

## Crime and Security in the Eastern Europe and Central Asia Region

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About 20 percent of firms in the Eastern Europe and Central Asia region are victims of crime during a year. While losses to firms from crime incidents average 0.5 percent of a firm's annual sales, expenses by firms for security average 1.4 percent of their annual sales. These two costs, equaling 1.9 percent of a firm's annual sales, are about eight times what firms spend on research and development (R&D) and 1.8 times the reported amount paid in bribes. Surprisingly, higher-income countries do not have more crime related problems compared to lower-income countries. Although large firms are more likely to be victims of crime than small firms, losses from crime as a percentage of firms' annual sales are much larger for the smaller firms. With the exception of the firm's business activity and whether or not a firm innovates, other firm characteristics have little relation to the incidence of crime and losses due to crime faced by a firm.

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 levels of crime against firms, etc., can inflate business costs, which in turn lower 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 because of limited data. We use firm-level data collected by the World Bank's Enterprise Analysis Unit in 29 countries in the Eastern Europe and Central Asia region (ECA) in 2009.<sup>1</sup> The survey covered 11,306 firms; the firms were asked if they faced one or more incidents of crime during the fiscal year (2008-09), about the losses they incurred due to crime, and how much they spent on security. Information was also collected on a number of firm characteristics.<sup>2</sup>

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

### Losses Due to Crime in ECA Appear to be Low While Security Expenses are Relatively High

The percentage of firms that experienced one or more incidents of crime during the survey year (incidence of crime) equaled 20 percent for the region as a whole. About 58 percent of the firms incurred security expenses. Together, 64 percent of the firms incurred costs either because of crime or expenditures on security (or both). Averaged over all firms (victims and non-victims of crime) and as a percentage of the firm's annual sales, the losses due to crime (henceforth, burden of crime) equaled 0.5 percent while expenses on security equaled 1.4 percent. In short, losses due to crime plus expenses on security (henceforth, crime related costs) equaled 1.9 percent of a typical firm's annual sales. EU-10<sup>3</sup> countries show a higher incidence of crime than the rest of ECA (27 percent vs. 17 percent) although crime related losses are lower in the former (1.3 percent vs. 2.2 percent). Table 1 lists some of the countries with the highest and lowest levels of incidence of crime and losses from crime and security related expenses. Figure 1 shows the full distribution of crime related costs across countries.

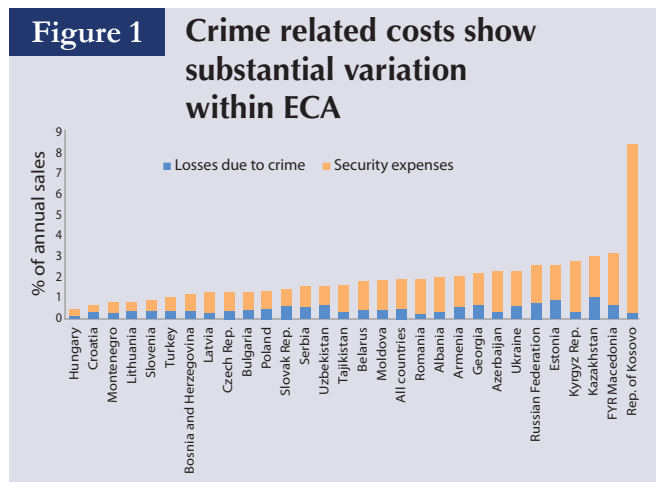
For a comparison, Enterprise Surveys (2005) data on 14 Latin American countries show that 33 percent of firms suffer from crime (compared with 20 percent of the firms

**Table 1** Countries most and least affected by crime and security costs

	Incidence of crime (% of firms)	Losses due to crime (% of annual sales)	Percentage of firms that spend on security	Expenses for security (% of annual sales)
High	Estonia (44%)	Kazakhstan (1.0%)	Rep. of Kosovo (91%)	Rep. of Kosovo (8.1%)
	Czech Rep. (36%)	Estonia (0.9%)	Estonia (85%)	FYR Macedonia (2.5%)
	Russian Federation (35%)	Russian Federation (0.8%)	Russian Federation (78%)	Kyrgyz Rep. (2.4%)
	Latvia (34%)	Georgia (0.7%)	Latvia (75%)	Azerbaijan (2.0%)
	Croatia (32%)	FYR Macedonia (0.7%)	FYR Macedonia (70%)	Kazakhstan (1.9%)
Low	Albania (8%)	Latvia (0.3%)	Hungary (41%)	Montenegro (0.5%)
	Tajikistan (7%)	Montenegro (0.3%)	Serbia (38%)	Slovenia (0.5%)
	Rep. of Kosovo (5%)	Rep. of Kosovo (0.3%)	Croatia (37%)	Lithuania (0.5%)
	Azerbaijan (4%)	Romania (0.3%)	Uzbekistan (30%)	Hungary (0.3%)
	Uzbekistan (4%)	Hungary (0.1%)	Montenegro (29%)	Croatia (0.3%)

Source: Enterprise Surveys.

Upper panel lists countries with highest values of the variables. The lower panel lists minimum values. Values are shown in parentheses.



Source: Enterprise Surveys.

All figures are for the fiscal year 2008-09 and are expressed as a percentage of the firm's annual sales. Averages shown are taken over all firms within each country, irrespective of whether the firms experienced crime or not and whether they spent on security or not.

in ECA). Similarly, losses due to crime in Latin America average 1.2 percent of the firm's annual sales (compared with 0.5 percent of annual sales for ECA firms). Despite the relatively low level of crime in ECA relative to Latin America, security expenses in the two regions are roughly the 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 bribes by the firms, 1.3 times the losses to firms from power outages and about 8 times what firms spend on R&D during the year.<sup>4</sup>

**EU-10 countries show a higher incidence of crime than the rest of ECA (27 percent vs. 17 percent) although crime related losses are lower in the former (1.3 percent vs. 2.2 percent).**

In short, crime imposes a heavier burden on firms than, for example, corruption.

The data show that losses from crime and expenses for security are positively correlated at the firm and 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 perceived threat of crime mentioned above.

### Crime and Security Problems are Similar Across Higher and Lower-Income Countries

One might assume that low incomes and high unemployment in lower-income countries, relative to higher-income countries, may exacerbate crime related problems. Furthermore, one expects the level of crime and security to be closely associated with the quality 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 nearly no relationship between the two if the Kyrgyz

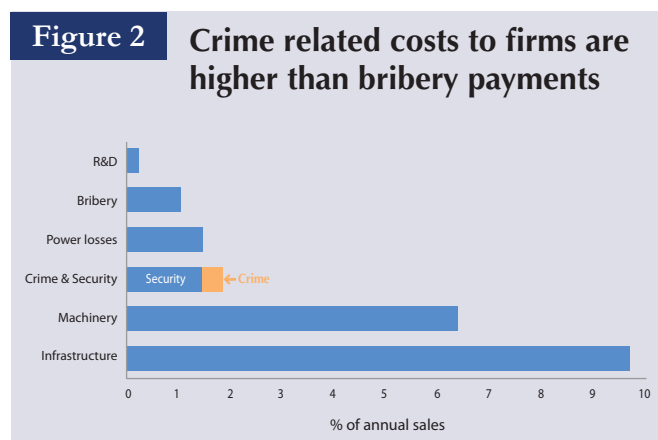
Republic (KGZ) and FYR Macedonia (MKD) are excluded from the sample. Also, there is almost no relationship between crime and security related measures and the quality of the overall business environment as measured by the Heritage Foundation's Business Freedom index. In short, we need to go beyond the usual rich vs. poor paradigm and good vs. bad overall business environment to properly understand why crime related costs to firms are greater in some countries relative to others.

## Firm-Size and Crime

The incidence of crime for small firms in ECA equals 18 percent and 27 percent for large firms (medium firms lie in between with an incidence rate of 22 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 (0.5 percent of annual sales for small, 0.3 percent for large and 0.4 percent for medium firms). The pattern holds for most individual countries as well although there are some exceptions (figures 4 and 5). Security expenses are higher for the large firms and consequently the gap between small and large firms becomes narrower when security expenses are added to the losses from crime. Nevertheless, the combined effect still remains biased against small firms (1.9 percent of annual sales for small firms vs. 1.8 percent of sales for large firms). At a 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, when compared with large firms, small firms may be nearly invisible. However, this does not mean that small firms do not suffer from crime. Furthermore, if the belief is that the owners and employees in small firms have lower incomes than their counterparts 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 more public resources toward crime prevention.<sup>5</sup>

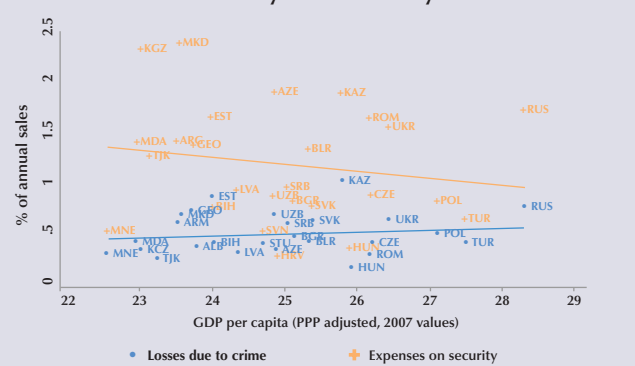
## Other Firm Characteristics and Crime

Apart from sector (discussed below) 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



Source: Enterprise Surveys.  
All figures are for the fiscal year 2008-09.

**Figure 3** Firms across higher and lower-income countries are similarly affected by crime

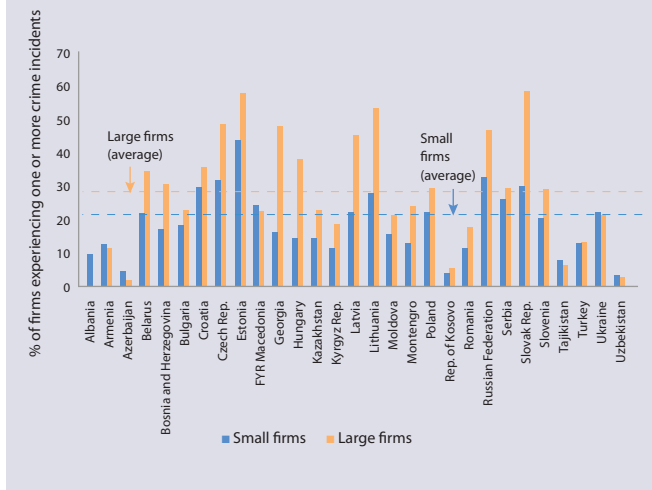


Source: Crime and security data are from Enterprise Surveys. GDP per capita (log, PPP adjusted in constant 2005 USD) are for the year 2007 and taken from World Development Indicators, World Bank.

introduced a new product during the three years prior to the survey year. There is evidence in the literature that the incidence of crime is higher in larger cities because such cities have more wealthy individuals for criminals to target, and because criminals can more easily remain anonymous. The data used in this note do not show higher crime in the bigger cities across countries. 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 4 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.

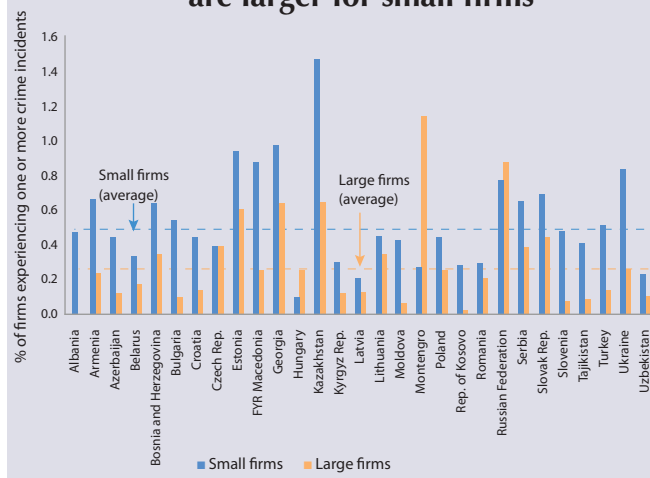
To summarize, in ECA, crime related costs are much higher than what firms pay in bribes and also higher than the losses to firms due to power outages. While losses from crime in ECA are not as high as losses in Latin America, security expenses by the firms are comparable in the two regions. Across sectors, 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 firm's annual sales are larger for the smaller firms. There is no evidence that firms in lower-income countries are more afflicted by crime related problems compared to firms in higher-income 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 4** Incidence of crime is higher for large firms



Source: Enterprise Surveys.  
All figures relate to the survey year (2008-09).

**Figure 5** Losses due to crime as a percentage of firms' annual sales are larger for small firms



Source: Enterprise Surveys.  
All figures relate to the survey year (2008-09).

## Notes

1. The Enterprise Surveys, implemented in Eastern Europe and Central Asia countries, are also known as Business Environment and Enterprise Performance Surveys (BEEPS) and are jointly conducted by the World Bank and the European Bank for Reconstruction and Development for this geographic region. ECA includes Albania 2009, Armenia 2009, Azerbaijan 2009, Belarus 2009, Bosnia and Herzegovina 2009, Bulgaria 2009, Croatia 2009, Czech Republic 2009, Estonia 2009, Georgia 2009, Hungary 2009, Kazakhstan 2009, Republic of Kosovo 2009, Kyrgyz Republic 2009, Latvia 2009, Lithuania 2009, FYR Macedonia 2009, Moldova 2009, Montenegro 2009, Poland 2009, Romania 2009, Russian Federation 2009, Serbia 2009, Slovak Republic 2009, Slovenia 2009, Tajikistan 2008, Turkey 2008, Ukraine 2008, and Uzbekistan 2008.
2. As defined in the Enterprise Survey, crime includes all incidents of losses as a result of theft, robbery, vandalism and arson; security expenses include all payments made by the firm for security including, for example, equipment, personnel, or professional security services.
3. EU-10 includes 2009 data from Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia.

4. R&D equals total expenditures by firms on R&D (in-house and contracted out as a percentage of annual sales). Bribe equals the amount paid to government officials to “get things done” as reported by firms (as a percentage of annual sales). Power losses equal losses incurred by firms due to power outages (expressed as a percentage of annual sales). Machinery equals total expenditure by firms on the purchase of machinery and equipment (expressed as a percentage of annual sales). Infrastructure is the total expenditure by firms on fuel, electricity, communication services and water (expressed as a percentage of annual sales). Crime & Security equals losses due to crime and expenses on security for all firms (victims and non-victims of crime) (expressed as a percentage of annual sales).
5. Amin (2009) reports similar results for Latin America. That is, the incidence of crime is lower for small relative to large firms but losses due to crime as a percentage of firms' annual sales are higher for smaller firms.

## References

- Amin, M. 2009. “Crime, Security and Firms in Latin America,” Enterprise Note 2, World Bank. The note is available at <http://www.enterprisesurveys.org/Documents/EnterpriseNotes/Note2.pdf>

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