7. TAXES AND PRODUCTIVITY: A GAME OF HIDE AND SEEK

High taxes—and high tax evasion—characterize business taxes in Latin America: a fact that is often considered part of a natural state of affairs. This chapter will argue that the combination of high taxes and widespread evasion has adverse consequences for productivity. High evasion may be a survival strategy for firms that would otherwise fail because of onerous and cumbersome regulations. Yet the combination of high taxes and high evasion distorts the investment decisions of firms, reduces the efficiency of markets, and diverts governments from investing in key public goods—all of which harm the productive possibilities of a society. From this viewpoint, tax evasion is both a consequence and a cause of low productivity and must be addressed directly if productivity is to increase in the region.

High and cumbersome taxes combined with widespread tax evasion affect productivity in a number of ways. High taxes can lessen firms' incentives to invest in technology and other productivity-enhancing strategies because taxes reduce the potential profits generated by those investments. Tax evasion also lowers government's ability to invest in productivity-enhancing public goods, such as roads and education.

In addition to these two channels, this chapter examines two other, less explored ones. First, the coexistence of tax-paying and tax-evading firms creates difficulties for tax-abiding firms, which face high taxes and competition from tax-evading firms. Thus, contrary to the view that tax-evading firms (or outright informal ones) pose no threat to taxpaying firms (La Porta and Shleifer, 2009), this chapter argues that tax evasion can amount to a large subsidy to low productivity firms.[1] This effective subsidy has consequences for the quality of jobs created—with most jobs created in low productivity firms—and on aggregate productivity, which is reduced by the increasing weight of low productivity firms.

The second channel concerns the usual remedies for the problem of high tax evasion—a cure that may be worse than the disease. A myriad of special regimes aimed at lowering taxes for micro and small firms have created obstacles to the growth of productive firms. This, in turn, lowers aggregate productivity because it lessens the economic weight of productive firms.

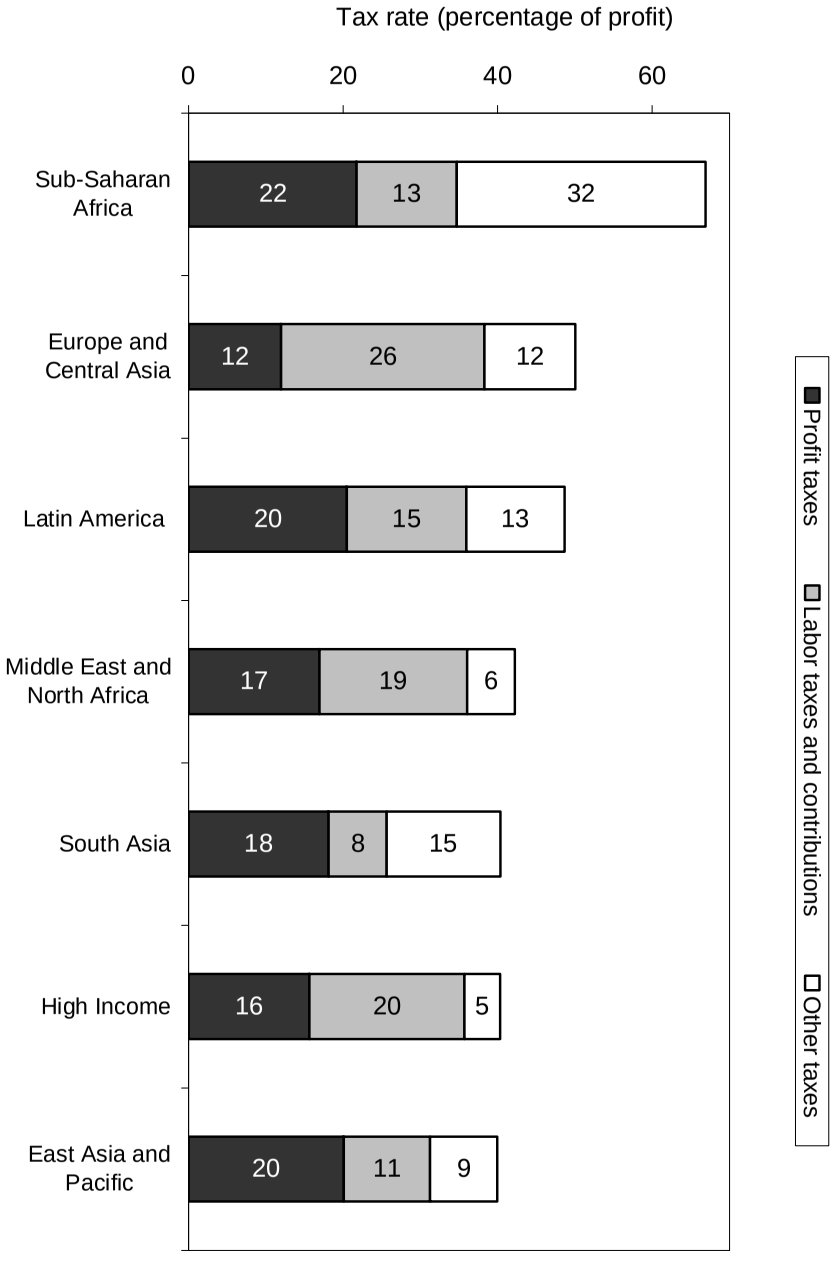
This chapter aims to put these issues in perspective, comparing the situation in various countries in the region as well as between Latin America and other regions in the world, and specifying the steps needed to make tax policy a means for raising productivity in the region, rather than lowering it.

The Current Tax Picture

Tax revenues in Latin America are low by international standards. Tax revenues excluding social contributions were about 17 percent of gross domestic product (GDP) in 2005. This figure has remained practically unchanged for the last ten years, despite a number of reforms that have been carried out during that period (Lora, 2008). By contrast, tax collection in industrial countries reaches about 36 percent of GDP. In particular, it hovers around 27 percent in the United States and nearly 26 percent in Japan (Cetrángolo and Gómez-Sabaini, 2007).

Despite low tax collection, tax rates in Latin America are high and are typically associated with high transaction costs. According to data from the World Bank's Doing Business report (2009), tax rates for Latin America are higher than in several other regions. In particular, taxes on profits are on average the second highest after Sub-Saharan Africa. The combination of low tax revenues and high tax rates points to the high incidence of tax evasion (Figure 7.1).

Figure 7.1 Tax Rates in Latin America Compared to Other Regions, 2007



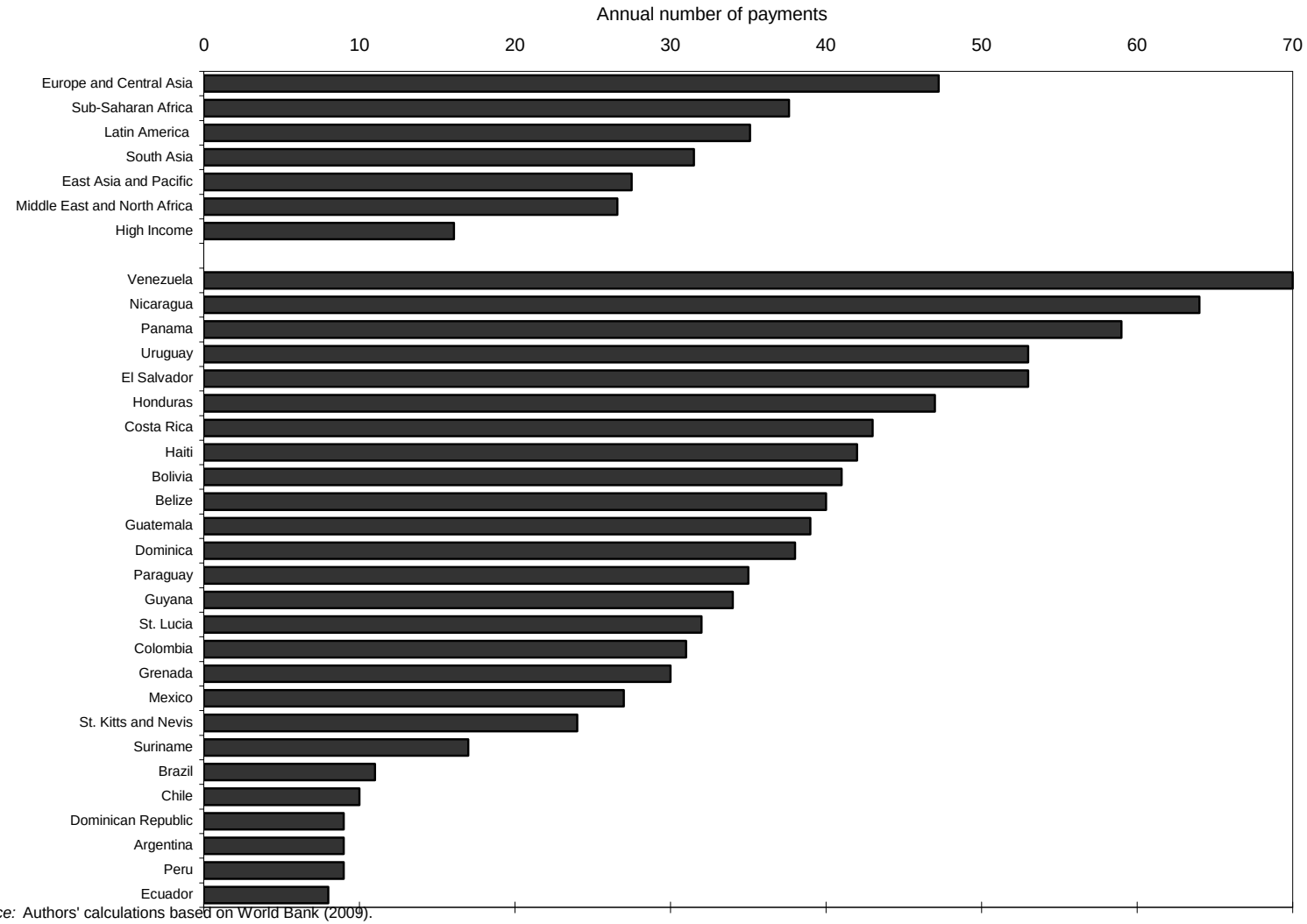
Source: Authors' calculations based on World Bank (2009).
Note: Information based in 181 countries, with data from January to December 2007.

It is usually argued that taxes on profits, mostly capital income, are inefficient because the supply of capital is highly responsive to taxes; on the other hand, taxes on labor income are less so because labor supply is less flexible. This argument is less valid in Latin America because tax evasion is likely to make labor income highly sensitive to tax rates. Nonetheless, to the extent that the supply of capital remains responsive to taxes in the region, high tax rates are probably an inefficient way to tax firms.

This unfavorable situation is aggravated by the fact that transaction costs related to taxes in the region are also among the highest in the world (see Figure 7.2). For instance, concerning the number of annual transactions that it takes for firms to make tax payments, Latin America ranks close to Sub-Saharan Africa, with 35 transactions per year. Countries in the region vary widely on this measure, however. At one extreme, Nicaragua and Venezuela require 64 and 70 tax-related transactions per year, respectively. At the other, Argentina, the Dominican Republic, Ecuador, and Peru require fewer than ten.

Greater numbers of transactions translate into more time spent by firms preparing, filing, and paying (or withholding) taxes. Latin America also ranks high on this measure when compared with other regions in the world (Figure 7.3) and the difference is not trivial. While firms in high-income countries spend an average of 177 hours a year in tax-related transactions, Latin American firms spend 320 hours, second only to those in Europe and Central Asia. Within Latin America, firms in Brazil and Bolivia spend the most hours in tax-related transactions (2,600 and 1,080, respectively).

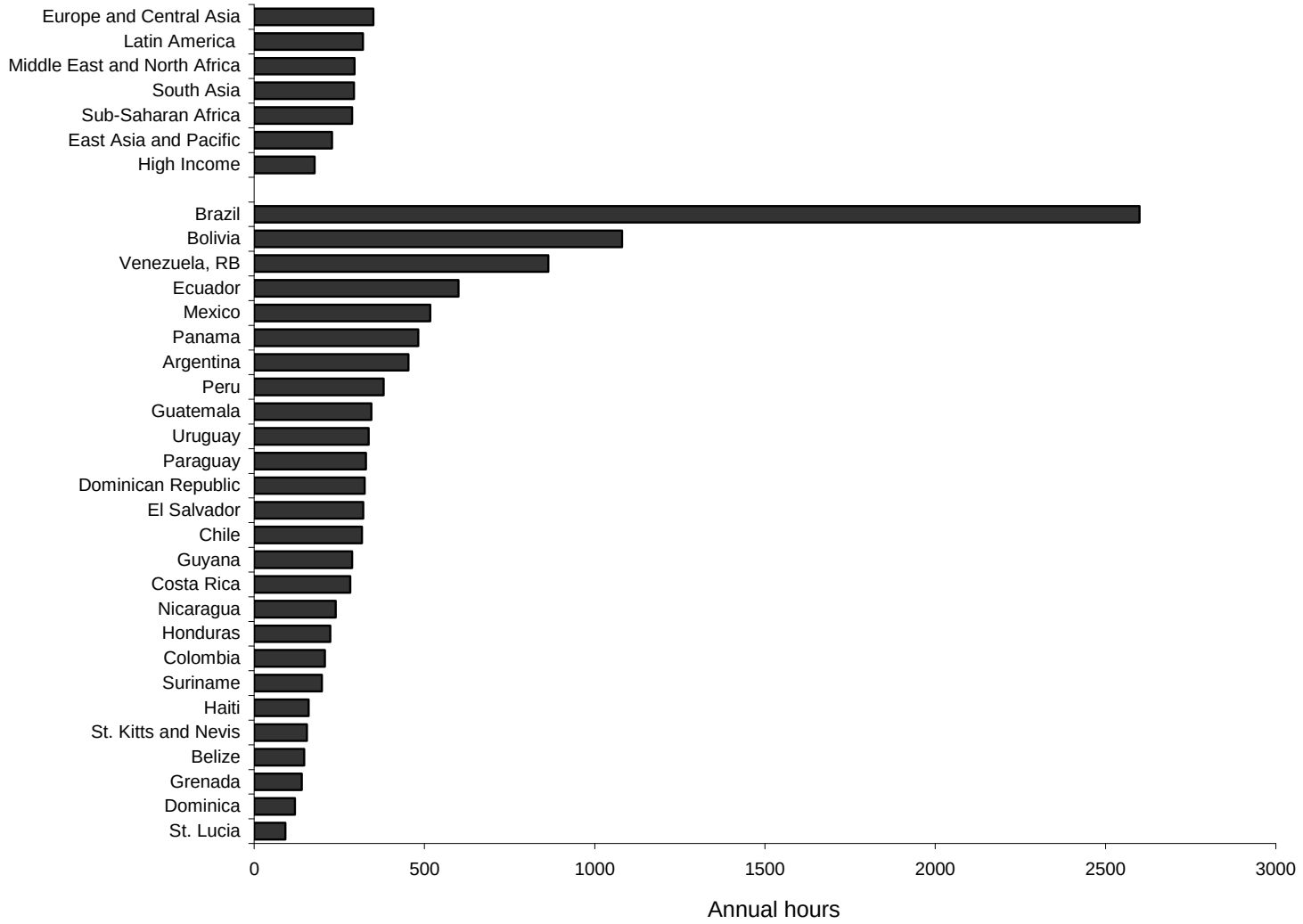
Figure 7.2 Number of Tax Payments Required, 2007



Source: Authors' calculations based on World Bank (2009).

Note: The tax payment indicator reflects the total number of taxes and contributions paid, considering the method of payment, the frequency of payment ,and the number of agencies involved for this standardized case.

Figure 7.3 Time Required to Complete Tax Payments , 2007



Source: Authors' calculations based on World Bank (2009).
Note: Information based in 181 countries, with data from 2007 -8. Time is recorded in hours per year, and it measures the time to prepare, file and pay (or withhold) 3three major types and contributions: the corporate income tax, value added or sales tax ,and labor taxes, including payroll taxes and social contributions.

As a result of these and other institutional distortions, the tax collection profile in the region looks dramatically different from other regions. While income tax looks very progressive in theory, it is not so in practice. During the mid-1980s, the marginal tax rates of income taxes were about 50 percent. They are now below 30 percent, thus becoming less progressive. Meanwhile, the minimum taxable income has increased considerably, from 60 percent of per capita income in the 1980s to around 230 percent today. However, current collection of income taxes does not represent a significant percentage of total tax collection in the region because of exemptions, deficient collection systems, and outright evasion (Lora, 2008). As a result, while tax revenues are low, the sources of revenues in Latin America are very different from other regions. In Latin America, 61 percent of tax revenues come from corporations. In industrial countries, this percentage is only 25 percent (Cetrángolo and Gómez-Sabaini, 2007). In short, corporate tax income is crucial to the tax collection system in the region, yet collection is very inefficient due at least to two factors: high evasion, particularly among small and micro firms, and a very large share of very small establishments.

Who Pays Taxes?

While tracking tax evasion of individual firms is notoriously difficult, the evidence indicates that evasion is particularly high for small firms and microenterprises, which in most cases are not registered, and thus are considered openly informal. But tax evasion is also high in medium and large firms, even when such firms are registered. This form of partial noncompliance is often referred to as the underground economy. Perry et al. (2007) find that firms underreport a large percentage of their sales for tax purposes, although the percentages vary considerably across countries. Underreporting is highest in Brazil and Panama, reaching

30–40 percent of sales, and lowest in Chile, with less than 5 percent. Such figures, however, are obtained from firms' own estimates of how much *other* firms evade.

Surprisingly, figures based on *self-reported* tax payments in enterprise surveys for a few selected countries indicate similarly high, if not higher, levels of evasion. For instance, nearly 70 percent of microenterprises (firms with 10 or fewer employees) in Mexico report that they are not registered and hence do not pay any taxes (Table 7.1). Only 9 percent of microenterprises pay more than 50 percent of what they should (arguably, a very conservative measure of evasion). Furthermore, among small and medium firms, the largest share, 63 percent, are registered but report not paying taxes. In the case of large firms, the largest share, 48 percent, do not pay taxes (McKinsey and Company, 2009).

Table 7.1 Tax-related Informality, Mexico

Degree of tax-related informality	Firm Size (percentage)		
	Micro	Small and medium	Large
Openly informal (not registered)	67	n.d.	n.d.
Pays no taxes (less than 4 percent of what they should)	11	63	48
Semi-formal (pays 4-50 percent of what they should)	12	19	25
Formal (pays over 50 percent of what they should)	9	17	28
Total	100	100	100

Source: McKinsey and Company (2009).

Note: Estimates include only those firms with positive profits.
n.d. = no data.

The situation is even more dramatic in El Salvador. Only 1 percent of all microenterprises and 3 percent of all nonmicroenterprises are registered (McKinsey and Company, 2009). While tax evasion is much lower in Chile, it is not negligible for some types of taxes. An estimated 66 percent of establishments with ten or more workers pay less than they should in value added taxes (VAT), 58 percent underpay profit taxes and 34 percent social security contributions (Table 7.2). While on average the percentage of social security contributions evaded is extremely low (around 1 percentage point of the tax base), average evasion of the value added tax and of profit taxes is around 5 percentage points. In an interesting departure from the conventional wisdom, tax evasion and state subsidies seemingly increase with size, as seen in Figure 7.4 (Busso, Madrigal, and Pagés, 2009).[2]

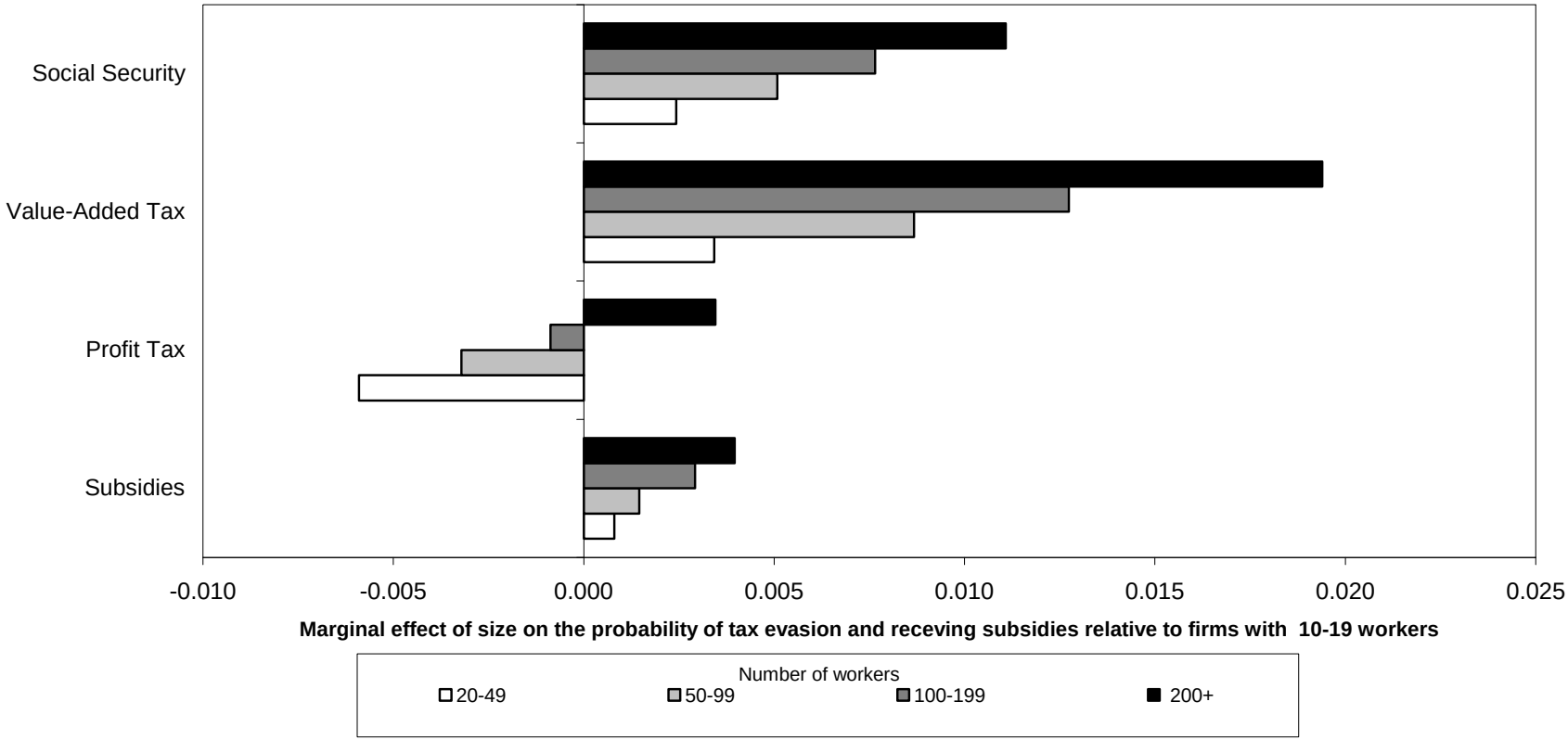
Table 7.2 Tax Evasion in Chile

	Establishments with 10 or more workers		
	Evasion (percentage of establisments)	Average evasion if evasion>0 (percentage of the taxable base)	Average legal tax rate
Social security contributions	34	1	19
Value added taxes (VAT)	66	5	18-19
Profit taxes	58	5	17

Source: Busso, Madrigal and Pagés (2009).

Note: To calculate evasion, the legal tax rate in each year minus 3 percentage points was used.

Figure 7.4 Probability of Tax Evasion and Receiving Subsidies by Firm Size Relative to Firms with 10-19 Workers, Chile



Source: Busso, Madrigal and Pagés (2009).
Note: Marginal effects were estimated using Pooled Tobit regresions. Dependent variables: Reported evasion in social security, value added tax (VAT), profit tax, and reported subsidies. The additional control variables are firm age, if the firm exports, percentage of unskilled workers, an dy ear effects. Observations: around 22,000. All marginal effects are statistically significant at the 1 percent level with the exeption of Profit tax for 100-249 workers and 250 + workers categories. To calculate evasion , the legal tax rate in each year minus 3 percentage points was used.

Which firms do not pay taxes? Carpio and Pagés (2009) use a survey of microenterprises in urban areas in Brazil (IBGE, 2003), to explore the characteristics associated with microenterprises that pay income taxes (defined in the survey as firms with fewer than five paid workers). They find that the probability of paying income taxes increases with the size and age of the firm, and the education and degree of entrepreneurialism of the owner.[3] Interestingly, they find that the probability of paying taxes declines with the number of unpaid relatives in the firm, if the owner is self-employed, and with the difficulty in accessing financial services. There is some evidence that credit is tightly linked to whether firms formalize and pay taxes. Catão, Pagés, and Rosales (2009) find evidence that formality rates increase with access to credit in Brazil. In particular, industries or economic sectors that are more credit-dependent tend to formalize faster in periods in which the supply of credit increases. They attribute this to the fact that banks normally require firms to register and often times, to document tax payments in order to provide a credit. When the supply of credit increases and firms' chances of obtaining credit rise, the incentives for firms to formalize increase as well.

A number of studies have examined the nature of informal firms in Colombia. Cárdenas and Mejía (2007) find that informal firms are much less likely to operate in a proper establishment, are younger and smaller, and are more concentrated in service sectors than formal firms. Similarly, Santamaría and Rozo (2008) find that informality is very prevalent among small firms and tends to decline with firm size. They also emphasize differences in location and physical setup: most formal firms (around 75 percent) operate from commercial premises while many informal firms operate out of their own residence (around 42 percent), use street kiosks, or conduct mobile sales. Arbeláez, León and Becerra (2009a) also find that informal firms in Colombia tend to have lower revenues, expenditures, and profits, lower fixed capital

investments, lower managerial capacity, lower integration with formal markets, and face tighter credit restrictions than formal firms.

Another important characteristic emphasized by many studies is the higher level of human capital among firm owners of formal firms (Arbeláez, León and Becerra, 2009a; LaPorta and Shleifer, 2008; Carpio and Pagés, 2009).

Are Governments Hunting for Animals in the Zoo—or Fishing in a Fishbowl?

Taxing firms in a region where the majority of firms are small enterprises is not an easy task. As described in Chapter 4, 80 to 90 percent of manufacturing establishments employ fewer than 10 workers, depending on the country. These figures are even higher in the service sector. For example, 97 percent of retail establishments in Mexico fall into that category. Many small firms imply a large number of establishments per capita, which makes collecting taxes from firms an operationally difficult and costly task for the state.

To facilitate formalization and tax collection, many countries have instituted special tax regimes for microenterprises and small firms, simplifying procedures and lowering tax rates for firms in this group. Yet tax collection from microenterprises and small enterprises represents a rather small percentage of the total tax revenues of a country, even though they constitute a significant proportion of the taxpayers (Arias, 2009). This incongruence between the number of firms and their percentage contribution to tax revenue reflects the generally lower productivity and higher evasion of small firms. For instance, in Bolivia and Chile, taxpayers registered in simplified tax regimes for microenterprises and small firms represent nearly 20 and 9 percent of all taxpayers in the country, respectively, but contribute less than 1 percent of the total tax

revenue in each country (Table 7.3). Most strikingly, in Paraguay, more than 60 percent of tax payers are microenterprises and small firms registered in simplified tax regimes, but they contribute barely 0.1 percent of total tax revenue. Given these low returns, tax agencies have little incentive to pursue microenterprises and small firms to comply with tax regulations.

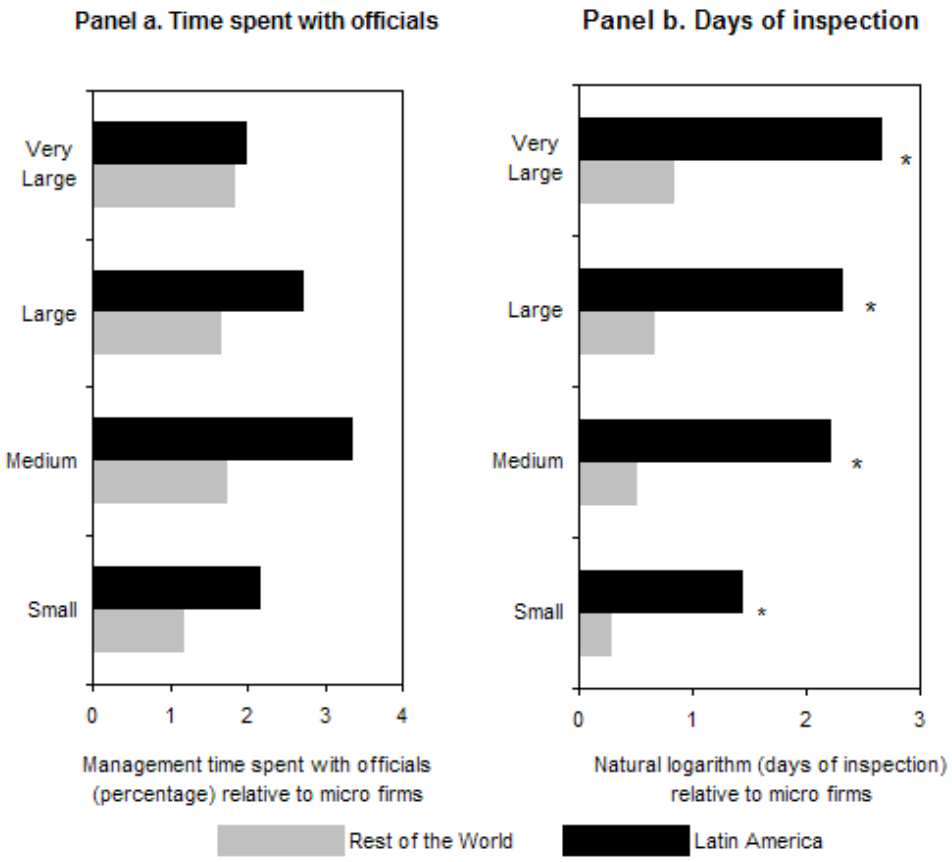
Table 7.3 Tax Collection in Simplified Tax Regimes (STR)

Country	STR	Tax collection (percentage of total tax income)	Year	Taxpayers included in the STR (percentage of total registered taxpayers)	Year
Brazil	SIMPLES (Small)	4.0	2004	9.7	2004
Brazil	SIMPLES (Micro)	2.3	2004	57.9	2004
Uruguay	IPE	0.6	2007	n.d.	n.d.
Nicaragua	Unique Tax	0.5	2008	n.d.	n.d.
Peru	RUS / RER	0.2	2008	15.2	2008
Paraguay	Unique Tax	0.1	2007	62.9	2007
Chile	RS	0.1	2007	9.0	1998
Bolivia	RTS / RAU / RTI	0.1	2007	18.2	2006

Source: Arias (2009).
n.d.= no data.

The difficulty in making small firms comply with tax regulations, coupled with the relatively low return of enforcing compliance, means that the largest, most productive firms pay most of the taxes in Latin America. Such firms are closely monitored, as enforcement is highly concentrated among them. While this is a general pattern that also appears to be true elsewhere, the differential in time spent inspecting larger firms relative to the smallest ones is far more pronounced in Latin America (Pagés, Pierre, and Scarpetta, 2009).[4] Although there are far more small firms, they are difficult to track down, so tax authorities concentrate their efforts on the accessible large firms that already pay the lion's share of taxes. In other words, tax agencies are not hunting for animals in the jungle, but rather in the zoo. As Figure 7.5 shows, larger firms tend to spend more time dealing with state officials or under inspection than smaller firms.

Figure 7.5 Tax Enforcement by Firm Size Relative to Micro Firms



Source: Pagés, Pierre and Scarpetta (2009).

* Indicates that the differences between Latin America and the rest of the world are statistically significant.

The unevenness in tax enforcement between large and small firms has a bearing on how managers in both types of firms behave and, in particular, on how they allocate resources. The costs in terms of firm productivity are not trivial. If governments target larger, more productive firms, tax evasion becomes a subsidy for less productive firms and an additional burden for the most productive ones. From this point of view, tax evasion may be lowering average

productivity, as the competition from tax-evading firms and informal firms reduces the market share of tax abiding companies.

To illustrate this distortion, consider a situation in which consumers can purchase two types of food preserving devices: ice bags, produced by low productivity, small, noncomplying firms; and refrigerators, produced by larger, more productive and more tax-compliant firms. Ice bag producers can sell their product at low cost despite their low productivity because they do not pay taxes or comply with regulations. While arguably ice is less expensive to buy and operate than refrigerators and thus more appealing to lower income consumers, the price distortion created by tax evasion increases consumption of ice bags and reduces the consumption of refrigerators relative to a situation in which all firms comply with taxes and regulations. This reduces the demand for labor—and therefore the size—of the most productive firms, and with it aggregate productivity.

Are Informal Firms Parasites, Marginal, or Romantics?

The view of informal firms as parasites—in the sense of detracting market share from taxpaying firms—is not widely held. Two other prevailing views are the romantic view and the dual view.[5] In the romantic view (as described by La Porta and Shleifer, 2008), informal firms are potentially productive but are held back by red tape/regulations (De Soto, 2000). In the dual view, the informal sector is populated by firms engaged in highly inefficient marginal activities with very low productivity such as street vendors, which exist in a parallel world that does not threaten formal firms (Harris and Todaro, 1970). Thus the predictions of these three alternative theories are clear. In the *romantic* view, total factor productivity (TFP) of informal firms is large, but their size is small due to obstacles to their growth (high costs—both financial and

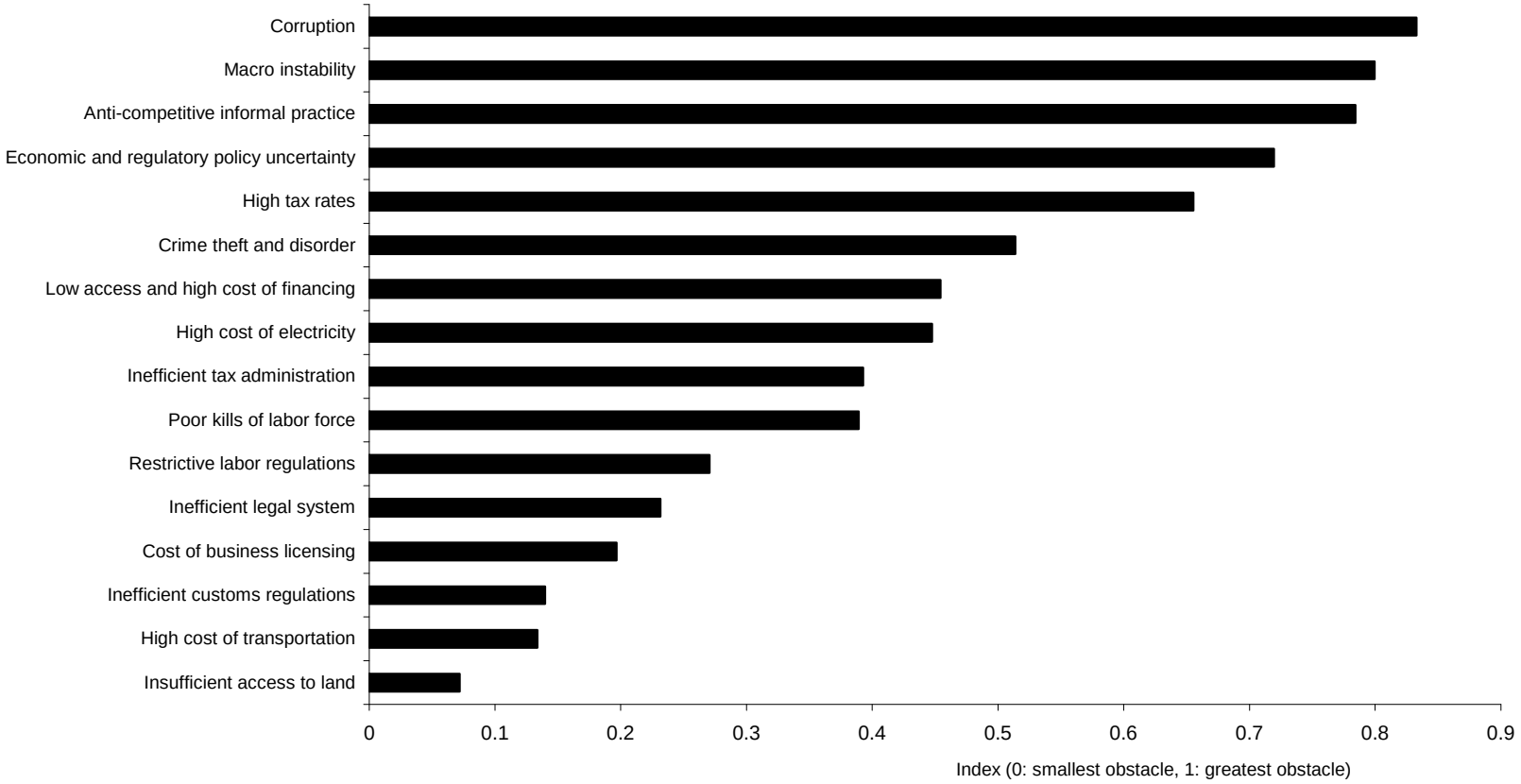
bureaucratic—of registration, limited access to financing, and the like). In the *dual* view, TFP of informal firms is low—so low that they operate only in very marginal and segmented markets to which formal firms would never cater. In the *parasitic* view, TFP of informal firms is lower than for formal firms. Thus they choose to evade taxes and regulations as a way to compete with larger, more formal firms. The key difference between the parasitic and the dual view is that in the parasitic view, informal firms reduce the market share of formal firms—because informal firms produce goods that are close enough substitutes to the products produced by formal firms. Given the stark differences in the predictions of the three theories and their potential implications for productivity, as well as poverty and inequality reduction policies, it is important to ascertain which view is best supported by the evidence in Latin America.

La Porta and Shleifer (2008) state there is not much support for the parasitic view. However, they reach this conclusion based on the observation that informal firms are on average less productive than formal ones—an observation that would also be supported by the parasitic view. Moreover, their evidence is mostly for poor countries in Africa and Asia, where the role of the informal sector may be very different than in Latin America, as there is evidence that in the region, competition from informal firms ranks high as an obstacle to the growth of formal firms.

Using data from the World Bank Enterprise Survey (WBES), Pagés, Pierre, and Scarpetta (2009) find that anticompetitive practices from the informal sector rank as the third most important constraint to formal firms' growth in Latin America, after corruption and macro instability, and ahead of other pressing issues, such as inefficient regulations, high tax rates, the economic cost of crime, high cost of electricity, or inefficient tax administration., (Figure 7.6).Furthermore, according to these data, it appears that this concern is more pressing in Latin America than in other regions of the world where typically, issues related with economic and

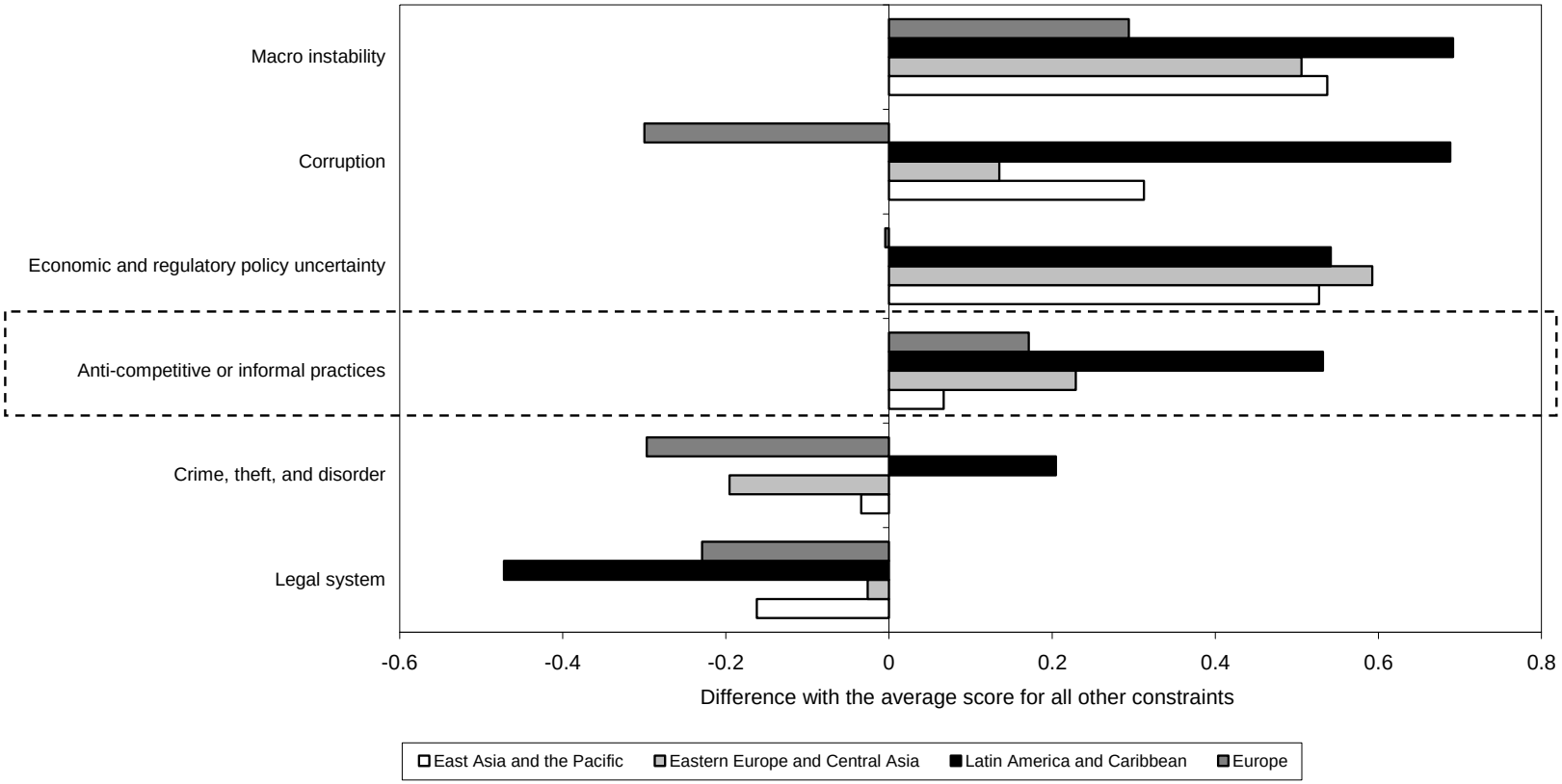
regulatory policy uncertainty and macroeconomic instability are considered relatively more relevant (Figure 7.7).

Figure 7.6 Investment Climate Constraints, Latin America



Source: Pagés, Pierre and Scarpetta (2009).
Note: The data for Brazil, Ecuador, El Salvador, Guatemala, Honduras, and Nicaragua are for 2003; Chile and Guyana, 2004; Costa Rica, 2005; and Argentina, Bolivia, Colombia, Mexico, Panama, Paraguay, Peru, and Uruguay, 2006.

Figure 7.7 Investment Climate Constraints, Latin America and Other Regions



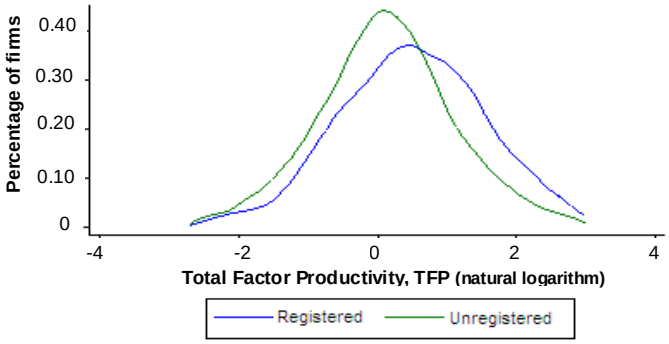
Source: Pagés, Pierre and Scarpetta (2009).
Note: The difference is between indexes that rank obstacles of each country standardized to take values between 0 (smallest obstacle) and 1 (greatest obstacle). Sample includes Brazil, Ecuador, El Salvador, Guatemala, Honduras, and Nicaragua (2003); Chile and Guyana (2004); Costa Rica (2005); and Argentina, Bolivia, Colombia, Mexico, Panama, Paraguay, Peru, and Uruguay (2006).

Moreover, new evidence at the firm level for Brazil (Carpio and Pagés, 2009) and Colombia (Arbeláez, León, and Becerra, 2009a) suggests that while informal firms are less productive than formal ones in terms of TFP, tax avoidance can distort competition between the two types of firms. In both studies, the comparison between formal and informal firms is done only among small firms in order to isolate the effect of formality from the effect of size on productivity. The sample is for firms with fewer than five paid workers (Brazil) or ten paid workers (Colombia).

Figure 7.8 plots the distribution of individual firms' TFP expressed as a difference with the average productivity of the industry to which the firm belongs. A positive (negative) number on the horizontal axis implies a productivity that is higher (lower) than the average of all firms in that industry, whether formal or informal. This allows a comparison of firms relative only to those in the same industry, since comparing firms across industries (say, metal and fabric production) may not be very meaningful. The higher productivity of formal firms is illustrated by the fact that the distribution of productivity of formal firms is always to the right of the distribution of informal firms, which implies that more formal firms tend to be above average in their respective industries than informal firms. This pattern can be observed in both Brazil and Colombia.[6]

Figure 7.8 Establishment Level Productivity, Average Productivity in Industry, Brazil and Colombia

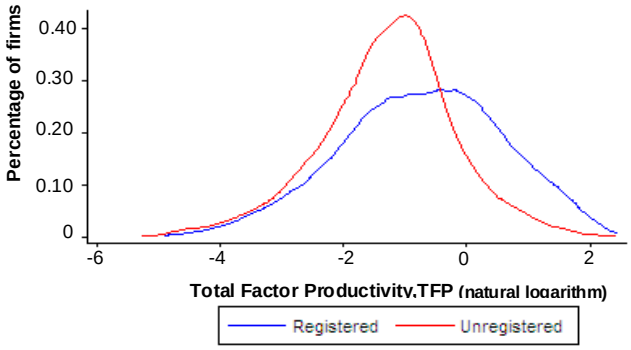
a. Brazil: Total Factor Productivity (Revenue Productivity), 2003



Source: Carpio and Pagés (2009).

Note : Productivity relative to the average of sector. Average sector=0; Input shares computed with cost shares.

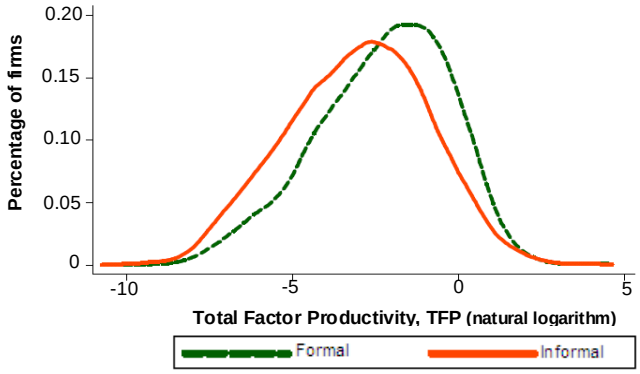
b. Brazil: Total Factor Productivity (TFP) Computed as in Hsieh-Klenow, 2009



Source : Carpio and Pagés (2009).

Note : Productivity relative to the average of sector. Average sector=0.

c. Colombia: Total Factor Productivity (TFP) Computed as in Hsieh-Klenow, 2009



Source: Arbeláez, León and Becerra (2009a).

Note : Productivity relative to the average of sector. Average sector=0.

In Brazil, the average gap in TFP between informal and formal micro firms is 55 percent. For the subset of firms that employ some paid labor, the gap is only 13 percent. For Colombia, the productivity gap between formal and informal firms is 80 percent. In comparison, the gap in TFP between the 25th and the 75th most productive firms in a given industry among formal firms is 182 percent in Brazil and 266 percent in Colombia.[7] The corresponding numbers for the informal firms are 130 percent in Brazil and 279 percent in Colombia. This implies that there are more differences in productivity within formal firms or within informal firms than across formal and informal ones. This supports the conclusion that for any given micro formal firm, there are a number of micro informal firms in the same sector that are not that far off in terms of productivity—a finding that does not fit well with the dual view of informality.

The evidence for Colombia suggests that the market share of small formal firms is too small in a world where all firms pay taxes (Arbeláez , León, and Becerra, 2009a). This is illustrated by the fact that, at the margin, transferring capital and labor from informal to formal micro firms would yield gains in total output.[8] The flip side is that the market share of the informal, less productive firms is too large, thus affecting aggregate productivity through a composition effect. The study for Brazil also indicates that tax evasion allows informal firms—particularly productive informal firms—to expand their market share beyond what they would have if they paid taxes, eating into the market share of formal firms.

A study on producers of leather shoes in Bolivia (Birbuet and Machicado, 2009) reveals great atomization in the subsector. Most producers are very small informal firms whose productivity increases by firm size. As in all other studies, productivity is higher in formal firms than in informal firms. Transferring resources (capital and labor) from informal to formal firms

would increase aggregate productivity in the sector, as the marginal products of labor and capital are higher in formal firms.

Similarly, Chong, Guillen, and Rios (2009) find that higher taxes reduce the size of formal firms. Using firm-level data from the World Bank Enterprise dataset for a sample of registered firms with five or more workers in a number of countries in the region, this study finds a systematic link between corporate taxes—measured as the percentage of profits paid by the firm as taxes—and the size of firms.

In the case of Brazil, Lewis (2004) examines the retail sector and argues that more productive supermarkets cannot take advantage of their higher productivity by lowering their prices and thereby increasing market share because they must pass on the costs of paying taxes and compliance, while traditional firms survive because they pay no taxes. He argues that Brazilian consumers, many of whom are very poor, would be better off if all firms paid taxes because their food prices would be lower. Similar results are found for supermarkets in Argentina (Sánchez, 2009), where the tax burden is applied only to the relatively few formal supermarkets. This creates a vicious circle as ever fewer taxpayers further increase the tax pressure on the remaining formal chains and forces many small formal self-service and traditional shops to move into informality. Moreover, many of the taxes, especially at the municipal level, are introduced or increased after the supermarkets have been established. This creates a problem of time inconsistency in tax policies, which may further deter expansion of formal supermarkets. These taxes act as an output wedge that mostly hurts the most productive firms.

Consider the case of the hotel industry in Colombia. Arbeláez, León, and Becerra (2009b) show that informal hotels have a large cost advantage relative to formal hotels, as formal hotels are obliged to pay income tax, value added tax, wage tax, and other taxes exceeding 60

percent of sales. Furthermore, formal hotels register as commercial establishments, while informal hotels register as residences; thus, public utility rates for commercial establishments are almost twice as high for hotels. However, informal hotels are less productive as they cannot take advantage of the economies of scale common to hotel services because these would make the government notice and tax them. When informal hotels grow, the consumption of public utilities increases, which attracts the attention of the utility service providers. Similarly, informal establishments cannot use branding, which eliminates potential economies of scale of chain-type arrangements. Because of these barriers, informal hotel services tend to grow through the proliferation of small independent firms. Furthermore, managerial capacity, which is fundamental in hotel services, is a scarce input. Hence, the more establishments there are in the market, the more probable it will be that many of them will lack adequate managerial capacity, and hence have low productivity.

A recent study by Hopenhayn and Neumeyer (2008) provides quantitative estimates of the effects of such distortions on aggregate productivity. In the context of a general equilibrium model, the authors assume 20 percent of the firms produce 80 percent of the output, and calculate the effect of a corporate tax of 25 percent of profits paid by 75 percent of the most efficient firms, while the rest of the firms are in the informal sector. This scenario reduces output between 5 and 10 percentage points, depending on the level of labor taxes, the production function, the type of competition faced by firms, and the differences in the cost of capital between formal and informal firms.[9] These figures do not account for the indirect effects on investment that a reduction in productivity yields on output. As such, they underestimate the total effects on output.

The evidence strongly suggests that informal firms are less productive—a finding that is not compatible with the romantic view. In addition, there is little evidence indicating that most

firms start informal activities and then formalize; rather, they remain informal. (Arbeláez, Leon, and Becerra, 2009a), Similar evidence appears in the World Bank Enterprise Surveys for Latin America, a survey of registered firms. Only 9 percent of firms in this survey began operations as unregistered and later formalized (La Porta and Shleifer, 2008).

Yet the lack of formalization of informal firms may attest to very large registration costs. Some studies provide evidence that lowering the cost of formalization may induce a number of firms to formalize and grow. However, as reported by Perry et al. (2007), the magnitude of such effects is still a matter of discussion. Two studies (Fajnzylber, Maloney, and Montes Rojas, 2006; Monteiro and Assuncao, 2006) assess the impact of a program to reduce registration costs and taxes on new Brazilian microenterprises (SIMPLES) and find that it leads to a 6–13 percentage point increase in formalization. One of the studies (Monteiro and Assuncao, 2006) also finds that newly formalized firms in Brazil invested more and changed the composition of the expenditures toward long-run projects. However, a program to simplify registration in Mexico (SARE) yielded more ambiguous results. Bruhn (2008) finds that this program had a large effect on formalization, although the inflow of formalized firms did not come from formerly unregistered self-employed workers, but rather from formerly relatively high-wage salaried workers who presumably were attracted by the lower costs of formalization. In contrast, Kaplan, Piedra, and Seira (2007) find that lower registration costs lead to very little new registration in the social security system. Such divergences might be due to the fact that the two studies use different formalization measures (registration in the commercial registry versus registration in the social security system); registration in the social security system is much more difficult than registration with tax authorities.

In sum, the available evidence for Latin America suggests that informal firms are less productive than formal ones; nonetheless, they may be reducing the market share of formal firms

because of their lower costs, which allow them to charge low prices in spite of their relatively lower productivity. On the positive side, there is some evidence that reducing the costs of formalization can induce some informal firms to register and invest more, although the magnitude of such effects is still a matter of discussion.

Nonetheless, there may be important differences across economic sectors. Two studies of Colombia (Arbeláez, León and Becerra, 2009a; 2009b) find evidence that while in some sectors the situation is best characterized by the parasitic view (hotels), in others (underwear manufacture), the situation conforms better to the dual view, with informal firms serving only residual market niches not covered by formal firms. In still other sectors, formal firms subcontract work to informal firms to gain flexibility in their production, and as a way to surmount extremely rigid labor market regulations. This diversity of findings implies that the relationship between informality and productivity needs to be evaluated carefully in each case.

Taxes and the Productivity of Formal and Informal Firms

In addition to the potentially distorting effects of uneven compliance, the literature also emphasizes other channels by which taxes and noncompliance affect the productivity of formal and informal firms.

High taxes can hurt productivity by reducing the incentives of formal firms to develop or adopt new technologies. Yet the opposite could be the case, if existing or prospective formal firms are induced to innovate more to compensate for the cost advantages of informal firms. Which way formal firms go is likely to depend on the depth of their pockets, their cost/access to credit, and the relative probability of gaining (and maintaining) a large share of the market with that investment.

The evidence suggests a negative relationship between corporate taxes and productivity at the firm level. Galindo, Pombo, and Guillen (2009) use individual firm-level data of formal firms from 42 developing countries from the WBES to examine the link between corporate taxes and productivity. Their methodology corrects for the possibility of reverse causality: that is, that firm productivity generates higher tax payments, instead of taxes generating productivity. Their findings also suggest that the impact of corporate taxes on investment and productivity increases as the size of firms increases. The larger the firm, the greater the negative impact of corporate tax rates on investment and productivity. These results suggest that tax policies may have significant consequences for economic development, and highlight the potential tradeoff between collecting revenue from firms and long-term growth.

Another important effect of tax evasion on productivity arises from the limited capability of the state to finance essential public goods that might improve the productivity of all firms, such as infrastructure, Chapter 5 emphasizes the importance of low transportation costs for productivity. This public good effect can account for a 12 percent reduction in output relative to an economy where the government can collect taxes from all firms (Robles, 2009).

The economic literature also emphasizes the effect of noncompliance on the productivity growth of informal firms. By not formalizing, informal firms forego a number of benefits and public goods, which hurts their productivity growth. By reducing firms' access to credit, tax avoidance limits the capacity of informal firms to finance the development or adoption of new technology. It also increases their incentives to remain small (to avoid detection)—and, if returns to scale are important, to become less productive as a consequence.

What is the evidence of these effects? On the one hand, most studies suggest that the economies of scale tend to be small, which suggests that larger firms do not become more productive because of their size, but rather that productivity causes size, with more productive

firms growing larger. This implies that informal firms are small due to their low starting level of productivity, but that they may not forego much in productivity by remaining small. On the other hand, if firms could achieve large gains just by formalizing—and thereby gain access to credit and public goods—why would they not do so? Informal firm owners may simply be unaware of the benefits of formalizing—a plausible explanation given their lower levels of human capital.

A second explanation, more related to the central point of this chapter, is that when tax rates are high, and formalizing involves not only paying taxes but also making high social security contributions (see Chapter 8) and abiding by numerous regulations, the benefits of formalization may be quite large but the costs would deter firms from becoming formal, even if they are fully aware of the benefits. This implies that the higher the taxes and regulations, the higher the productivity benefits of formalization foregone by informal firms, with larger consequences for aggregate productivity.

Is the Cure Worse than the Disease? Simplified Tax Regimes

To deal with the low tax collection and high administrative costs of collecting taxes from numerous small firms, governments have adopted so-called special tax regimes that seek to broaden the tax base, increase tax revenues, and—through positive spillovers—set the stage to benefit the economy further. The basic reasoning behind the design and implementation of special tax regimes for smaller firms may be sensible. First, such regimes seek to simplify the taxation process and lower tax administration costs. Second, special regimes for smaller firms aim to promote formality as well as increase control of small taxpayers. Third, such regimes seek to reduce employers' labor contributions in order to stimulate employment and expand labor benefits to low-income workers. Finally, these simplified tax regimes for smaller firms are

designed to help free up resources so tax administration efforts can focus more on monitoring larger firms.

As sensible as these aims are, the obvious question is whether these special tax regimes actually work. To address this issue, it is best to separate it into two questions. First, do these programs increase formalization among microenterprises and small firms, thereby reducing some of the distortions described above? Second, are there unintended outcomes of these regimes that conspire against their original objectives? Before answering these two questions, it is useful to briefly review the characteristics of such programs.

Table 7.4 presents a summary of simplified tax regimes for many countries in Latin America. Of 17 countries considered, 13 have at least one special tax regime. Two countries, El Salvador and Panama, simply exclude targeted firms from their general regime; these firms end up not being taxed. Venezuela and Ecuador are the only two countries that currently do not have simplified tax regimes for smaller firms (Arias, 2009).

Most strikingly, many countries have more than one simplified regime; the number varies, depending on the industries and taxes affected. For instance, Peru has two simplified regimes, Bolivia has three, and Chile has four. Moreover, the word "*simplified*" is a euphemism**:** the requirements to qualify for these tax regimes are anything but simple. Requirements range from income and assets, to number of establishments, number of workers, and even surface area of establishments. Interestingly, of the 25 special regimes listed in Table 7.4, eight are issued only to sole proprietors[1], while six extend to firms with more than one partner. Thus, effectively, when a sole proprietor of a microenterprise or a small firm decides to associate with another individual as a partner, the firm is forced to leave the simplified regime and choose between the

[1] That does not allow corporations.

underground economy and the general tax regime. This is not a trivial choice and is directly related to the tax profile in Latin America today.

Table 7.4 Simplified Tax Regimes in Latin America

Country	Program name	Total	Requirements to belong to a STR								Types of taxpayers		
			Income	Assets	Purchases	Area	Unit prices	Estab. (no.)	Employees	Other	Individuals	Firms: Sole proprietorship	Firms: Corporations
Argentina	Simplified Regime for Smaller Taxpayers (Monotributo)	2	x			x	x	x		Electricity consumption	x	x	
	Simplified Regime for Eventual TaxPayers (RSCE)		x								x		
Bolivia	Simplified Tax Regime (RTS)	3	x				x			Capital	x		
	Integrated Tax Regime (STI)									No. of vehicles	x		
	Unified Farming Regime (RAU)					x					x	x	
Brazil	SIMPLES	2	x								x	x	
	Supposed Income Tax Regime		x								x	x	x
Colombia	Simplified Regime over the AVT (RS IVA)	1	x	x				x		Financial transactions	x		
Costa Rica	Simplified Tax Regime (RTS)	1			x			x	x		x	x	x
Chile	Simplified Regime over the Income Tax (RSIR)	4								Mining: No. of dependents. Handicraft: capital and no. of operations. Local fishing: No. of boats and weight	x	x	
	Sipposed Income Tax Regime - Farming Industry (RRPA)		x								x	x	
	Simplified Tax Regime for Smaller Taxpayers (RTSPC)		x								x		
	Changing the Character in the VAT Regime (RCS IVA)		x							Fiscal valuation	x		
Honduras	Simplified VAT Regime (RSIV)	1	x					x			x		
Mexico	Small Taxpayers Regime (REPECOS)	4	x								x		
	Intermediate Regime (RI)		x								x		
	Simplified regime for agriculture, farming, forestry, and fishing (RSAGP)		x								x	x	x
	Simplified regime for the "autotransporte" sector (RST)		x								x	x	x
Nicaragua	Special Regime of Administrative Estimation (REEA)	1	x							Inventory	x		
Paraguay	Unique Tax (RSIV)	1	x								x	x	
Peru	Simplified Unique Regime (RUS)	2	x	x	x						x		
	Special Regime for Income Tax (RER)		x	x	x				x		x	x	x
Dominican Republic	Simple Estimation Regime (RES)	1	x								x	x	
Uruguay	Small Firm Tax (IPE)	2	x	x					x		x	x	x
	Monotributo		x						x		x	x	

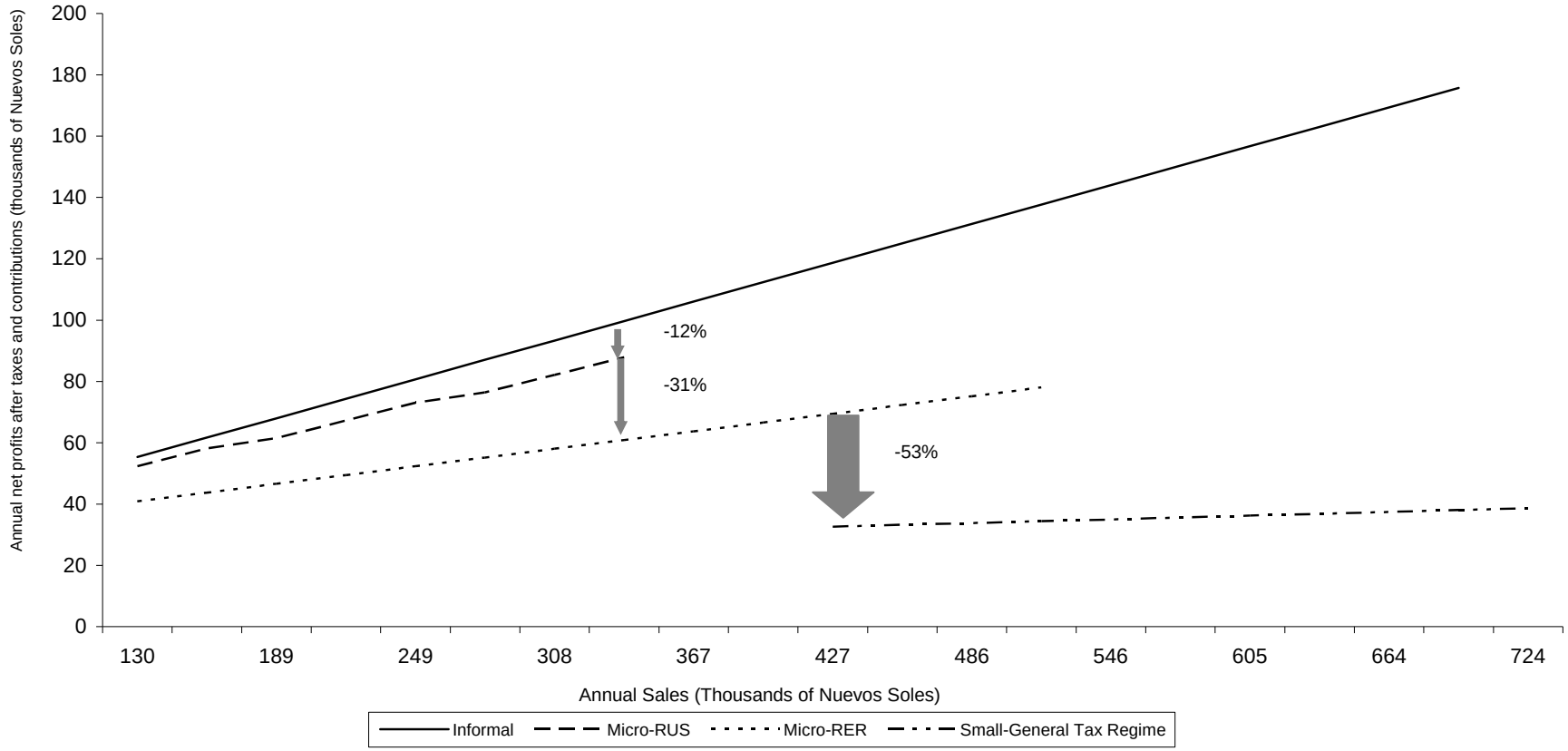
Source: Arias (2009).

Do these programs help resolve the thorny tax collection problem in Latin America and encourage greater formalization? The answer depends on whether the simplified regime is able to smooth the transition of firms toward registration and tax payments.

In general, it looks as if simplified tax regimes help reduce the large obstacle that may stop firms from starting to pay taxes. This is evident in Figures 7.9 and 7.10, which focus on Peru and Argentina, respectively, and depict a firm's profits as a function of sales for different tax regimes, based on the assumption that more sales are associated with higher profits.[10] The figures show the corresponding potential tax profit gap that a small firm faces when moving from not paying taxes (the solid line at the top) to paying taxes under different regimes. In all cases, paying taxes reduces profits—unless other factors not accounted for here, such as improved access to credit or public goods, compensate for taxes paid. Yet, if the smallest firms are taxed under the general tax regime (the dotted line at the bottom), profits drop even more.

Do more firms become formal as a result of simplified tax regimes? Unfortunately, the empirical evidence on this front is very sparse. Despite the large number of tax simplification programs listed in Table 7.4, their impact on registration and potential effects on firm behavior and productivity have been scarcely evaluated. One exception is the case of the SIMPLES program, already discussed, in which at least two separate studies found positive effects of the program on formalization (between 6 and 13 percentage points). However, the effects of such programs will likely differ across countries. Enticing firms to pay taxes by simplifying and reducing tax obligations may not be enough if, by becoming formal, firms also face hefty additional costs associated with labor and product market regulatory mandates.

Figure 7.9 Simplified Tax Regimes, Peru



Source: Authors' calculations based on the taxation system.
Note: Annual replacement investment: 10 percent of sales. Inputs: 50 percent of sales. Annual depreciation: 10 percent. Annual sales are a linear function of the number of workers. Labor contributions are estimated according to the legislation that apply for the general and simplified tax regimes, and considering the legal minimum wage 5f 50 Nuevos Soles monthly.

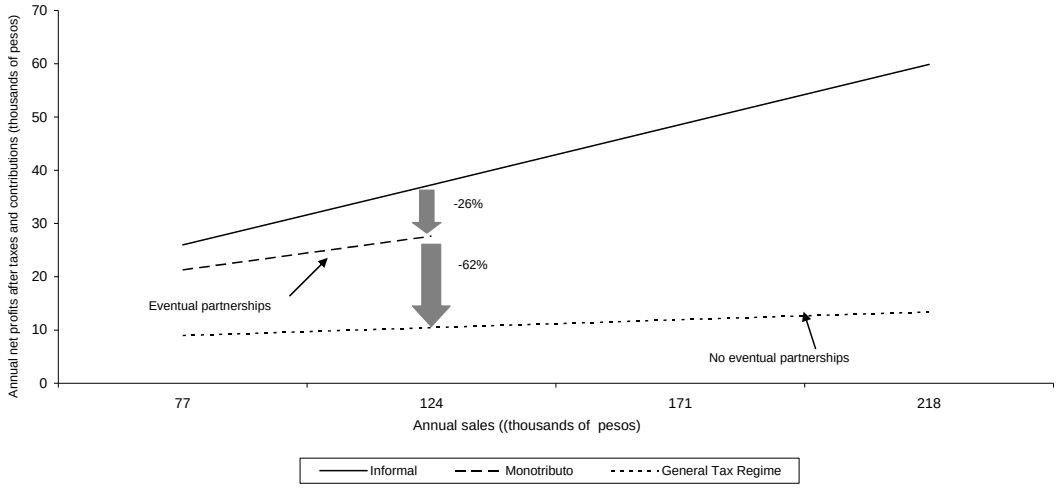
However, in spite of some favorable results at the margin concerning formalization, there are some unintended outcomes that may exacerbate and perpetuate the problems that such regimes were intended to fix. The main problem with these regimes is that they can stunt the growth of small firms. These regimes create gaps—or so-called "non-linearities"—which means that firms wanting to grow do not have the correct incentives to do so. Perhaps the best way of thinking about these gaps is to visualize a deficiently built highway with a section full of bumps and holes. It does not matter how good the automobiles are, or how smooth the asphalt is, or even how bad the traffic is; automobiles will be forced to slow down or stop the closer they come to the section full of bumps and holes.

These possible bumps are evident in Figures 7.10 and 7.11. For a Peruvian firm with sales around the threshold to move from the simplified tax regime to the general tax regime, growth in sales from say 400,000 to 450,000 *nuevos soles* implies a drop in profits of 53 percent, which is likely to render the increase in sales unprofitable. This large discontinuity in the marginal tax rate can create strong incentives to hover in the simplified tax regime, unless a firm faces an extraordinary growth opportunity that provides it with the means of bridging this rough and bumpy stretch. In Argentina, the growth discontinuity is even larger, since it implies a profit reduction of 62 percent.

Remarkably, these potentially adverse effects have gone largely unnoticed and thus there is a dearth of studies that empirically assess their consequences. A very recent study for Mexico, however, provides evidence that growth disincentives may be strongly at play (McKinsey and Company, 2009). In 2004, Mexico had two tax regimes: a simplified regime and a general one. The first was designed for companies with yearly sales of less than 2 million pesos; they must pay around 2 percent of income as tax. The second system was designed for companies with yearly sales greater than 2 million pesos; they pay approximately 28 percent of profits as tax.

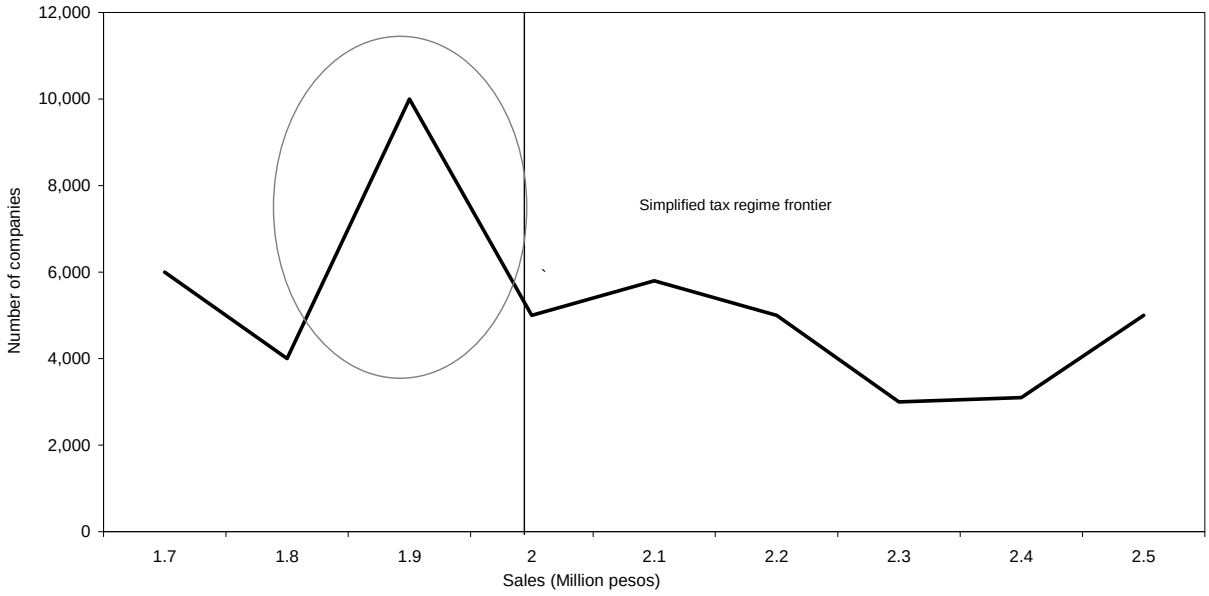
Using data from the 2004 national census of firms and the 2002 national survey of microenterprises, the study calculated the distribution of firms according to sales and found a significant concentration of firms right at the frontier of the tax regime change (Figure 7.11). This suggests that firms are getting stuck around the regime frontier.

Figure 7.10 Simplified Tax Regime, Argentina



Source: Authors' calculations based on the taxation system.
Note: Annual replacement investment: 10 percent of sales. Inputs: 50 percent of sales. Annual depreciation: 10 percent. Annual sales are a linear function of the number of workers. Labor contributions are estimated according to the legislation that apply for the general and simplified tax regimes, and considering the legal minimum wage of 980 pesos monthly.

Figure 7.11 Number of Companies and the Simplified Tax Regime, Mexico



Source: McKinsey and Company (2009).
Notes: Informal firms pay less than 50 percent of what they should. In 2004, the simplified tax regime consider those companies with annual sales lof less than 2 million pesos, and that should pay aproximately 2 percent of income as a tax.

A Better Tax Policy for Productivity

This chapter has reviewed the institutional set-up of the Latin American tax system with particular emphasis on the productivity effects of tax regimes, tax collection, and tax evasion patterns of firms. Tax evasion by firms is commonplace in the region, going well beyond the smallest firms; the chapter provides evidence of significant tax evasion among large firms as well. The chapter then reviews the different channels by which tax regimes, tax enforcement, and evasion affect productivity: by distorting the use of existing resources (and therefore reducing the potential productivity of existing resources in the region); reducing the provision of

productivity-enhancing public goods; and curbing firms' appetite to invest in productivity-enhancing upgrades for both tax compliant and noncompliant firms.

The evidence indicates that most of these channels are at play. Taxes reduce formal firms' size and productivity, and evasion allows noncompliant firms to capture market share that otherwise would go to larger, more productive firms—all of which contributes to lower productivity levels and growth.

The very difficult policy conundrum is that tax evasion, and in particular, informality—the most extreme form of tax evasion—are survival strategies for many low-income households. In the short run, policies to better enforce tax collection may also increase unemployment. This highlights the difficulties of moving from the current situation to one where such households find better sources of income in larger, more productive firms. A possible strategy for the governments of the region is to focus first on particular sectors where it is clearer that informality is harming formal firms. Within a sector, increased enforcement could be directed first to the types of noncompliant establishments that are more likely to directly compete with tax compliant ones. In addition, temporary measures to help the transition of workers toward tax compliant, more efficient firms could be put in place.

There is also a need to truly simplify tax regimes, reducing the hurdles and the time required to comply with them. Tax systems should also minimize the large jumps between regimes for small and medium enterprises (SMEs) and the general regime. At the least, the size of the bump could be reduced by increasing the number of sales brackets and making the tax rate increase more continuously until it merges with the generalized tax rate.

Another, even more desirable alternative is to lower the general corporate tax rate so as to make the overall tax rate flatter. In Latin America, a flat rate would be the most convenient as it would not require registries or other specific characteristics. However, such quotas should be set

at more realistic levels (González, 2006). This may have the double benefit of reducing the discontinuity between simplified and general tax regimes, and reducing evasion. To the extent that lowering the corporate tax rate entices more firms to pay, lower tax rates do not need to imply a reduction in tax revenues—something that the region could not afford.[11] Furthermore, lowering rates will reduce the incentives of small firms not to grow, and that of large firms to evade taxes.

In addition to reducing the cost of paying taxes, governments need to pay attention to enhancing the benefits of formality. Chief among them is the possibility of accessing credit. On the one hand, governments can increase the supply of credit and with it—as shown by Catão, Pagés and Rosales (2009) for Brazil—improve the odds that firms become formal: either increasing the opportunity cost of firms of remaining informal or increasing the possibility for formal firms to grow and absorb workers from informal firms. As shown in Chapter 6 while the low supply of credit in the region responds partly to a history of volatile macroeconomic management, there is much room to expand credit supply, and with it, tax compliance, by improving the region's financial regulatory and policy framework. Yet it is also important to emphasize that the growing supply of micro-lenders can actually weaken the link between credit and formality if they provide lending without requiring firms to provide documentation of tax payments and proof of registration. To the extent that registered firms can access credit from other sources, it may be in the interest of micro-lenders not to ask for registration, which plays to firms' unwillingness to be registered. Yet this situation is inefficient from society's point of view and further steps to strengthen the link between micro credit and registration would be required.

Complementary policies concern the use of technology and simple organizational changes. An example of the former is to encourage firms to use the banking system.[12] An example of the latter is to make receipts mandatory. In addition to the operational reforms,

countries that have sought to reduce tax evasion have emphasized information collection and data sharing and, above all, stronger penalties for noncompliance. For example, data exchange between the tax administration and relevant agencies could be improved. In terms of sanctions, countries could consider measures that provide for increased fines for noncompliance, larger penalties for failure to certify origin of goods or registration of employees, and the suspension of tax identification numbers (González, 2006; Lewis, 2004; World Bank, 2009).

Tax authorities should also try to rely less on corporate taxes and more on taxation of other sources, such as personal income. However, the many reforms that have tried—and to large extent failed—to do so attest to the difficulty of implementing this (and many other) productivity-enhancing changes.

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[1] Informal firms are defined in this volume as those that are not registered and that do not pay profit taxes or payroll taxes, such as social security.

[2] An important caveat in the data for Chile, El Salvador, and Mexico is that they are computed based on applying mandatory tax rates to reported value added, profits, or wage payments, and hence they could underestimate some forms of legal exemptions, year-to-year carry-overs, or other legal accounting allowances that create divergences between the taxable base and the reported figures.

[3] They were able to differentiate between owners that created their firms to generate profit and growth and those that launched a firm because they lacked a job.

[4] The definition of microenterprise varies across datasets and studies, and is defined as fewer than five paid workers in the Brazilian Survey of the Urban Informal Economy (IBGE, 2003), or fewer than ten paid workers in other datasets.

[5] The labels *parasitic*, *romantic,* and *dual* are coined in La Porta and Shleifer (2008).

[6] Measured differences in productivity between formal and informal firms depend, among other factors, on whether productivity is measured adjusting for the fact that informal firms tend to employ more unpaid laborers and operate with less human capital, or whether differences in prices charged at the firm level are accounted for. Yet results are quantitatively similar across alternative methods to measure productivity. Results are summarized in Carpio and Pagés (2009).

[7] The figure for Brazil is for the year 2003 and for Colombia, 2006.

[8] That is, the marginal revenue product of capital and labor is higher in formal than in informal firms.

[9] Alesina et al. (2002) show that taxes have negative effects on profits. Cummins, Hassett, and Jubbard (1996) find that investment responds to tax changes in industrial countries. Alfaro, Charlton, and Kanczuk (2008) find that resource allocation determines differences in income. Chongvilaivan and Jinjarak (2008) find that higher tax rates are associated with a lower number of firms. Dabla-Norris, Gradstein and Inchauste (2008) and Chong and Gradstein (2008) find that the quality of the legal framework is crucially important to the size of the informal sector, whereas taxes, regulations, and financial constraints are less significant in the context of a well-functioning legal system.

[10] A series of other neutral assumptions are also made: an annual replacement investment of 10 percent of sales; inputs, at 50 percent of sales; and annual depreciation of 10 percent. Annual sales are a linear function of the number of workers. Labor contributions are estimated according to the legislation that applies for the general tax regime and the simplified tax regime in each country (RUR and RER for Peru; Monotributo for Argentina). Wages are the legal minimum (S/.550 monthly in Peru; Arg$980 monthly in Argentina).

[11] A recent study by Djankov et al. (2009) provides evidence of an important association between the effective corporate tax rate and the size of the informal economy.

[12] Argentina's current experience provides a cautionary tale about the use of the banking system to improve the monitoring of tax administration. A tax devolution scheme (a decrease of 3 to 5 percentage points of the value added tax) for payments made with debit cards coexists with a tax on financial transactions at a maximum rate of 0.6 percent. One scheme cancels out the other.