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Crime, Security, and Firms in Latin America

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Existing studies show that crime is more rampant in the larger cities and that wealthier individuals are more often targeted. Using Enterprise Surveys data for 14 Latin American countries, we find that one-third of the firms surveyed suffer from one or more incident of crime annually, which is roughly similar to the percentage of households affected. Crime-related losses average 2.7 percent of annual sales for all firms in the sample, which is more than the reported amount of bribery, losses due to power outages, and firms' expenditure on research and development. We also find that the relatively well-off large firms are more likely to be victims of crime than the small firms, but losses due to crime as a percentage of annual sales are bigger for small firms. In short, crime in the region is regressive. Last, larger cities are more prone to crime than the smaller cities. However, we find that what matters for crime is the relative size of a city within a country; its absolute size is irrelevant.

Anecdotal evidence suggests that crime is a common feature of many Latin American cities. Yet little work has been done on the scope of the problem or its causes and effects. Lack of reliable data is often cited as the main hindrance to a rigorous analysis. This holds true not only for Latin America but other regions as well. The studies that do exist are exclusively focused on crime against individuals and households as opposed to firms. The two most important themes that emerge from these studies are that the incidence of crime is higher in the more populous cities and that criminals tend to target the relatively wealthier individuals. Both these findings have important socioeconomic and policy implications especially for crime prevention related policies.

This note focuses on crime against enterprises – the magnitude of the problem and the pattern across cities and firm-size. The data used are from 10,439 firms in 14 Latin American countries surveyed by the World Bank's Enterprise Surveys in 2005.[1] The survey asked firms if they experienced an incident of crime during the previous year, the losses incurred due to crime (as a percentage of annual sales), and the amount they spent (if any) on security (personnel and equipment). Note that the reported losses due to crime and security expenses capture only the direct cost of crime-related problems. Additional indirect costs may be incurred, for example, when firms are unable to operate night shifts or avoid crime-prone locations that are otherwise optimal for their business.

The main findings of the note can be summarized as follows. First, firms in Latin America are as likely to be victims of crime as individuals and households. Second, what seems to matter for crime is the size of a city relative to other cities in the country. The absolute size of a city or the average size of cities across countries seems irrelevant for the level of crime. Third, much like wealthier households, larger firms are more likely to be crime victims. However, losses due to crime as a proportion of annual sales (averaged over victims and nonvictims of crime) are much higher for small than for large firms. If small firms represent the relatively weaker sec-

tions of society (less wealthy owners, less skilled workers, and those with lower-paying jobs), then crime against enterprises in Latin America appears to be regressive.[2]

Crime against Firms in Latin America: How Big Is the Problem?

The survey reveals that about one-third of the firms surveyed experienced at least one incident of crime during the survey year and close to two-thirds incurred security-related expenses. Seventy-three percent of all firms in the region either lost money as a result of crime or incurred security expenses, with a high of 82.8 percent (Argentina) and a low of 45.3 percent (Mexico). As a percentage of annual sales of firms, losses due to crime averaged 1.2 percent in the region, and expenses on security averaged 1.5 percent. The former varies between 2.8 percent (El Salvador) and 0.4 percent (Peru) and the latter between 2.4 percent (Honduras) and 0.6 percent (Chile). Figure 1 shows the full distribution across countries.

Seventy-three percent of all firms in the region either lost money as a result of crime or incurred security expenses

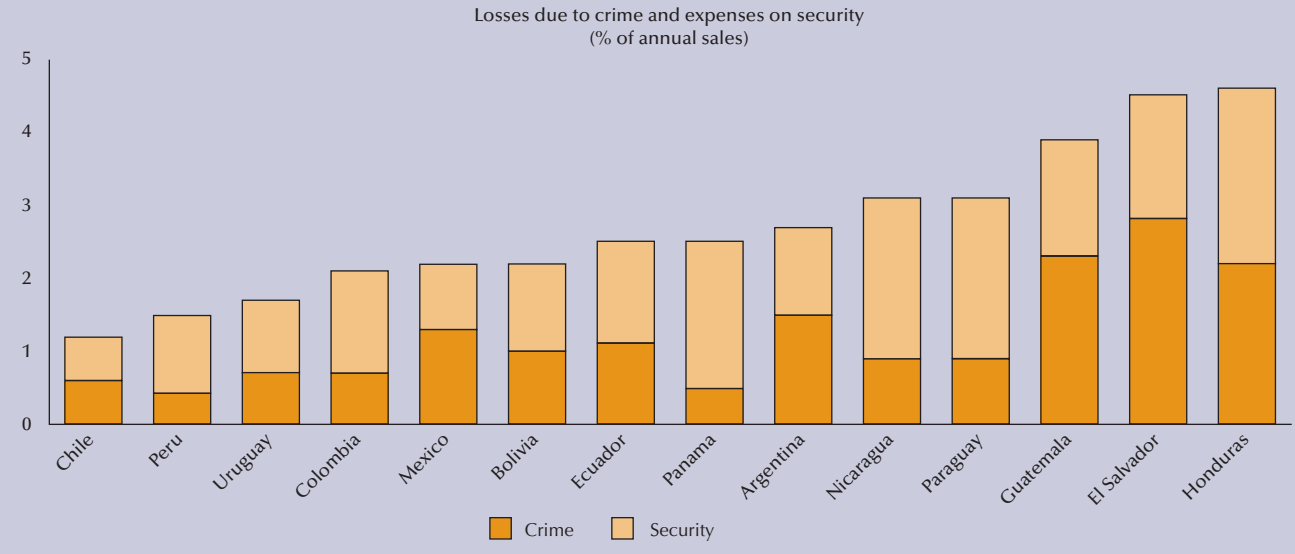
These numbers make two important points. First, incidence of crime against firms is roughly comparable to that against individuals and households. For example, Gaviara and Pages (2002) use data from Latinobarometer for major cities in 17 Latin American countries. They find that about 38.6 percent of the households (versus 33 percent of firms in our sample) suffer from at least one incident of crime during a given year. Second, losses due to crime and expenses on security are significant. Figure 2 shows that these combined losses are more than twice what firms spend on research and development (R&D), 1.7 times the reported amounts paid in bribery, 1.2 times the losses due to power outages, and 39 percent of firms' total expenditure on infrastructure (electricity, water, transport, and telecom). Alternatively, if resources lost as a result of crime and security expenses were to be invested in machinery and equipment, such investments would increase by over 50 percent. Provided that the cost of crime prevention is not too high, these numbers suggest substantial gains from a greater allocation of resources toward crime prevention.

Are Larger Cities More Prone to Crime?

An important finding in the literature is that crime rates are typically higher in more populous cities, for two main reasons: First, the level of anonymity is higher in larger cities, making it easier for criminals to hide. Second, larger cities have more wealthy individuals, making them greener pastures for criminals. These are plausible explanations but they imply contrasting dynamics of crime and optimal policy responses.

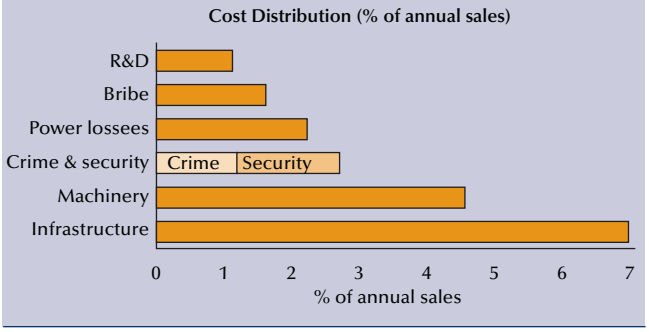
First, consider the "relative" city-size case. Crime is higher in the larger cities simply because criminals choose to locate there. Consequently, there is no reason to believe that a doubling of all city populations would increase the level of crime in the country, and crime is not necessarily higher in countries that have on average, bigger cities. In short, the city-size and crime nexus is essentially about the distribution of criminal activity within a country, with no obvious implication for the overall level of crime in the country. What matters is the relative size of a city in a country rather than its absolute size. In terms of policy im-

Figure 1 Firms in Honduras Spend or Lose Four Times as Much as Firms in Chile



Source: Author's own calculations based on Enterprise Surveys data.

Figure 2 Crime and Security Are More Expensive Than Power Losses, Bribes or R&D



Source: Author's own calculations based on Enterprise Surveys data.

plications, the natural growth of city populations does not call for increasing resources for crime prevention, but rather for redistributing existing resources devoted to crime prevention away from slow-growing and toward faster-growing cities.

Now consider the "absolute" city-size case. In this case, an increase in city population encourages more people to become criminals and the prediction is quite different. A doubling of all city populations would lead to an overall increase in crime; countries with larger cities would experience more criminal activity. The natural growth of populations in cities would require increasing resources devoted to prevention in order to suppress the rise of criminal activity. In this scenario, the absolute size of a city does matter for the level of crime. Of course, these two extreme scenarios are not mutually exclusive; the reality may lie somewhere in between the two. This is largely an empirical issue.

One way to check for these scenarios is by examining the relationship between city size and crime within and across countries. The first case suggests that city size and the incidence of crime should be positively correlated within a country but not across countries (cross-border movement of criminals and the wealthy is still very limited). In contrast, the second case predicts a similar positive relationship between city size and crime within and across countries.[3]

Measured as a percentage of annual sales, small firms suffer significantly higher losses from crime than do large firms (1.4 percent vs. 0.7 percent)

Figure 3 shows the relationship between city size and crime within a country. This relationship is positive and strong.[4]

The city size and crime relationship across countries is negative but not robust.[5] Combining within and across country figures we get virtually no association between city size and crime incidence. These results suggest that the positive crime and city-size relationship is most likely driven by relocation of criminal activity from the smaller to the larger cities. There is little evidence of higher crime in countries that have, on average, larger cities, nor is there evidence of increasing crime with the natural growth of city populations.

Figure 3 Bigger Cities within a Country Have More Crime

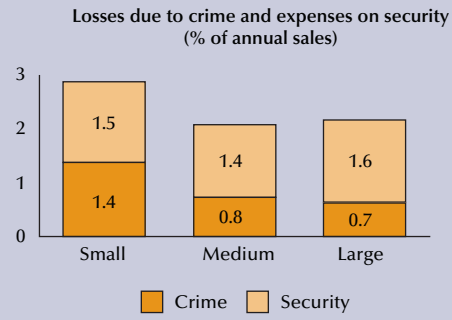
Source: Author's own calculations based on Enterprise Surveys data and the latest census of population available.
Note: The figure is a partial scatterplot accounting for differences across sectors in the level of crime and the average size of cities in each country.

Is Crime Regressive?

Another important finding in the literature is that crime is not regressive. That is, the relatively poorer agents suffer less from crime than the richer ones. Precisely how do we define the level of "suffering?" Existing studies use the probability of being a crime victim, which is, at best, a partial measure. Loss from crime as a proportion of household income or wealth (burden of crime) is a better measure but largely neglected because of data limitations.

A natural extension of these ideas to our data is how crime affects small versus large firms. Compared with the latter, the former arguably have owners that are less wealthy and a workforce that is less skilled and in lower-paid jobs. Consistent with existing studies, the incidence of crime is lowest among small firms (31.4 percent) and highest among large firms (42.4 percent). However, Figure 4 reveals the dangers of jumping to a conclusion based on the incidence of crime alone. Measured as a percentage of annual sales, small firms suffer significantly higher losses from crime than do large firms (1.4 percent vs. 0.65 percent). Expenses on security are slightly higher for larger

Figure 4 Small Firms Lose More Due to Crime and Security



Source: Author's own calculations based on Enterprise Surveys data.

firms (1.55 percent vs. 1.5 percent), but the combined burden of crime and security is still regressive.[6] Following suggestions in the literature (Glaeser and Sacerdote 1999), we also checked if crime is higher against firms that have women owners and a greater proportion of women in the workforce. We did not find any significant differences along these dimensions. The same holds for new versus old firms and registered versus unregistered firms.[7]

The discussion above shows that crime in Latin America is widespread and that it imposes substantial costs on firms. Further, the regressive nature of crime makes policy initiatives aimed at crime prevention even more important. Yet, the current state of the literature offers little help in guiding policy. To guide policy measures, more work is needed to understand how crime affects firm performance, how crime prevention measures affect the burden of crime, and, as discussed above, how the absolute and relative size of cities affects the level of crime.

Notes

1. The sample for the survey was stratified at the region-sector-size level. Using sampling weights provided in the data, we are able to compare across data points that are representative at the level of country, region, region-sector, size, etc. For more information on the Enterprise Surveys data, please consult www.enterprisesurveys.org . The remaining data include population of the sampled cities that are taken from the most recent census available.

2. These results were confirmed for various robustness checks using simple regression analysis at the firm level and also at various levels of aggregation. However, they should be treated with due caution. A more rigorous analysis is required to validate or reject them.

3. We check for these cases using variation at the region-sector level. We filter out sector-specific effects on the incidence of crime, although doing so makes virtually no difference to the results.

4. The relationship in Figure 3 is significant at less than a 1 percent level with all standard clustered on the country. Mean-adjusted population of cities equals the difference between the city population and the average population of all cities in the country. These mean-adjusted population figures are grouped into deciles for expositional convenience.

5. The relationship is statistically insignificant at the 10 percent level.

6. Regression results show that the difference between small and large firms in losses due to crime as percentage of annual sales is significant at less than the 5 percent level. The result holds even if we add security expenses with losses due to crime and/or control for various firm and country characteristics.

7. For age we used 2006 minus the year the firm was established. For crime against women vs. men we used a dummy variable indicating if a firm has a female owner or not and the proportion of women employees in the firm's workforce. In the regressions, these variables were defined at the firm level and also aggregated at the region-sector level.

References

Gaviria, A., and C. Pages (2002), "Pattern of Crime Victimization in Latin American Cities," *Journal of Development Economics*, 67: 181-203.

Glaeser, E., and B. Sacerdote (1999), "Why Is There More Crime in Cities?" *Journal of Political Economy*, 107: S225–S259.