

Crime and Security in ECA: Firm Level Analysis

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About 20 percent of the firms in the Eastern Europe and Central Asia region are victims of crime during a year. While losses to firms due to crime incidents average 0.48 percent of a firm's annual sales, expenses by firms on security average 1.42 percent of their annual sales. These two costs equaling 1.9 percent of annual sales of a firm are about 8 times what firms spend on R&D and 1.8 times the reported amount paid in bribery. Surprisingly, rich countries do not score over poor ones on crime related problems. Last, while large firms are more likely to be victims of crime than the small firms, losses from crime are much heavier on the smaller firms. Other characteristics of a firm do not matter much for the extent of crime it faces with the exception of the industry to which it belongs and whether it innovates or not.

The business environment can have a significant impact on the costs firms face in conducting their business. Corruption, weak enforcement of contracts and property rights, lack of physical and financial infrastructure services, high level of crime against firms, etc., can inflate business costs in turn lowering investment, employment creation and the overall development of the private sector. This note focuses on crime against firms, an issue that has received very little attention largely due to data limitations. The Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009) was recently completed in 29 countries in Eastern Europe and Central Asia region (ECA). The survey covered 11,306 firms asking them if they faced one or more incident of crime during the survey year (2008-09), losses they incurred due to crime and how much they spent on security. Information was also collected on a large number of firm characteristics.

Table 1

Incidence of crime (% of firms)	Losses due to crime (% of annual sales)	% of firms that Spend on security	Expenses on security (% of annual sales)
Top five countries			
Estonia (44.4%)	Kazakhstan (1.04%)	Kosovo (90.7%)	Kosovo (8.1%)
Czech Republic (35.5%)	Estonia (0.85%)	Estonia (84.9%)	Fyr Macedonia (2.5%)
Russia (34.7%)	Russia (0.76%)	Russia (77.7%)	Kyrgyz Republic (2.4%)
Latvia (34.1%)	Georgia (0.73%)	Latvia (74.6%)	Azerbaijan (2%)
Croatia (31.8%)	Fyr Macedonia (0.69%)	Fyr Macedonia (69.7%)	Kazakhstan (1.9%)
Bottom five countries			
Albania (7.7%)	Latvia (0.29%)	Hungary (40.9%)	Montenegro (0.52%)
Tajikistan (6.7%)	Montenegro (0.29%)	Serbia (38.4%)	Slovenia (0.5%)
Kosovo (5%)	Kosovo (0.28%)	Croatia (37.1%)	Lithuania (0.45%)
Azerbaijan (4.1%)	Romania (0.26%)	Uzbekistan (29.7%)	Hungary (0.34%)
Uzbekistan (3.7%)	Hungary (0.14%)	Montenegro (29.3%)	Croatia (0.25%)

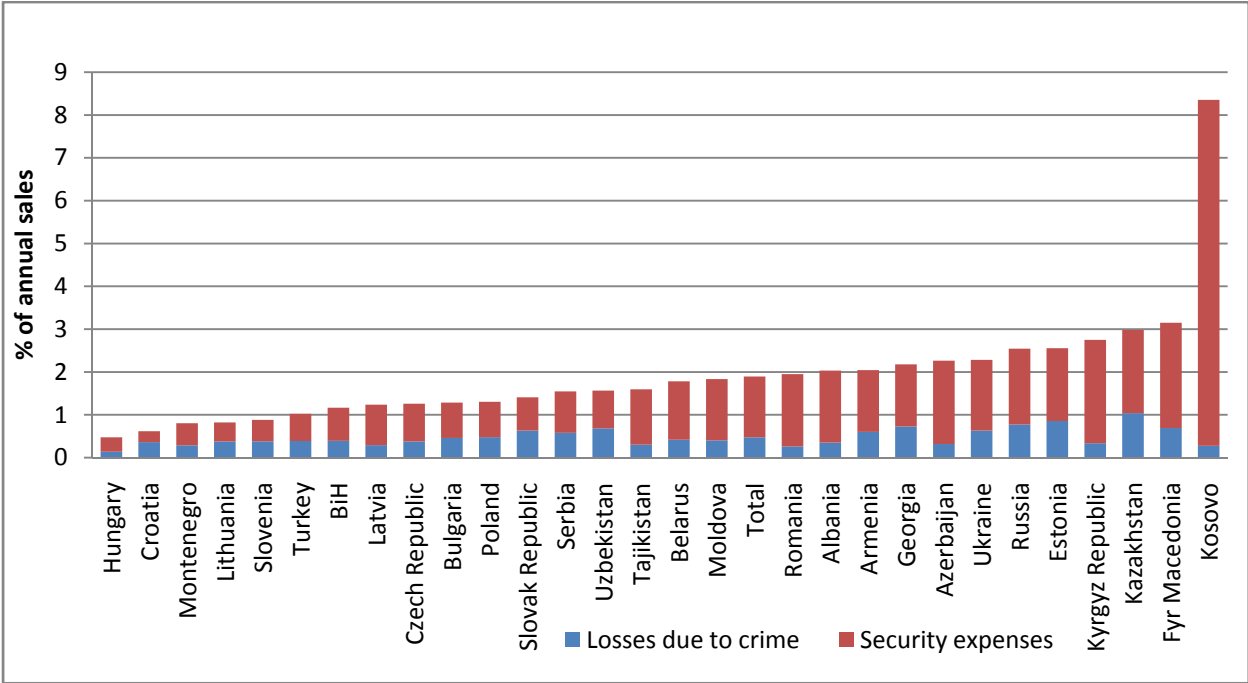
Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). Upper panel lists countries with highest values of the variables and lower one is for minimum values. Values are shown in brackets.

Using these data, this note looks at the crime and security situation in ECA: proportion of firms that are victims of crime in a given year and the losses incurred by firms due to crime and security expenses. A comparison with other costs incurred by the firms such as bribe payments and losses due to power outages is provided. For an international comparison, crime and security in ECA is compared with the same in Latin America – a region known for high levels of crime.

Losses due to crime in ECA are low and security expenses substantially higher

The percentage of firms that experienced one or more incident of crime during the survey year (incidence of crime) equaled 20 percent for the region as a whole. Over 57 percent of the firms incurred security expenses. Together, 63.5 percent of the firms lost money either due to crime or expenditure on security (or both). Averaged over all firms (victims and non-victims of crime) and as a percentage of the annual sales of the firms, losses due to crime (henceforth, burden of crime) equaled 0.48 percent while expenses on security equaled 1.42 percent. In short, losses due to crime plus expenses on security (henceforth, crime related costs) equaled 1.9% of a typical firm's annual sales. EU 10 countries show a higher incidence of crime than the rest (26.9 vs. 16.5 percent) although crime related losses are lower in the former (1.3 vs. 2.2 percent). Table 1 lists some of the best and worst performing countries in the region while Figure 1 shows the full distribution of crime related costs across countries.

Figure 1: Crime related costs show substantial variation within ECA

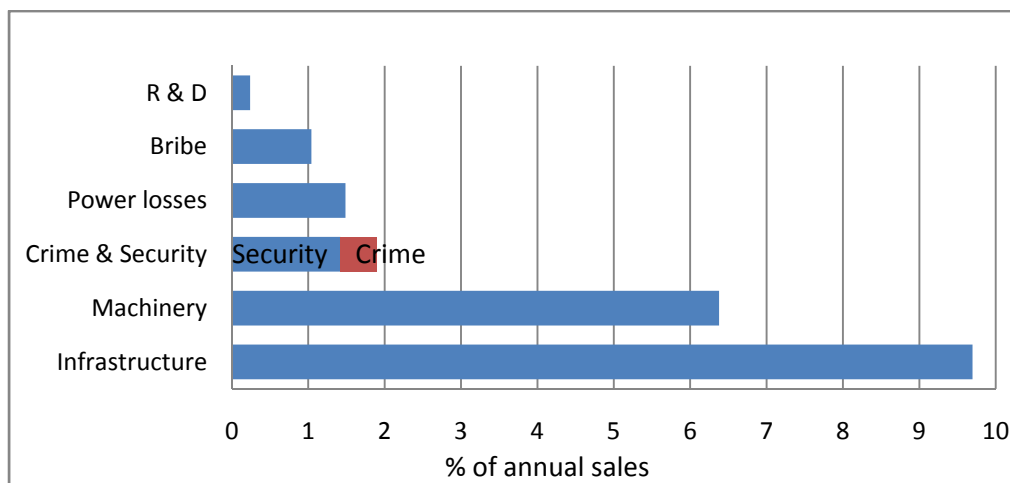


Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). All figures are for the survey year 2008-09 and expressed as % of the annual sales of firms. Averages are taken over all firms (victims and non-victims of crime and whether they spent a positive amount on security or not).

For a comparison, [Enterprise Surveys](#) (2005) data on 14 Latin American countries show that 33 percent of the firms suffer from crime (compared with 20 percent in ECA). Similarly, losses due to crime in Latin America average 1.2 percent of the annual sales of firms (compared with 0.48 percent in ECA). Despite the relatively low level of crime in ECA relative to Latin America, expenses on security in the two regions are roughly same (1.5 percent in Latin America vs. 1.4 percent in ECA).

Should policy makers worry about crime in ECA? Figure 2 suggests that the answer is yes. Crime related costs in the region are about 1.8 times the reported amount paid in bribery by the firms, 1.3 times losses to firms due to power outages and about 8 times what firms spent on R&D during the year. In short, crime imposes a heavier burden on firms than, for example, corruption.

Figure 2: Crime related costs on firms are bigger than bribe payments



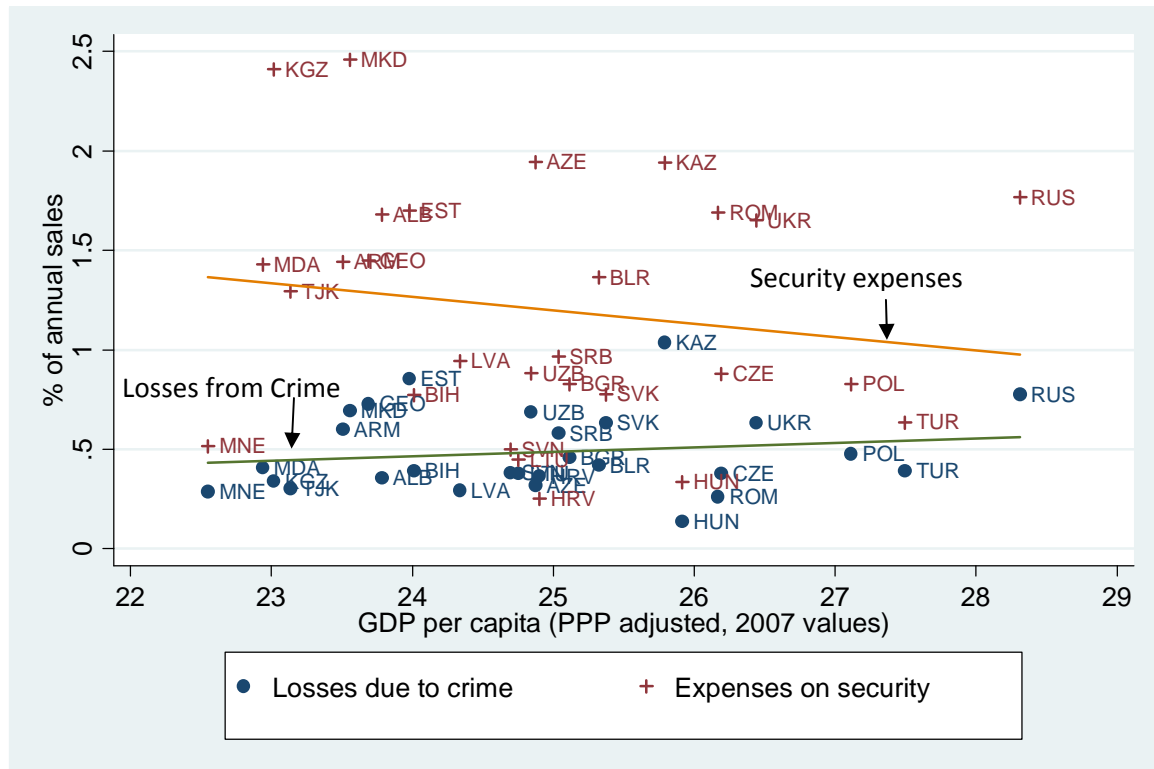
Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). All figures are for the survey year 2008-09. R&D equals total expenditure of firms on R&D (in-house and contracted out; % of annual sales); Bribe equals the amount of bribe paid to government officials to “get things done” as reported by firms (percent of annual sales); Power losses equal losses incurred by firms due to power outages (percent of annual sales); Machinery equals total expenditure of firms on purchase of machinery and equipment (percent of annual sales); Infrastructure is total expenditure of firms on fuel, electricity, communication services and water (percent of annual sales). Crime & Security equals losses due to crime and expenses on security for all firms (victims and non-victims of crime; percent of annual sales).

It is tempting to look at the effect of security expenses on crime. The data show that losses due to crime and expenses on security are positively correlated at the firm and the country level. One reason for this positive relationship could be that firms spend more on security when they perceive a higher threat of crime. Of course, this does not rule out the possibility that security deters crime but only that the deterring effect, if any, is more than countered by the positive effect of perceived threat of crime on security.

Crime and security problems are similar across rich and poor countries

It is natural to expect that lower incomes and higher unemployment that we find in the poor relative to rich countries may exacerbate crime related problems. Further, we might expect crime and security situation to be part and parcel of the overall business climate. However, we find only a weak relationship between crime, security and income (Figure 3). There is a negative relationship between security expenses and income level but it is not too strong. In fact, there is virtually no relationship between the two if we exclude Kyrgyz Republic (KGZ) and Former Macedonia (MKD) from the sample. Also, there is almost no relationship between crime and security related measures and the quality of the overall business environment as measured by, for example, Heritage Foundation’s Business Freedom index. In short, we need to go beyond the usual rich vs. poor paradigm and good vs. bad overall business environment to properly understand why crime related costs on firms are greater in some countries relative to others.

Figure 3: Rich countries do not score over poor countries in crime



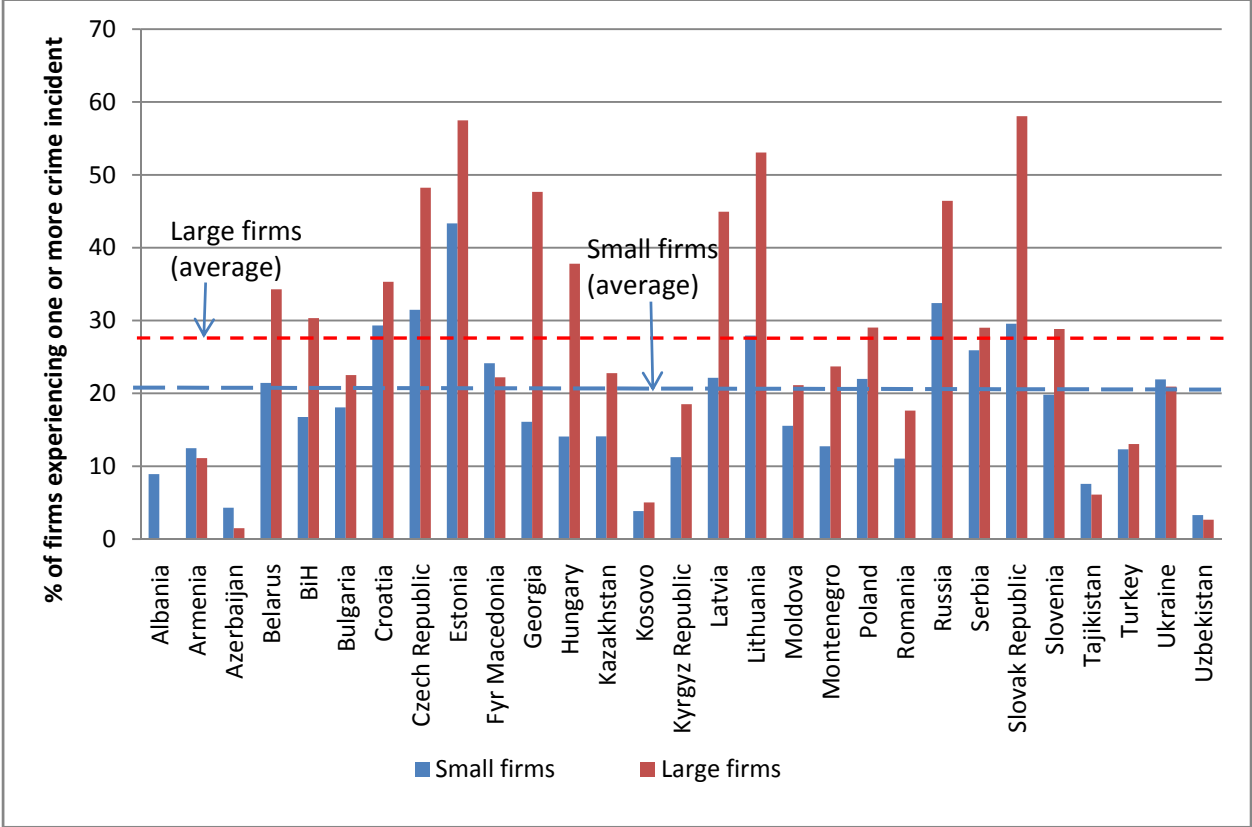
Source: Crime and security data are from Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). GDP per capita (log, PPP adjusted in constant 2005 USD) are from World Development Indicators, World Bank and for the year 2007.

Firm-size and Crime

The incidence of crime for small firms in ECA equals 18.4 percent and 27.2 percent for large firms (medium firms lie in between with an incidence rate of 21.6 percent). Hence, large firms are more likely to be victims of crime than the small firms. However, the burden of crime is much higher for small than for large firms (0.54 percent for small, 0.29 percent for large and 0.43 percent for medium firms). The pattern is found to hold for most individual countries as well although there are some exceptions (Figures 4 and 5). Security expenses are higher for the large firms so the gap between small and large firms becomes narrower when we add security expenses to the losses from crime. Nevertheless, the combined effect still remains biased against the small firms (1.94 percent for small vs. 1.84 percent for large firms). At the minimum, these findings make two broad points. First, studies based solely on the incidence of crime (majority of existing studies) may paint a misleading picture of the sorts of agents that suffer most from crime. Second, compared with large firms, small firms may be virtually invisible. However, this does not mean that small firms do not suffer from crime. Further, if we believe that the owners and employees in the small firms are less well off than the same in large firms, the data suggest

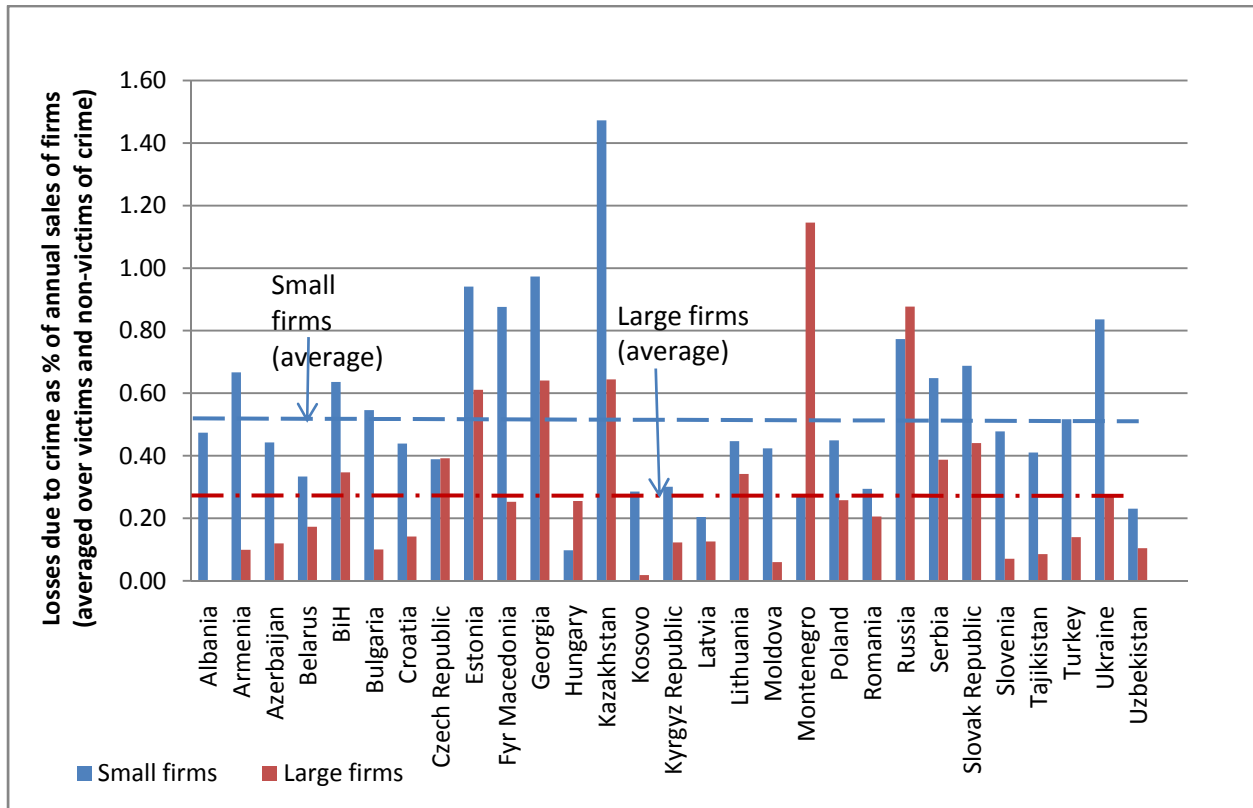
that crime is regressive in nature – it imposes a heavier burden on the relatively less well off agents. The distributional implication here provides another rationale for devoting larger public resources towards crime prevention.ⁱ

Figure 4: Incidence of crime is higher for large firms



Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). BiH is Bosnia and Herzegovina. All figures relate to the survey year (2008-09).

Figure 5: But losses due to crime are heavier on small firms



Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009). BiH is Bosnia and Herzegovina. All figures relate to the survey year (2008-09).

Construction firms suffer most from crime followed by service and manufacturing firms

Another aspect of crime in ECA that stands out is its relatively high level in the construction sector compared with the manufacturing sector. The service sector lies in between the two (Table 2).ⁱⁱ The pattern holds in a majority of countries individually. Interestingly, there is not much difference in the percentage of firms spending on security across the three industries with the level of security expenses being least for the construction firms. It might be tempting to conclude that construction firms face more crime because they spend less on security, but such a conclusion must await a rigorous analysis of the security-crime relationship (discussed above). For one, the negative security-crime relationship is not supported by the comparison between manufacturing and service firms. Further, construction sites are usually in public areas which arguably are easier targets for the criminals.

Table 2: Crime and security across Industries

	Manufacturing	Services	Construction	All firms
Percentage of firms reporting one or more incident of crime	14.2	21.2	27.2	20.1
Losses from crime as percentage of annual sales	0.35	0.51	0.64	0.48
Percentage of firms that spend on security	55.5	59.5	55.6	57.6
Expenses on security as percentage of annual sales	1.39	1.55	1.20	1.43

Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](#), 2009).

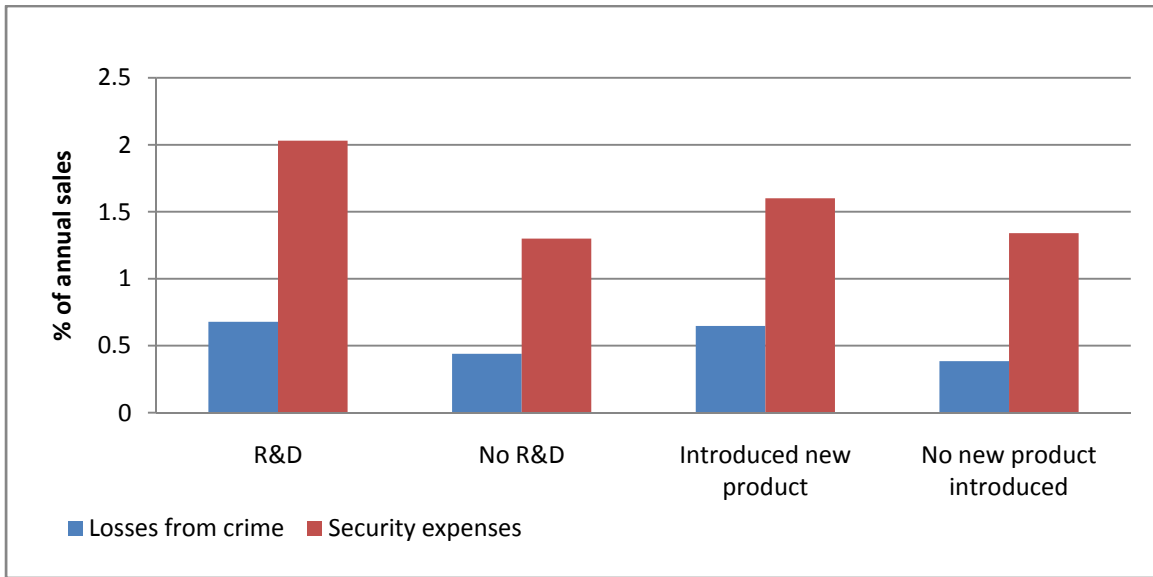
Losses from crime and expenses on security are averaged over all firms. All figures relate to the year of the survey (2008-09).

Other firm characteristics and crime

Apart from the industry and firm-size, crime and security measures show little correlation with most of the remaining firm characteristics. Two exceptions are whether or not a firm does R&D, and if it introduced a new product during the survey year (Figure 6). There is evidence in the literature that the incidence of crime is higher in the larger cities because such cities have more wealthy individuals for criminals to target and also because it is easier for criminals to remain anonymous. The data used in this note do not show higher crime in the bigger cities. However, it does show that crime is higher in larger cities within a country: moving from a smaller city to a city with more than 1 million persons within a country increases the incidence of crime by 3.9 percentage points (against the average of 20 percent). In short, the absolute size of a city is irrelevant for crime; what matters is the city's size relative to that of other cities in the country.

Summarizing, in ECA, crime related costs are much larger than what firms pay in bribes and losses to firms due to power outages. While losses due to crime in ECA are not as high as in Latin America, expenses on security by the firms are comparable in the two regions. Across sectors, manufacturing firms are least affected by crime and construction firms are most affected. Large firms are more likely to be victims of crime although losses due to crime as a percentage of annual sales of a firm are heavier on the smaller firms. There is no evidence that crime related problems are more severe in the relatively poorer (or richer) countries. Similarly, the incidence of crime does not change much with the absolute size of a city although it does increase when we move from a smaller to a larger city within a country.

Figure 6: Innovating firms suffer more from crime



Source: Business Environment and Enterprise Performance Survey ([Enterprise Surveys](http://www.enterprisesurveys.org), 2009).

References

Amin, M (2009), "Crime, Security and Firms in Latin America," A short note available at

http://www.enterprisesurveys.org/ResearchPapers/Crime_security_firms_Latin_America.aspx

ⁱ Amin (2009) reports similar results for Latin America. That is, incidence of crime is lower for small relative to large firms but losses due to crime are heavier on the smaller firms.

ⁱⁱ The difference in losses from crime between service and construction firms does not appear to be that big in Table 2, but this is largely due to 3-4 service firms that report very high levels of losses due to crime.