's major economic cities into clusters and blocks, and then randomly selecting a subset of blocks to be enumerated.

Data quality is clearly a concern for the Enterprise Surveys data, since they are collected by private contractors with no enforcement power in the case of misstatement, a contrast with the situation when firm-level surveys are conducted by national authorities. Three aspects of the data suggest that they are of sufficient quality for use in the present case, however. First, the Enterprise Surveys data or similar World Bank firm-level surveys have been widely used in published work as they represent the best available data for many developing countries; analysis using other data is simply not feasible. Examples of well-known and widely-cited papers using these data—either the Enterprise Surveys themselves, or their previous versions at the World Bank—include: Svensson (2003); Beck et al. (2004); Van Biesebroeck (2005); Dollar et al. (2006); Fisman and Svensson (2007); and Djankov et al. (2010). Second, the data are cleaned by taking advantage of the survey administrator's response to two questions: whether or not the questions in the survey relating to opinions and perceptions were answered truthfully or somewhat truthfully; and whether or not the questions regarding figures were taken directly from establishment records or were estimates computed with some precision. Firms not satisfying either of these two criteria are dropped from the analysis. Thirdly, it will be shown in the remainder of the paper that the basic stylized facts of the Enterprise Surveys data line up well with previous work from developed and developing countries using alternative sources, which suggests that the data are of sufficient quality to be of use and interest in the present context.

In terms of the makeup of the dataset used here, the total number of firms included after cleaning is 58,875, although not all firms report data for all indicators, which means that the effective regression samples below will be considerably smaller. The dataset covers services firms in addition to

manufacturers. Firm activities are identified at the ISIC 2 digit level, and the data make it possible to distinguish 23 manufacturing sectors and 26 services sectors (Table 3). The dataset is slightly skewed towards manufacturing, which makes up 57% of the full sample. Services firms are, however, well represented numerically, as these figures indicate.

Table 3 shows that although a large number of services sectors are included in the data, firms are heavily skewed towards just a few activities. Together, six sectors make up over 90% of the services firms surveyed: retail trade (42%), construction (12%), hotels and restaurants (5%), wholesale trade (11%), and computers (6%). Although activities are quite concentrated sectorally, there are significant numbers of firms surveyed in diverse sectors at different levels of technology and labor intensity.

Descriptive statistics for manufacturing and services separately are in Table 4. At first glance, most variables are quite similar in magnitude between the two sectors, which is a preliminary indication of similarities that will be investigated further below. One difference stands out, however: the two export variables show much lower levels of foreign market participation for service providers than for goods producers. This is an issue I return to below in the context of the econometric analysis.

2.2 Preliminary Analysis: Data for Nigeria

As an example of the data that can be extracted from the Enterprise Surveys, I analyze the case of Nigeria (surveyed in 2007), which is the country with the most observations for services firms (807, or 46% of the total sample). As would be expected in light of the previous literature, particularly Breinlich and Criscuolo (2011), the data show that only a small minority of firms export: the figure is only about 0.5% for services, as compared with about 2% for manufacturing. In line with the summary statistics for the whole dataset discussed above, it appears that in the case of Nigeria, services exporting is a very rare activity. The numbers reported here are substantially lower than those for the UK in Breinlich and Criscuolo (2011). For example, those authors found that about 6% of firms export services, a figure

which is an order of magnitude different than the one just reported for Nigeria. There are two probable explanations for this difference. One is that the dataset used here represents a much smaller sample than the one used by Breinlich and Criscuolo (2011), so the number of exporters is probably understated. The second likely explanation is that potential services exporters in Nigeria face much higher trade barriers overseas than do their counterparts in the UK. As part of the EU, UK services exporters have access to a single market for services, which, although imperfect, is not subject to many of the restrictions on service provision commonly viewed in an intra-regional context.

The data for Nigeria also show that the market for service provision is highly concentrated. The largest firm accounts for about 12% of total sales, which is exactly the same as in manufacturing. Exports are considerably more concentrated in services than in goods, with the largest exporter accounting for 42% of the total in the former, as against 35% in the latter. This finding mirrors the result of Breinlich and Criscuolo (2011) to the effect that the top 1% of British services exports account for 74% of exports by value. Production and exports thus appear to be highly concentrated among a small number of firms in developing and developed countries alike.

The Nigerian data can provide some preliminary information on whether service providers are systematically different from tend to be much smaller than manufacturers: on average they employ 15 workers, compared with 27 for manufacturing. However, despite their smaller size, they are much more productive, using sales per worker as a proxy for productivity: the differential is around 100%. If this finding is repeated below in the context of the full dataset, it would be an important one, in light of the views described at the beginning of this paper that tend to see services being about relatively low productivity jobs, particularly in the developing world.

In addition to examining the differences between services firms and manufacturers, the Nigerian data can also be used to test for the existence of exporter premia in size and productivity. Although the

number of services exporters is very small, it is still possible to make some preliminary observations. First, services exporters tend to be significantly larger than non-exporters: the differential in total sales is about 200%, on average. Although large, this figure is substantially smaller than the exporter sales premium in manufacturing, which is over 700%. A similar picture emerges in terms of productivity: sales per worker is almost 35% higher among services exporters than non-exporters, although the premium in manufacturing is an order of magnitude larger (325%). These findings suggest that there is indeed an exporter premium in developing country services markets, as is the case for manufacturing. However, as in Breinlich and Criscuolo (2011), a preliminary analysis of the data indicates that the exporter premium may be substantially smaller in services than in manufacturing. We return to these conjectures in the next section using the full dataset, and descriptive regressions rather than basic statistical analysis.

3 Comparing Services and Manufacturing Firms

In the first part of the analysis, I am interested in analyzing the differences between services and manufacturing firms in order to better understand the characteristics of the former in the developing country context. To do this, I use a series of descriptive regressions. In each case, the dependent variable is a firm-level characteristic such as size, growth, wages, labor productivity, investment per employee, the percentage of sales exported, or the percentage of foreign ownership. The independent variable is a dummy equal to unity for services sectors, and zero for manufacturing sectors. In addition to the services dummy, I also include a full set of country-year fixed effects to account for outside influences such as macroeconomic factors including the exchange rate, and other country-specific shocks.³ All regressions are conducted using OLS with standard errors clustered at the country-year level. I emphasize that, in line with much of the literature on trade premia in manufacturing, as well as

³ Due to collinearity constraints—the services dummy is coded in terms of ISIC 2-digit sectors—it is not possible to include sector fixed effects in these regressions. Sector fixed effects are, however, included in the trade premia regressions below, when the services dummy is no longer required and the sample is split between manufacturing and services sectors.

Breinlich and Criscuolo (2011) in the case of services, these are descriptive regressions only, and should not be given a causal interpretation.

Results are in Table 5. In column 1, the dependent variable is $\log(\text{sales})$. Interestingly, the coefficient on the services dummy is negative but not statistically significant. Services firms are therefore not systematically smaller than their manufacturing counterparts in terms of total sales. The next column, however, shows that there is a significant difference between the two types of firms when it comes to the recent growth of sales (i.e., over the last three years): the coefficient on the services dummy is positive and 5% statistically significant, which indicates that services firms have been experiencing faster recent growth than manufacturing firms.

The next two columns move away from sales to examine the employment situation. By contrast with column 1, column 3 shows that services firms are systematically smaller than manufacturers in terms of the number of workers they employ: the effect is quantitatively significant, with service providers employing about 30% less workers on average than manufacturers, and it is also statistically significant at the 1% level. In column 4, attention turns to wages. Although services firms tend to employ fewer workers than manufacturers, they tend to pay them more: the services dummy is positively signed and statistically significant at the 10% level. However, the range differential is small, on the order of 5%. It may well be due to differences in workforce skill composition, as found by Breinlich and Criscuolo (2011) for the case of the UK, but the data do not allow me to examine that hypothesis.

Columns 5 and 6 consider firms' productive characteristics. In line with the result for wages, column 5 shows that services firms tend to be more productive than manufacturers. The differential is quantitatively significant, at over 35%, and statistically significant at the 1% level. Of course, this result should of course be interpreted cautiously for the reasons discussed above in relation to the structure and composition of the Enterprise Surveys data. Nonetheless, it is at least indicative of the fact that the

common stereotype of services jobs as low wage and low productivity may not fit well with the data in developing countries at this time. In addition, and in line with this result, column 6 shows that services firms tend to have a higher level of investment than do manufacturers, an effect which is statistically significant at the 5% level.

Finally, columns 7 and 8 look at firm internationalization.⁴ Services firms are again significantly different from manufacturers in this regard: they are less likely to internationalize. Column 7 shows that service providers tend to export a smaller percentage of their output than do manufacturers (1% statistically significant), and column 8 shows that services firms are slightly less likely to have foreign participation in their ownership structure than manufacturers (5% statistically significant). The result on exports is interesting, since it might be expected that many services could easily be sold across borders using information and communication technologies. However, Miroudot et al. (2012a) have recently shown that trade costs are in fact very high in services sectors—perhaps twice as high as in goods sectors—and the result on export participation here would tend to reflect the view that trade in services remains subject to substantial barriers in the case of developing country exporters.

4 Internationalization of Services Firms: Trade and FDI Premia

In contrast to the previous section, this one focuses on examining heterogeneity within the services sector by identifying trade and FDI premia, and comparing them with similar numbers for manufacturing. As noted above, there is currently no empirical evidence on trade and FDI premia in services for developing countries, and only one example for a developed country, namely the UK (Breinlich and Criscuolo, 2011).

⁴ For consistency, these regression results are presented using OLS. However, results are qualitatively identical if the fractional logit model is used instead, to account for the fact that the dependent variable is bounded between zero and unity.

To provide a baseline, Table 6 presents estimated trade and FDI premia for manufacturing sectors only. As in the previous literature, the premia are estimated by running an OLS regression with a firm characteristic as the dependent variable, and dummy variables for export status and foreign ownership as the independent variables. Each model also includes a full set of fixed effects by country-ISIC 2 digit sector-year. Again, these models are presented as descriptive regressions only, in line with much of the existing literature, and should not be given a causal interpretation.

Results are in Table 6, and accord well with the extensive literature on trade and FDI premia in manufacturing sectors. Column 1 shows that exporters and foreign-owned firms tend to be larger than other firms, with both effects statistically significant at the 1% level. Column 2 examines recent growth in sales, and shows that exporters tend to experience faster growth than other firms (10% statistically significant). There is no statistically significant effect for foreign-owned firms.

Columns 3 and 4 turn to employment variables. They show that exporters and foreign-owned firms tend to employ more workers, and pay them more, than manufacturing firms that are not internationalized. All effects are statistically significant at the 1% level.

Finally, columns 5 and 6 deal with productivity and investment. They show that exporters and foreign-owned firms both tend to have higher levels of labor productivity than other manufacturing firms, and that both effects are statistically significant at the 1% level. Foreign-owned firms also have higher levels of investment per worker than other firms, an effect which is 1% statistically significant. However, there is no statistically significant export premium for investment per worker.

Results from Table 6 align well with existing work for manufacturing. In Table 7, I examine whether they carry over to the services sector in developing countries. Column 1 again uses sales as the dependent variable, and shows that exporters and foreign-owned firms tend to have higher levels of sales than other services firms. Both effects are statistically significant at the 1% level. In line with the results for

manufacturing, column 2 shows that services exporters also experience faster recent growth in sales (1% statistically significant), as do foreign-owned firms (10% statistically significant). Comparing columns 1 and 2 of Table 7 with the corresponding columns of Table 6 makes it possible to see whether the trade and FDI premia are of similar size for services and manufacturing firms. In the case of sales, the export premium is smaller for services firms, but is slightly larger for foreign-owned firms. By contrast, the premia for recent growth in sales are much larger for services firms, and it is only in the case of services that foreign-owned firms experience significantly faster sales growth than other firms.

Columns 3 and 4 use employment variables as the regressands. Results again support the existence of substantial trade and FDI premia in the case of services firms: exporters and foreign-owned firms tend to employ more workers and pay higher wages than non-internationalized services firms, and all effects are statistically significant at the 1% level. Comparing the size of the premia for services with those for manufacturing shows that they are considerably smaller in both cases for employment. For wages, however, only the exporter premium is smaller. The FDI premium, by contrast, is noticeably larger than the corresponding figure for manufacturing.

Finally, columns 5 and 6 analyze productivity and investment. In the former case, exporters and foreign-owned firms both tend to be substantially more productive than other service providers, and both effects are statistically significant at the 1% level. For investment per worker, premia are again evident in both cases: the exporter premium is statistically significant at the 1% level, and the foreign ownership premium is statistically significant at the 5% level. Comparing the coefficients from columns 5 and 6 with the corresponding figures from Table 6 for manufacturing firms suggests that in the case of labor productivity, the exporter premium is smaller in services than in manufacturing, but the foreign ownership premium is larger. For investment per worker, the exporter premium is only statistically

significant in the case of services, but the foreign ownership premium is somewhat smaller for services than for manufacturing.

5 Conclusion

The services sector is rapidly growing in importance in the developing world, and even in low income countries accounts for, on average, at least half of all economic activity. Despite this trend, however, there is very little empirical work on services firms in general, and particularly in the developing country context. This paper has been a first attempt to fill that void. It has shown that contrary to common stereotypes, services firms in developing countries tend to be smaller but faster growing than manufacturing firms. They pay higher wages, have higher labor productivity, and display higher levels of investment. However, they are substantially less internationalized, with exporting and foreign ownership less common than in manufacturing. This result is in line with recent work suggesting that trade costs in services markets remain very high compared with manufacturing (Miroudot et al., 2012a).

In addition, this paper has provided the first empirical evidence on trade and FDI premia for services in developing countries. In a qualitative sense, results are quite similar to what has been observed in numerous papers for manufacturing: services exporters, and foreign-owned service providers, are systematically larger, faster growing, more productive, have higher levels of investment, and pay higher wages than domestic firms. However, in line with the findings of Breinlich and Criscuolo (2011) for the UK, export premia in services are generally smaller than in manufacturing. However, the opposite is often true for foreign ownership premia.

The results presented here are suggestive of a number of avenues for future research. First, it would be of research and policy interest to extend work for manufacturing which shows that liberalization generally has a positive effect on firm productivity (e.g., Pavcnik, 2002). Enterprise Surveys data on

services could be combined with new measures of services trade restrictiveness from the World Bank (Borchert et al., 2012) to see whether the same association holds true for services firms. Preliminary indications are that it does: Miroudot et al. (2012b) show that trade costs and productivity are negatively linked, but their analysis is at the sectoral, not firm, level, and it is limited to developed countries, primarily the EU.

A second possibility would be to examine the linkages between services firms and manufacturers, particularly as regards exporting behavior by the latter. Services firms provide many crucial inputs for manufacturers, such as transport, distribution, utilities (electricity and water), telecommunications, information technology, and other business services such as consulting and research. There is thus considerable scope for productivity shocks in services sectors to be transmitted to manufacturing. Existing evidence for the Czech Republic (Arnold et al., 2011) and India (Arnold et al., 2012) suggests that services liberalization can indeed lead to productivity improvements in manufacturing sectors. The Enterprise Surveys data could be used to directly link productivity in the two sectors, and to examine in a more general setting—given wide country coverage—the impact of services performance on manufacturing performance and trade.

References

- Alvarez, R., and R. Lopez. 2005. "Exporting and Performance: Evidence from Chilean Plants." *Canadian Journal of Economics* 38(4): 1384-1400.
- Arnold, J.M., B.S. Javorcik, and A. Mattoo. 2011. "Does Services Liberalization Benefit Manufacturing Firms? Evidence from the Czech Republic." *Journal of International Economics* 85(1): 136-146.
- Arnold, J.M., B.S. Javorcik, M. Lipscomb, and A. Mattoo. 2012. "Services Reform and Manufacturing Performance: Evidence from India." Policy Research Working Paper No. 5948, World Bank.

- Beck, T., A. Demirguc-Kunt, and V. Maksimovic. 2004. "Bank Competition and Access to Finance: International Evidence." *Journal of Money, Credit, and Banking* 36(3): 627-648.
- Bernard, A.B., and J.B. Jensen. 1999. "Exceptional Exporter Performance: Cause, Effect, or Both?" *Journal of International Economics* 47(1): 1-25.
- Bernard, A.B., J.B. Jensen, S.J. Redding, and P.K. Schott. 2007. "Firms in International Trade." *Journal of Economic Perspectives* 21(3): 105-130.
- Borchert, I., B. Gootiiz, and A. Mattoo. 2012. "Policy Barriers to International Trade in Services: Evidence from a New Database." Policy Research Working Paper No. 6109, World Bank.
- Bosworth, B., and S. Collins. 2008. "Accounting for Growth: Comparing India and China." *Journal of Economic Perspectives* 22(1): 45-66.
- Bosworth, B., and A. Maertens. 2010. "The Role of the Service Sector in South Asia in Economic Growth and Employment Generation." In E. Ghani, ed. *The Service Revolution in South Asia*. New Delhi: Oxford University Press.
- Breinlich, H., and C. Criscuolo. 2011. "International Trade in Services: A Portrait of Importers and Exporters." *Journal of International Economics* 84(2): 188-206.
- Djankov, S., T. Ganser, C. McLiesh, R. Ramalho, and A. Shleifer. 2010. "The Effect of Corporate Taxes on Investment and Entrepreneurship." *American Economics Journal: Macroeconomics* 2(3): 31-64.
- Dollar, D., M. Hallward-Driemeier, and T. Mengistae. 2006. "Investment Climate and International Integration." *World Development* 34(9): 1498-1516.
- Fisman, R., and J. Svensson. 2007. "Are Corruption and Taxation Really Harmful to Growth? Firm Level Evidence." *Journal of Development Economics* 83(1): 63-75.

Francois, J., and B. Hoekman. 2010. "Services Trade and Policy." *Journal of Economic Literature* 48(3): 642-692.

Javorcik, B.S. 2004. "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages." *American Economic Review* 94(3): 605-627.

Miroudot, S., J. Sauvage, and B. Shepherd. 2012a. "Measuring the Cost of International Trade in Services." Working Paper.

Miroudot, S., J. Sauvage, and B. Shepherd. 2012b. "Trade Costs and Productivity in Services Sectors." *Economics Letters* 114(1): 36-38.

Mishra, S., S. Lundstrom, and R. Anand. 2011. "Service Export Sophistication and Economic Growth." Policy Research Working Paper No. 5606, World Bank.

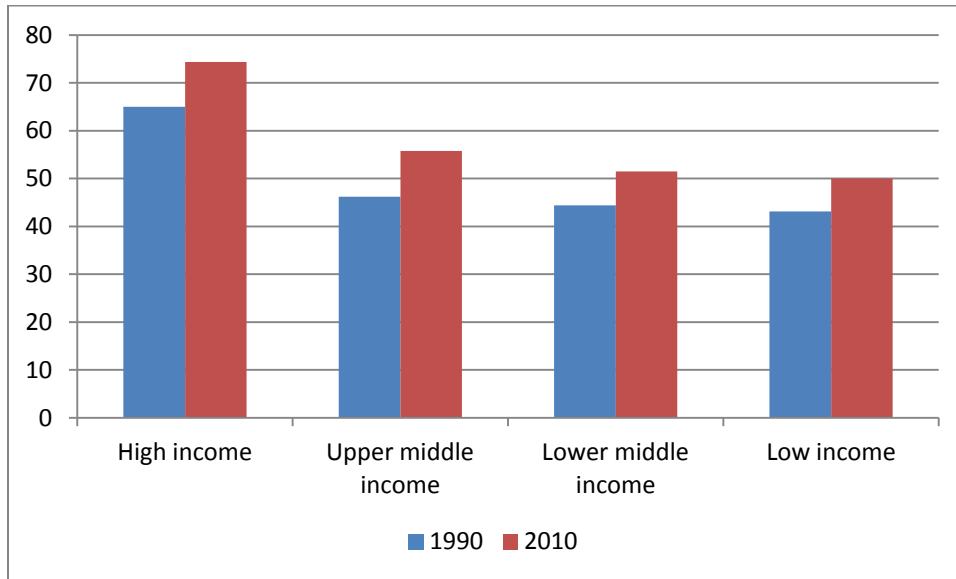
Pavcnik, N. 2002. "Trade Liberalization, Exit, and Productivity Improvement: Evidence from Chilean Plants." *Review of Economic Studies* 69(1): 245-276.

Svensson, J. 2003. "Who Must Pay Bribes and How Much? Evidence from a Cross-Section of Firms." *Quarterly Journal of Economics* 118(1): 207-230.

Van Biesebroeck, J. 2005. "Exporting Raises Productivity in Sub-Saharan African Manufacturing Firms." *Journal of International Economics* 67(2): 373-391.

Figures

Figure 1: Services value added as a percentage of GDP, by World Bank income group, 1990-2010.



Tables

Table 1: Dataset description.

Variable	Definition	Year	Source
% Foreign Ownership	Percentage of an establishment owned by foreign private individuals, companies, or organizations.	Various	World Bank Enterprise Surveys question b2b.
% Sales Exported	Percentage of an establishment's total sales accounted for by direct exports.	Various	World Bank Enterprise Surveys question d3b.
DLog(Sales)	Logarithmic difference of total sales for the last fiscal year and total sales three fiscal years ago.	Various	World Bank Enterprise Surveys questions d2 and n3.
Log(Employees)	Logarithm of the total number of permanent full time employees and full time seasonal/temporary workers for the last fiscal year.	Various	World Bank Enterprise Surveys questions l1 and l6.
Exporter	Dummy variable equal to unity for establishments that recorded non-zero direct exports as a percentage of total sales for the last fiscal year.	Various	World Bank Enterprise Surveys question d3b.
Foreign	Dummy variable equal to unity for establishments that were owned more than 50% by foreign private individuals, companies, or organizations.	Various	World Bank Enterprise Surveys question b2b.
Log(Investment per Employee)	Logarithm of the establishment's purchases of machinery, vehicles, equipment, land, buildings, and information technology, divided by the number of employees.	Various	World Bank Enterprise Surveys questions l1, l6, n5a, n5b, and n5c.
Log(Labor Productivity)	Logarithm of total sales divided by the number of employees.	Various	World Bank Enterprise Surveys questions d2, l1, and l6.
Log(Sales)	Logarithm of total sales for the last fiscal year.	Various	World Bank Enterprise Surveys question d2.
Services	Dummy variable equal to unity for firms in ISIC sectors 40 through 93 inclusive.	Various	World Bank Enterprise Surveys.
Log(Wage)	Logarithm of the total annual cost of labor divided by the number of employees.	Various	World Bank Enterprise Surveys questions l1, l6, and n2a.

Table 2: Country coverage of the Enterprise Surveys dataset.

Country	Years	No. of Firms	Country	Years	No. of Firms	Country	Years	No. of Firms
Afghanistan	2008	502	Chad	2009	147	Guyana	2010	164
Albania	2007	297	Chile	2006, 2010	1896	Honduras	2006, 2010	703
Angola	2006, 2010	572	Colombia	2006, 2010	1859	Hungary	2009	290
Antigua and Barbuda	2010	151	Congo	2009	110	Indonesia	2009	414
Argentina	2006, 2010	1898	Costa Rica	2010	391	Iraq	2011	657
Armenia	2009	336	Croatia	2007	584	Ivory Coast	2009	446
Azerbaijan	2009	358	Czech Republic	2009	219	Jamaica	2010	376
Bahamas	2010	150	Democratic Republic of the Congo	2006, 2010	622	Kazakhstan	2009	503
Bangladesh	2007	1,439	Dominica	2010	150	Kenya	2007	620
Barbados	2010	150	Dominican Republic	2010	356	Kosovo	2009	251
Belarus	2008	268	Ecuador	2006, 2010	923	Kyrgyz Republic	2009	213
Belize	2010	150	El Salvador	2006, 2010	924	Lao PDR	2009	357
Benin	2009	119	Eritrea	2009	158	Latvia	2009	266
Bhutan	2009	235	Estonia	2009	266	Lesotho	2009	134
Bolivia	2006, 2010	819	Fiji	2009	155	Liberia	2009	97
Bosnia and Herzegovina	2009	316	Macedonia	2009	351	Lithuania	2009	267
Botswana	2006, 2010	540	Gabon	2009	123	Madagascar	2009	411
Brazil	2009	1,669	Gambia	2006	141	Malawi	2009	133
Bulgaria	2007, 2009	1,296	Georgia	2008	348	Mali	2007, 2010	824
Burkina Faso	2009	344	Ghana	2007	493	Mauritania	2006	185
Burundi	2006	232	Grenada	2010	153	Mauritius	2009	367
Cameroon	2009	325	Guatemala	2006, 2010	925	Mexico	2006, 2010	2,531
Cape Verde	2009	149	Guinea	2006	221	Micronesia	2009	65
Central African Republic	2011	145	Guinea Bissau	2006	125	Moldova	2009	356
Mongolia	2009	255	Tajikistan	2008	337	Nepal	2009	358
Montenegro	2009	113	Tanzania	2006	404	Nicaragua	2006, 2010	698
Mozambique	2007	473	Timor Leste	2009	46	Niger	2009	144
Namibia	2006	277	Togo	2009	126	Nigeria	2007	1,753

Country	Years	No. of Firms	Country	Years	No. of Firms	Country	Years	No. of Firms
Pakistan	2007	822	Ukraine	2008	818			
Panama	2006, 2010	728	Uruguay	2006, 2010	1165			
Paraguay	2006, 2010	842	Uzbekistan	2008	357			
Peru	2006, 2010	1589	Vanuatu	2009	126			
Philippines	2009	1,303	Venezuela	2006, 2010	756			
Poland	2009	356	Vietnam	2009	1,033			
Romania	2009	506	Yemen	2010	422			
Russia	2009	952	Zambia	2007	484			
Rwanda	2006	203	Zimbabwe	2011	583			
Samoa	2009	98						
Senegal	2007	506						
Serbia	2009	375						
Sierra Leone	2009	126						
Slovak Republic	2009	241						
Slovenia	2009	269						
South Africa	2007	937						
Sri Lanka	2011	573						
St. Kitts and Nevis	2010	150						
St. Lucia	2010	150						
St. Vincent and the Grenadines	2010	154						
Suriname	2010	152						
Swaziland	2006	271						
Tonga	2009	150						
Trinidad and Tobago	2010	358						
Turkey	2008	1,070						
Uganda	2006	536						

Table 3: Sectoral coverage of the Enterprise Surveys dataset.

Manufacturing			Services		
ISIC Code	Sector	No. of Firms	ISIC Code	Sector	No. of Firms
15	Food products and beverages.	7,974	40	Electricity, gas, and hot water.	1
16	Tobacco products.	71	41	Water distribution.	1
17	Textiles.	2,565	45	Construction.	3,111
18	Apparel.	4,554	50	Repair of motor vehicles and fuel sales.	2,360
19	Leather and leather products.	849	51	Wholesale trade.	2,880
20	Wood and wood products.	1,036	52	Retail trade.	10,680
21	Paper and paper products.	363	53	NA	2
22	Publishing and printing.	1,091	55	Hotels and restaurants.	3,144
23	Coke and petroleum products.	52	57	NA	1
24	Chemicals and chemical products.	3,043	60	Land transport.	801
25	Rubber and plastics.	1,568	61	Water transport.	70
26	Non-metallic mineral products.	1,900	62	Air transport.	65
27	Basic metals.	573	63	Other transport activities.	581
28	Metal products.	2,798	64	Post and telecommunications.	177
29	Machinery and equipment.	1,653	65	Financial intermediation.	3
30	Office equipment.	19	66	Insurance.	1
31	Electrical machinery.	657	67	Auxiliary finance activities.	1
32	Communication equipment.	168	70	Real estate.	5
33	Medical and precision instruments.	89	72	Computers.	1,593
34	Motor vehicles.	274	73	Research and development.	2
35	Other transport equipment.	140	74	Other business activities.	13
36	Furniture.	1,821	81	NA	1
37	Recycling.	61	84	NA	1
			85	Health and social work.	46
			92	Recreational, cultural, and sporting activities.	9
			93	Other services.	7

Table 4: Summary statistics for manufacturing and services firms.

Variable	Manufacturing					Services				
	Obs.	Mean	Std. Dev.	Min.	Max.	Obs.	Mean	Std. Dev.	Min.	Max.
% Foreign Ownership	32504	0.094	0.274	0.000	1.000	25110	0.100	0.282	0.000	1.000
% Sales Exported	33173	0.105	0.255	0.000	1.000	25309	0.029	0.138	0.000	1.000
DLog(Sales)	26149	0.340	1.039	-11.736	21.060	18877	0.418	1.108	-8.564	16.300
Log(Employees)	33262	3.620	1.412	0.000	11.074	25449	3.162	1.347	0.000	10.539
Exporter	33173	0.252	0.434	0.000	1.000	25309	0.083	0.276	0.000	1.000
Foreign	32504	0.089	0.285	0.000	1.000	25110	0.094	0.292	0.000	1.000
Log(Investment per Employee)	17139	9.735	3.950	-8.613	25.121	11626	10.336	3.016	-3.401	22.963
Log(Labor Productivity)	30763	13.363	2.817	-0.836	27.253	22742	13.597	2.801	2.303	28.373
Log(Sales)	30792	16.988	3.227	1.649	33.846	22801	16.754	3.095	4.605	35.532
Log(Wage)	30388	11.474	2.702	-0.288	23.390	22982	11.420	2.620	0.916	23.431

Table 5: Regressions of firm-level variables on a dummy for services sectors.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log(Sales)	DLog(Sales)	Log(Employees)	Log(Wage)	Log(Labor Productivity)	Log(Investment per Employee)	% Sales Exported	% Foreign Ownership
Services	-0.047 (0.456)	0.032** (0.024)	-0.352*** (0.000)	0.052* (0.085)	0.309*** (0.000)	0.156** (0.034)	-0.076*** (0.000)	-0.014** (0.012)
Observations	53593	45026	58711	53370	53505	28765	58482	57614
R2	0.600	0.118	0.137	0.836	0.766	0.767	0.088	0.065
Fixed Effects	Country-Year	Country-Year	Country-Year	Country-Year	Country-Year	Country-Year	Country-Year	Country-Year

*Note: The dependent variable is indicated at the top of each column. All regressions are by OLS. P-values based on robust standard errors clustered by country-year are in parentheses beneath the parameter estimates. Statistical significance is indicated as follows: * (10%), ** (5%), and *** (1%).*

Table 6: Regressions of firm-level variables on dummies for internationalization, manufacturing firms only.

	(1)	(2)	(3)	(4)	(5)	(6)
	Log(Sales)	DLog(Sales)	Log(Employees)	Log(Wage)	Log(Labor Productivity)	Log(Investment per Employee)
Exporter	1.791*** (0.000)	0.036* (0.054)	1.267*** (0.000)	0.293*** (0.000)	0.524*** (0.000)	0.063 (0.265)
Foreign	1.238*** (0.000)	0.011 (0.674)	0.709*** (0.000)	0.315*** (0.000)	0.533*** (0.000)	0.250*** (0.000)
Observations	29973	25508	32327	29589	29952	16640
R2	0.195	0.000	0.204	0.024	0.051	0.003
Fixed Effects	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year

*Note: The dependent variable is indicated at the top of each column. All regressions are by OLS. P-values based on robust standard errors clustered by country-sector-year are in parentheses beneath the parameter estimates. Statistical significance is indicated as follows: * (10%), ** (5%), and *** (1%).*

Table 7: Regressions of firm-level variables on dummies for internationalization, services firms only.

	(1)	(2)	(3)	(4)	(5)	(6)
	Log(Sales)	DLog(Sales)	Log(Employees)	Log(Wage)	Log(Labor Productivity)	Log(Investment per Employee)
Exporter	0.844*** (0.000)	0.123*** (0.000)	0.609*** (0.000)	0.192*** (0.000)	0.239*** (0.000)	0.215*** (0.003)
Foreign	1.260*** (0.000)	0.053* (0.098)	0.644*** (0.000)	0.422*** (0.000)	0.620*** (0.000)	0.141** (0.029)
Observations	22277	18479	24779	22421	22221	11339
R2	0.052	0.001	0.042	0.014	0.019	0.002
Fixed Effects	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year	Country-Sector-Year

*Note: The dependent variable is indicated at the top of each column. All regressions are by OLS. P-values based on robust standard errors clustered by country-sector-year are in parentheses beneath the parameter estimates. Statistical significance is indicated as follows: * (10%), ** (5%), and *** (1%).*