**Crime and Investment in Security: Economic Incentives,**

**Political Economy and Efficiency**

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**Motivation of the research**

In the present paper, we explore the relationship between investment in security (both public and private) and several economic and political variables, such as the distribution of wealth and degree of political accountability of the government. We propose a theoretical model that provides a better understanding of two main issues. First, the reasons behind the observed cross-country differences in the ratio of private-to-public investment in security (table 1 (from Mendoza (2015)) below serves as an example of such cross-country evidence).



Second, it attempts to explain the spatial differences in the allocation of crime and investment in private security in Russia, where the process of transition to market economy and change in political institutions favored the emergence and spread of private actors of security provision. Flourishing in the beginning of 1990-s, the number of criminal groups and legal private security firms that were the main actors in the security market has considerably decreased by mid-2000-s, as documented in Volkov (2012). However, during the period of stable economic growth, the private investment in security has risen coupled with new measures of security appearing, for example, gated communities (see Polischuk and Sharygina (2016)). These communities are distributed very unequally across cities and regions, as well as across income groups. We apply the model of spatial allocation of crime and private investment in security to the Russian case.

**The first results**

At this stage, the model shows that in countries with more democratic political regimes the ratio of private-to-public investment in security is lower in most cases. Moreover, incentives of the government to invest in security (police, courts) depend on the amount of self-protection, taken by private parties, which in turn depend on the distribution of wealth in the society. Intensive and observable private protection, such as numerous gating communities, present in one countries, but almost absent in other, appear to be the result of lower public investment in security coupled with skewed wealth distribution. The latter leads to the emergence of the regime, in which government tolerates the substitution of public investment in security for observable private investment by the rich few. The result is a huge diversion effect of crime (i.e. reallocation of crime towards less protected victims), which could even outweigh the crime-deterrence effect. We test these and several other predictions using cross-country data on public and private investment in security and criminal activities.

Moreover, using the model of spatial allocation of crime, we are able to account for intra-country allocation of crime and private investment in security, like “CHOPs” (ЧОПы) and gating communities in Russia. We show that decrease in institutional quality will lead to increase in private security investment. And especially so in richer regions with skewed wealth distribution. To test the results acquired in formal analysis, we conduct empirical econometric analysis of Russian panel regional level data beginning in 2006 through 2016.

**Relation to the literature**

Security, which constitutes one of basic human needs, might be regarded as a public good and a private good at the same time. As a public good, security is to be provided by state, since it holds monopoly on violence inside a delimited territorial jurisdiction. As a private good, security might be bought by an individual or a group of individuals if they perceive current security level maintained by state as insufficient. The actors who produce supply of security might be, for example, private security firms or developers of gated community (e.g. Helsley and Strange (1999)). However, there is lack of academic agreement on the nature of interaction between state and private actors in providing security. On the one hand, public and private investment are proved to be substitutes, since increase in taxation demotes incentives to invest in security privately (see Bergstrom, Blume and Varian (1986)). On the other hand, the concept of “co-production” was introduced (Ostrom (1996)) with emphasis on the importance of two kinds of investment being complementary.

The complex relationship links together private and public security investment, crime rates, and quality of institutions. Many scholars emphasize mutual dependence between private and public expenditure on security. For example, Helsley and Strange (2005) argue that increase in private security investment will induce demotion of state expenditure. However, Guha (2013) shows that if one relaxes the assumption of private and public security measures being substitutes, which underpins Hesley and Strange research, the opposite conclusion might be reached. Similarly, Mendoza (2015) scrutinizes the factors that make a state become a free-rider in law enforcement. Those factors include efficiency of taxation, and efficiency of economic crime.

Among the determinants of private security demand, scholars usually conceive of crime level as the key factor which drives individuals’ decision to invest (e.g., Ehrlich (1996), Lee and Pinto (2009)). However, crime tends to be endogenous variable itself dependent on income inequality and economic growth (see Mehlum et al. (2005)), law enforcement (see Hotte and Yppersele (2008)), and interaction between various private security measures. Zimmerman (2014) warns against treating crime level as a homogeneous variable. Using state-level USA data from 1999 to 2010, he shows that there are differentiated patterns in influence of separate private security measures on different crimes.

**Methodology**

The theoretical model we develop is based on the following papers (Shavell (1991), Helsley and Strange (2005), Guha (2013), Mendoza (2015), and Friehe and Miceli (2015)). We investigate the interaction between public and private investment allowing for spatial externalities. Concerning private security investment, we differentiate between security measures on their observability to potential criminal (observable or unobservable), and nature of interaction with state security provision (complementary or substitutable). In the model, we have three kinds of actors: citizens, who choose the level of private security investment, state, who determine the level of public security expenditure, and criminals, who decide whether to commit a crime and where.

To test the results acquired in formal analysis, we conduct empirical econometric analysis of Russian panel regional level data beginning in 2006 through 2016. As a dependent variable, we employ the number of private security firms which hold official license by each year in each region. Independent variables comprise set of socio-economic indicators (income inequality, gross regional product per capita), political indicators (regional democracy level, quality of institutions, law enforcement efficiency), and crime rates per regions differentiated by types of crimes (violent crime or property crime).

However, estimates obtained from common fixed effects or random effects models might be inconsistent. Our data structure obliges us to account for temporal autocorrelation, while theoretical framework encourages to account for spatial autocorrelation. Thus, dynamic autoregressive models and spatial autoregressive models are estimated as well. Since complex interdependence between key variables – private and public investment in security – takes place, and variables treated as exogeneous are probable to be endogenous, we try to model endogeneity using structural equation modelling and instrumental variables approach.

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