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The economics of organized crime: evidence on FDI attraction in Latin America and Caribbean

Master dissertation

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Declaration of authoship:

I, **Štěpán Tošovský**, hereby declare that the thesis "The economics of organized crime: evidence on FDI attraction in Latin America and Caribbean" was written by myself, and that all presented results are my own, unless stated otherwise. The literature sources are listed in the References section.

Prague , September , 2016 ……

Signature

Abstract

This paper attempts to investigate the degree to which organized crime affects FDI in 15 Latin America and Caribbean countries during 2006-2014 period. We employed four crime proxies: homicide rate, organized crime index, business cost of terrorism index and business cost of crime index and analyzed their impact on overall, sectoral and industrial FDI inflows. We find evidence of a deterrent effect of organized crime on FDI inflows; in particular on FDI in secondary and tertiary sectors. On the contrary FDI inflows in more 'extractive' industries - primary sector - are less affected by the presence of organized crime

Key words

Foreign Direct Investment, Latin America and Caribbean, organized crime, sector specific FDI, industry specific FDI.

List of abbreviations

CPI	Consumer Price Index
DESEPAZ	Development, Security, and Peace Program
EU	European Union
FDI	Foreign Direct Investment
FE	Fixed Effects
GCR	Global Competitiveness Report
GDP	Gross Domestic Product
NGO	Non-governmental organization
OC	Organized Crime
PISA	The Programme for International Student Assessment
REER	Real Effective Exchange Rate
UNCTAD	United Nations Conference on Trade and Development
UNODC	United Nations Office on Drugs and Crime
US	United States
WB	World Bank

Graphs and Figures

Total, sectoral and industrial FDI as a % of GDP are dependent variables.

Ln (OC index $_{t-1}$) and Ln (Homicide$_{t-1}$) are organized crime variables.

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Introduction

The flow of foreign direct investment (FDI) to Latin America and Caribbean[1] has increased rapidly in recent years. Policy makers believe that FDI flows contribute to long-run growth and development more than other forms of capital inflows (see Alfaro 2003) as foreign technology and management skills that can be absorbed and adapted by the host economy boost productivity. Economic growth in this region however falls behind the performances of comparable middle-income countries and one of the reasons can be seen in the limited accumulation of capital. Given the fact, that national savings in Latin America and Caribbean[2] are relatively low, foreign capital becomes an important element of economic growth. For these reasons, it is vital for local governments to know, what are the forces that drive investors to locate FDI into their country.

Many studies attempted to analyze inward FDI flows into this region, however, the existing literature provides ambiguous answers for several reasons. Some analysis employ a large number of differently combined and defined variables[3] and often face mixed results with respect to statistical significance or even direction of the effects. Most studies[4] also deal only with overall FDI inflows and hence are subject to some fundamental limitations. Firstly, FDI determinants are likely to be variant across sectors, therefore, results from empirical analysis which use only overall inflows do not reveal important information about sectoral and industrial differences. Secondly, only a limited number of studies analyzed the impact of organized crime on FDI inflows. Most of existing studies investigate the role of other determinants such as market potential, openness, quality of institutions, infrastructure and education, income level, tax rates or economical and political stability.

The reason, why are we concerned about organized crime is that for decades Latin America has been the most violent region in the world and this situation is unlikely to change in the near future. With only about 8 percent of the world population, more than 30 percent of murders in 2012 were registered there[5]. With 90,4 murders per 100,000 people, Honduras became leader of actual homicide rate statistics, Brazil ranked first in total number statistics

[1] In this paper, we will sometimes refer to this region as „Latin America“
[2] According to Worldbank data 2006-20014
[3] Most of such measures appeared in United Nations Conference on Trade and Development -UNCTAD (1998) classification
[4] For example: Tumman and Emmert (2003), Penfold (2014), Reyes and Sawyer (2011) or Manrique (2006)
[5] In 2012, United Nations Office on Drugs and Crime (UNODC) registered 134,519 homicides in Latin America out of the 440,000 murders globally. By contrast, with 60% of the world population, only 27% of world murders were comitted in Asia By contrast, with 60% of the world population, only 27% of world homicides were comitted in Asia

with 50,108 murders in 2012. While only Chile, Cuba and Argentina[6] have lower murder rates than the world average[7], Global Study on Homicide 2013[8] ranked 13 Latin America countries in „top 20“. Besides murders, Latin America is responsible for 25 percent of all kidnappings in the world[9] and extortion is becoming daily bread for local businesses. Pan American Health Organization labeled violence in Latin America "the social pandemic of the 20th century“.

Concerning murders in Latin Americas, unlike in rest of the world, high percentage of them are committed by gangs. United Nations Office on Drugs and Crime (UNODC) estimate, that over 30 percent of homicides are related to organized crime groups[10], whose power and range has exploded in recent years. Cartels and street gangs rule entire neighborhoods, cities and even provinces, directing the law in their favor. Moreover, within the most inefficient and corrupted criminal justice systems in the world, fear of being punished is very low[11].

The strongest manifestation of organized crime in Latin America and Caribbean is drug trafficking, especially cocaine. Colombia, Peru, and Bolivia produce the base products for the entire world consumption of this drug, of which 86 percent is placed in Europe and Norh America. 90 percent of cocaine to North America is trafficked along the Pacific and Atlantic coast of Mexico and Central America, the rest through the Caribbean. Drug for European market departs from Venezuela and Brazil and arrive mainly to Spain. Cartels fight for these smuggling roads and correlation with violence is not accidental there. The traffic of illegal drugs is estimated to generate an annual turnover of about US $150 billion just in the United States, $40 billion may be spent on cocaine alone. Overally, organized crime generated almost $900 billion in 2009. This amount represents 1,5 percent of world Gross Domestic Product (GDP) and it is also an equivalent of nearly 7 percent of the world's exports of merchandise (United Nations Conference on Trade and Development - UNCTAD 2009).

As a consequence, the rise in crime and violence, apart from the direct human cost[12], cause high corruption and insecurity. This enviroment is undermining economic growth and reducing substantally welfare. The Inter-American Development Bank estimates that Latin America's per capita GDP would be 25 percent higher if the region's crime rates were equal to

[6] Chile reported 3,1 murders per 100,000 inhabitants; Cuba 4,2 and Argentina at 5,5.
[7] 6 homicides per 100,000 people
[8] Global Study on Homicide 2013 by UNODC
[9] Control Risks map 2013, *www.controlrisks.com*
[10] Global Study on Homicide 2013 by UNODC
[11] UNODC states that the highest number of murderers in the world to escape unpunished in Latin America
[12] Crime-related violence contribetes with more victims than HIV/AIDS or other infectious diseases

the world average. The World Bank also found a strong correlation between crime and income inequality[13]. Latin America finds itself in the vicious circle where economic growth is deterred by excessive crime rates which in turn are feeded by insufficient economic opportunities. It this light, it is not surprising, that regional businesses consider crime as the biggest obstacle for trade and investments in Latin America and Caribbean.

Getting back where we started, with all these information, it is important not only to consider but to analyze as deeply as possible the influence of organized crime on FDI as an important driver of regional economic growth. However, whilst literature provides various studies analysing determinants of FDI, most of them overlook organized crime. To our knowledge, only three papers study the relationship between organized crime and FDI flows into Latin America. While Manrique (2006) and Gómez Soler (2012) examined overal FDI inflows, only Blanco Ruiz, Sawyer and Wooster (2015) analyzed correlation between crime and FDI with respect to primary, secondary and tertiary sectors.

Since we expect not only sectoral but also industry differences, this paper attempts to fill one missing link. Besides overall and sectoral analysis, we examine how organized crime affects FDI flows into different industries of tertiary sector in Latin America and Caribbean. This paper is devided into three parts. In the theroetical part of this study we briefly survey the determinants and concequences of organized crime. The empirical part presents original estimates of the effect of organized crime on overall, sectoral and industrial FDI into Latin America and Caribbean. In the last section some conclusions are drawn.

[13] Fajnzybler (2002). "Inequality and law", *http://siteresources.worldbank.org/DEC/Resources/Crime&Inequality.pdf*

1 Definition of organized crime

Organized Crime Control Act (1970, United states) defines the term „organized crime“ as "the unlawful activities of a highly organized, disciplined association“, however due to large historical diversity between cultural, origin or structural aspects of such groups, there is no generally accepted all-embracing definition. Organizations does not have to be necessarily „large-scale“ and highly centralized with hierarchy and with the presence of a boss at the top. One fundamental element of organizations that we label mafia[14], gang, mob, cartel or crime syndicate is the presence of well defined collective identity, internal rules and subdivision of work among memebers (Paoli 2002)**.** Organized crime groups are engaged in unlawful activities to make profits which is, besides organization aspect, another feature that distinguish „organized crime“ from „crime“ (Coniglio, Celi and Scagliusi 2011). Typical business activities are human, sex and arms trafficking, illegal drug trade, money laundering, extortion or kidnapping and although literature distinguishes them from other forms of crime, such as white-collar, financial or political crimes, this distinction may become blurred when „mafia“ starts to control state institutions. Not only style of organization but also portfolio of businesses differs from group to group, country to country.

2 Determinants of (organized) crime

The link between economy and crime has attracted many sociologist and economist during last decades and popularity of this topic has continued to increase. With growing rate of organized crime, there is a strong need to find what are the determinants of organized crime and what are the effects of organized crime on the economy. It is important to note that the bulk of the existing literature has focussed on „crime“ rather than „organized crime“.

Debates in 50s and 60s presented crime as a result of mental illness and social oppression, however, studies followed in 70s stood against this conventional wisdom and set crime within the theory of rational choice. The origins of this theory go back to the classical school of criminology and to the work of Cesare Beccaria and Jeremy Bentham, famous philosophers of eighteenth and nineteenth century, who are considered „founders of classical criminology“. Both men were mainly interested in the control of crime through the manipulation of penal sanctions rather than the direct observations of criminals or the analysis

[14] Mafia with capital M which usually means the Sicilian Mafia groups

of aggregate crime data.[15] The main assumption of their work was, that agents choose to commit crime by using free will and their decision is based on reason and knowledge.

Relationship between crime and racional choice theory came alive later in book of Gary S. Becker called „Crime and Punishment: An Economic Approach" (1974) which is considered as „fount of economic writing on crime and its control."[16] Becker´s interest in criminology was sparked by his own experience with parking. One day, he rushed for a job and chose to park illegally after he calculated all potential gains and consequences of this action. According to Becker, all „criminals" face the same rational choice and when the gains of committing crime are higher than probability of conviction and punishment, delinquency is a utility maximizing behaviour. Becker added, that of course, the probability of being discovered and convicted and the nature and extent of punishments differ from person to person and activity to activity"[17] and many people may behave under a high moral and ethical constraint.

Later studies by Becker and Stiegler (1974) and Landes and Posner (1975) attempted to address the optimal enforcement of laws. Unlike Jeremy Bentham's rational choice theory, Becker's stated that due to socially unacceptable costs, crime can not decrease below certain level, therefore the question is, how many resources and how much punishment should be used to enforce law, in another perspective, how many offenders should go unpunished[18]. Beckers studies were followed by Ehrlich (1974), who went beyond previous analysis and emphasized, that perspectives based on the rational, calculating criminal may not be accurate. Ehrlich provided a more comprehensive model of the decision to commit a crime and analyzing data from United States between 1940s and 1960s, he found correlation between specific crime rates[19] and income inequality as well as law enforcement activity. In later researches, Freeman (1994, 1996, 2000) found out that during 80s in United States, less educated workers[20] were associated with higher crime rates, relationship between low wages and higher rates of crime in US were found also in work of Gould, Weinberg and Mistard (2000), who examined period of 1980s and 1990s. Machin and Meghir (2004) supported these results with the evidence from United Kingdom, analyzing period between 1975 and 1996.

[15] Moran R. (1995). „Book Review: Bringing rational choice theory back to reality", *Journal of Criminal Law & Criminology p. 1147 (1995-1996)*
[16] Posner, R. (2004) „Frontiers of Legal Theory", *page 13*
[17] Gary S. Becker: Crime and Punishment: An Economic Approach, 1974
[18] Gary S. Becker: Crime and Punishment: An Economic Approach, 1974
[19] Murder, Rape, Assault, Robbery, Burglary, Larceny, Auto theft
[20] Young and black

They found that a drop in the pay of low wages workers led to an increase in crime rates of this group.

To conclude, although the choice to commit crime is conscious, many other factors such low education, unemployment or income inequality play important part in such decision. In the famous book „Burglars on the Job: Streetlife and Residential Break-ins“, Decker and Wright (1996) state that criminals are not making their choices in a vacuum with the help of a calculator and due to „street culture“, their decisions do not (even) have to be be independent in all cases. There is one phrase related to Latin American underworld which describes this concept perfectly: cooperation with criminal groups does not have to be driven by free will. When you are offered „plata o plomo“, you are about to select "silver or lead", in another words, either you "accept money[21] or face death."

These findings open a question: are these determinants enough for existence and rise of crime which is organized, or are we missing some important feature? Analysis showed another factor that plays a crucial part - the weakness of the local government authorities (Paoli 2002).

3 Organized crime on the market

Whether we consider a small street gang in Brooklyn or a large scale transnational organization, organized crime groups have one thing incommon, they are businesses in some way and they exist and make (collective) decisions in order to maximize profits[22] by running illegal activities such selling illegal goods and providing illegal services. These organizations are active actors in the market and allocate resources with respect to profit maximizing goals. If we would skip the term „illegal“, the description of these organizations would fit the classic definition of legal firm.

On the market, crime organizations compete for monopoly of power over territories and they try to maintain it as long as possible, hence, whenever you hear or read about mafia-like murders you may be sure, that it is a consequece of war over territorium such part of the city or route for trading drugs. Organizations compete against each other or even against central government. Fight for monopoly with State happens in areas where organized crime groups are strongly situated (no matter in which part of the world) through providing „security“ or

[21] Bribe or salary
[22] Except of politicaly motivated groups

„order“ services such protection against other criminal activities, negotiation and settlement of conflits or gurantee of contractual arrangements, that are or should be provided by the State (Hess 1998). In the book „War Making and State Making as Organized Crime“ (1985), American historian Cherles Tilly also found similarities between State and „mafia“ and taking the example of the formation of European states during early modern times, he described state as protection rockets or organized crime. In fact States defended their territorial monopoly in wars, protected economically powerful clients against enemies within or outside of the state territory and collected taxes. Italian judge Giovanni Falcone – assassinated by Sicilian mafia in 1992 - described the emerge of Italian mafia as nothing more than desire for order and argued that it should not be combatted because of its values but because there cannot be at the same time parallel governments. It is clear, that if State would by strong enough it would be a monopoly over the provision of its services and could not allow „alternative governments“.

4 Consequences of organized crime

We defined the enviroment that help organized crime groups to emerge and in this part of our study, we attempt to answer, what are the consequences of their presence. Conventional wisdom tempt us to conclude that it must result in significantly negative effects in all possible fields of economy, but is it necessary true?

Firstly, let´s go back to Giovanni Falcone´s statement. He implied that mafia should not be fighted for its values so one can ask: could mafia be desired by people more than state? It can be the case in areas where government fails to protect its inhabitants. Mafia security system may be more effective, these groups may provide also legal jobs or even invest into public services/public goods[23]. Giovanni Falcone described the emerge of alternative groups as „nothing more than longing for order“. This is actually one of the reasons why so called „mafia“ or „cartel“ culture that is created over such territories is so hard to fight. It is a vicious circle, because it was weak government that allowed the emergence of „alternative groups“ (Paoli 2002) and once they are estabilished it is nearly impossible for government to win the loyalty of the public back. (Hess 1998, Fiorentini and Peltzman 1997).

However, while origins of „mafia“ groups in Sicily may be described as „longing for order“, emerge of organized crime groups in Latin America and Caribbean has not been

[23] Colombian Narcobaron Pablo Escobar was known for building sport fields, schools and hospitals.

driven by „security“ issues. The main driver has been economic profit, generated by illegal business, which besides the unlawful aspect brings another significant problem. As we know, illegal activities such drug trafficking generate incredibly high markups compared to most legal businesses. Economic theory suggests that where there is high markup, competitors emerge if entry barriers are not insormountable. The bigger the revenues are, the tougher the competition is. But organized crime syndicates do not solve it with more sophisticated advertisements or price wars. The solution is violence and the more is at stake, the further it goes. Eventual military responses of local governments are often followed by acts of terrorism[24]. This enviroment might negatively affect the allocation of both local and foreign resources. Let´s firstly look at the local ones.

Several authors (Baumol 1990 and Robinson et al. 1995) found that economic incentives to accumulate skills in areas ruled by „mafia law“ are very low in longer perspective, because the return to skills and human capital are low and distorted. Negative consequences might arise also in terms of business incentives and domestic investments. Giménez (2007) concluded that the decrease in the murder rate to the world average would increase domestic investments in Latin America by one percent, Bonaccorsi di Patti (2009) found that expected returns from investments in areas with higher crime in Italy are likely to be lower and cost of them higher due to riskiness. Let´s not forget, that probability of loosing your life in much higher, since crime-related violence cause thousands of victims every year.

But what to do when you neither want to become a criminal nor coexist with criminal enviroment? According to Hirschman (1970), there are two effective responses for citizens when they are dissatisfied with the enviroment they live in: political participation or migration to other location. Because areas with mafia power are significant for corruption enviroment and penetration of mafia members into politics (Forgione 2009), people will most likely chose to migrate from their homes when they think there is a threat of violent behavior (Moore and Shellman, 2008), despite the fact that relocation of both human and financial capital is a very costly way to avoid crime victimization. This theoretical approach is supported by several empirical studies. Cullen and Levitt (1999) found that an increase in crime causes population flight from city centers to surrounding suburbs. Dugan (1999) concluded that property crime victims are more likely to move over a three year period and the same data set from National Crime Survey led Xie and McDowall (2008) to conclude that victims of violent crime are

[24] For example Revolutionary Armed Forces of Colombia (FARC) is besides involving in the the drug trafficking responsible for numerous terrorist attacks while fighting with government. This organizations is also known for having close ties with other terrorist organizations such Hezbollah. (Duglas 2014)

even more likely to migrate. Moreover, they found that it is not only actual victimization but also „just“ fear of it that drives people out of their homes. Most recently, Coniglio, Celi and Scagliusi (2011) using municipal-level data from a Southern Italian Region, Calabria, show that areas with a rooted and pervasive presence of organized crime are moe likely to induce emigration and reduce the incentives to invest in education.

All those studies shed a light on the effects of organized crime on the domestic economy. To conclude, it deters incentives to education and doing business, highly corrupted enviroment results in poor quality of institutions which produce expensive public goods of low quality. Consequently, an overall decrease in the quality of life often results in emigration and it is not a surprise that macroeconomical performances of such terittories tend to be poor. Empirical support was provided by Peri (2004) who found that Italian provincies with presence of mafia have significantly lower GDP per capita grow rates. Another study revealed by The Inter-American Development Bank estimates, that Latin America's per capita GDP would be 25 percent higher if the region's crime rates were equal to the world average.

As we mentioned before, economy is not only affected by the change of behavior of local „resources“, a crime-intensive enviroment is also likely to reduce the attractiveness for foreign investors. Incentives to pour money into country with no market potential, low quality of institutions, infrastructure and education, where only kind of stability is stability of violence, is very low. However, whilst the economic literature provides numerous studies analysing determinants of FDI, not many of those employ organized crime variable as a potential determinant. Concerning Latin America, empirical evidence is provided by state-level analysis of Mexico and Colombia and to our knowledge, only three papers study the relationship between organized crime and FDI in Latin America.

Mexican State-level data and homicide rate as a proxy for organized crime were used by Madrazo Rojas (2009), Ashby and Ramos (2013) and Ramos and Ashby (2013). Madrazo Rojas (2009) found that one-point increase in the homicide rate led to a decline of 13 US dollars per capita in FDI during the 1998-2006 period. Ashby and Ramos (2013) contributed with sectoral analysis and found negative effect of homicide rate on the agriculture, commerce and financial services[25] sectors, however, positive effect was found on oil and mining sectors and no effect on the manufacturing sector and total FDI. In another study,

[25] Increase in the homicide rate by one point led to a decrease of 2-4%, 4-5%, and 14% of FDI in the financial, commerce, and agriculture sectors, respectively.

Ramos and Ashby (2013) concluded that high crime rates do not deter investments when the investment originates from a country with higher levels of crime. Pshisva and Suarez (2010) used firm level data for their Colombian case study. Authors concluded that while firm-related kidnappings have a negative impact on corporate investments, general forms of crime have no significant effects. In the same study, Pshisva and Suarez found negative effect of kidnappings by international terrorists on FDI analysing a sample of 196 countries. Evidence from Europe was provided by Daniele and Marani (2007) and Brock (1998). Analysing 103 Italian provinces, Daniele and Marani (2007) found significant negative correlation between mafia-type crime and FDI inflows in Italy between 2002–2006. Lower FDI inflows were not associated with other crimes such property crimes or robberies. Finally, Brock (1998) found negative significant correlation between crime and FDI in Russia

Literature on cross-country analysis is limited. Constantinou (2011) examined a sample of 75 countries and concluded that during 1999-2004 period, 1 percent increase in violent crimes led to decrease in FDI inflows by 0,07 percent. Only three studies considered Latin America region. Manrique (2006) analyzed, that organized crime has a negative affect on FDI through low quality of infrastructure destroyed by civil wars and low security. Recetly, Blanco, Ruiz, Sawyer and Wooster (2015) examining 13 Latin American countries, found negative effect of organized crime on FDI in the secondary and tertiary sectors during 1995-2010 period. Finally, Gómez Soler (2012) did not find significant correlation betwen crime and FDI analysing data between 2002 and 2010 for 19 Latin American countries.

5 The empirical analysis

5.1 Methodology and Data

To analyze the impact of organized crime on FDI flows in Latin America and Caribbean, we employ a dataset which includes a sample of 15 countries for the period 2006-2014. Data was available for Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Dominican Republic, El Salvador, Mexico, Trinidad and Tobago, Nicaragua and Panama. We run three set of regressions that attempted to analyze effect of organized crime on overall, sectoral and industrial FDI. Concerning industrial breakdown, we examined FDI across seven sub-sectors within the tertiary sector, namely: „Electricity, gas and water", „Construction", „Trade", „Hotels and restaurants" „Transport, storage and communications", „Finance and business activities" and „Other services", which consist of Community and Social Services, Professional, Technical and Personal Services'[26]. Data on FDI were collected from UNCTAD and National Banks.

More specifically we estimate the following model on the determinants of FDI based on previous theoretical and empirical analysis:

$$FDI_{i,(j),t} = \alpha + \beta 1 Crime_{i,t} + \beta_2 X_{i,t} + \varepsilon_{i,t}$$

where *i* represents country, *j* industry and *t* time, $X_{i,t}$ is set control variables and $\varepsilon i,t$ is the error term.

Our dependent variable is the inflow of total, sectoral and industrial FDI as a percentage share of GDP[27] in the period 2006-2014. In order to explore our main hypothesis of a negative or deterrent effect of organized crime on FDI inflows we employed four proxies for measuring the extent of the phenomena: homicide rate, organized crime index, business cost of terrorism index and business cost of crime index and we worked with following set of control variables: institutional quality, market size and market potencial, openness, unemployment, human capital and real exchange rate. The reason for using these variables are described in more details in the following chapter. Since our dependent variable is in percentage and we use logged control variables (crime variables, institutional quality, market

26 And „other services" according to The American National Standards Institute
27 Later on we use just „FDI", but we always mean FDI as a share of GDP

size, market potencial), we may interpret our results in terms of elasticities. Crime variables, market size, human capital and openness are lagged by one year which assumes that decisions of investors is influenced by past recent data (Ashby and Ramos 2013). Institutional quality, market size, real exchange rate and unemployment are not lagged since we believe, that investors are more likely to rely on actual data[28].

In what follows we report estimates of a fixed effect model after performing Hausmann test. It is important to say, that when we use fixed effects we are able to estimate the impact of the change of organized crime on FDI rather than its overall effect.

5.2 Measuring the intesity of organized crime

Measuring organized crime is not an easy task and in order to quantify this phenomenon as accurately as possible it is crucial to answer two important questions. Firstly, what kind of crime is typically caused by organized crime group. Secondly, what type of crime tends to be reported accurately when organized crime is a pervasive phenomenon. Concerning typical crimes, although it is very problematic to prove it by data, we may assume that offences such property crime, sexual assaults, corruption or homicides are not generally typical of organized crime groups. On the contrary, other crimes such extortion, bomb attacks, arson or kidnappings are likely to be associated with the presence of these groups (Daniele & Marani 2011). Taking into account accuracy, criminologists believe that while serious crimes such homicides or bomb attacks are more likely to be reported and recorded correctly, offences such property crimes or extortion, where reporting is based on voluntary basis, tend to be underreported (Gillespie 1979**).** Victims may find reporting such crimes embarrassing, dangerous, or they may take law into their own hands[29] when they feel that it can't provide justice (Amnesty International, 2007**).** This so called "dark figure of crime"[30] is generally large in countries with poor security and judicial systems (Fajnzylber et al. 2002)**.**

These ambiguous findings are not very comfortable, because when we work with typical crimes such extortion and kidnappings, we get underreported or even missing data, when we employ not typical crimes such homicide rate, we tell only a part of the story, which

[28] The results are generally robust to alternative specifications. Lagging all the variables by 1 year does not change significancy of our main variable of interest, i.e the crime variables.
[29] To attempt to administer the law
30 The dark figure of crime describes the amount of unreported or undiscovered crime

may lead to misinterpretation **(**Price and Ball 2015). The quest to find the most fitting proxy for organized crime is therefore searching for "lesser evil", and the question is: how close to reality we can get. The existing literature suggests two approches.

The first and major group of authors worked with homicide rate and we consider it as a logical choice for two reasons. Firstly, data on homicides tends to be the least underreported (Gillespie 1979) and secondly, although there is no doubt that homicides are committed by all criminals, several studies revealed that a high percentage of murders (in Latin America and Caribbean and other areas) is committed by organized groups. Development, Security, and Peace Program (DESEPAZ)[31] found out that 71 percent of total homicide victims during January 1993-May 1994 in Cali were members of gang, Venezuelan Non-Governmental Organization (NGO) Fundepro[32] revealed in 2015 report, that criminal groups are key factor of Venezuelan highest homicide counts in the world, estimations made from Mexican "Drug on war" imply that it is an increase in organize crime activity that lead to increase in homicide rate, while "normal homicides" stay the same relative to other factors (Espinosa 2014). Finally, UNODC estimate, that over 30 percent of homicides in Latin America in 2013 were related to organized crime groups (Global Study on Homicide 2013).

A second strand of researchs employs as a proxy for the presence of mafia-organization data on crime offenses such as extortion, kidinapings, bomb attacs or arson (Daniele & Marani 2011; Peri 2004). Those statistics are however not available for all countries we want to analyze and since we don´t want to work with unbalanced data, our only possibility is to follow majority of researchers and use homicide rate as a proxy for organized crime. In addition we employ as alternative proxies three indexes developed by Global Competitiveness Report (GCR): organized crime index, business cost of terrorism index and business cost of crime index (see *Table 1* for details). We believe, that these four indexes allow us to capture the intensity of the presence of organized crime in a sufficiently accurate way.

[31] Velasco, R., Eastman, C., Alvarez, A., Cobo, A., Roux, G., Alzate (1993) "Patterns of Homicide - Cali, Colombia", *Development, Security, and Peace Program (DESEPAZ)*

[32] Venezuelan government is of not releasing crime statistics such murder rate.

5.3 Control variables

The attractions of FDI depends on several dimension of the micro and macro-economic environment within which foreign firms operate in host countries. Our estimates include a set of control variables descibed in more details below which have been considered in previous analysis.

Institutional quality

Institutional quality "as a concept that captures law, individual rights and high quality government regulation and services"[33] is widely considered as an important determinant of FDI, particularly for emerging countries. It is believed that good governance leads to both political certainty and long run economical growth which attract foreign investors, highly sensitive to uncertainty due to high sunk cost. Positive and significant effect of institutional quality on FDI was proved by many papers such Buchanan (2012), Wei (2000) or Hines (1995), however analysis of Wheeler and Mody (1992) did not find any significant relationship. All researchers except of Wheeler and Mody used corruption indexes as a proxy for institutional quality. Taking into account the results of The World Economic Forum surveys (2006–2014), in which corruption is one of the 5 biggest problems for doing business in Latin America and Caribbean, we consider it as the best choice for us and employ Corruption index of GCR. It is however good to say, that institutional quality captures more aspects than just corruption and therefore this choice may have limits.

Market size and market potential

Market size and market potential are the most frequently cited FDI determinants in the literature. Theory says, that the larger the size of the market is, the bigger demand may be potentially served. Larger markets provide efficient utilization of resources since they allow market-seeking investors to exploit economies of scale (Charkrabarti 2001). FDI will therefore be higher in countries with such markets since firms may gain higher capital returns (Jordaan 2004; Akin 2009) analysing a sample of developing countries found positive relationship between FDI and total population, population growth and population density. The same author also concluded that a small size of the market is associated with non-market seeking FDI. Schneider and Frey (1985), Tsai (1994) and Lipsey (1999) found positive

[33] Bruinshoofd, A. (2016), „Institutional quality and economic performance"

relationship between FDI and GDP per capita and conclude that higher GDP per capita implies better prospects for FDI in the host country. In contrast, no significance was found by Loree and Guisinger (1995), Wei (2000) and Hausmann and Fernandez-Arias (2000) and several studies such Edwards (1990), Jaspersen, Aylward and Knox (2000) and (Asiedu 2002) employed inverse of the real GDP per capita as a proxy for return on investments. According to Asiedu (2002) an inverse relationship between FDI and GDP per capita may also reflect investors requirements for higher returns as risk rises with decline of GDP per capita. These arguments are valid especially for non-market seeking FDI activities.

What seems to be correct for African countries in the work of Asiedu might not hold for Latin America, which receives both market seeking and non-market seeking investments. Hence we use real GDP per capita as a proxy for market potencial and GDP as proxy for market size.

Openness of the host country

Openness, mostly measured by share of trade (import + export) to GDP, is accepted as a likely determinant of FDI. This share may be interpreted as a level of restriction of the host economy and according to Esew and Yaroson (2004) more liberal economies encourage more foreign investment. However, Asiedu (2002) claims that we should take into account the type of FDI. While market seeking investors prefer less opened economies, export-orientated investments are deterred by trade restrictions. This can be explained by „tariff jumping hypothesis", which argues, that market seeking firms are likely to set up subsidiaries in the host country if there are obstacles to import their goods there. On the other hand, export orientated firms will prefer as opened economy as possible since trade restrictions such tariffs bring higher transaction costs.

However, there is mixed evidence concerning the role of openness. Asiedu supports it positive role as a factor of attraction analysing sample of African countries. On the contrary, Resmini (2000) finds that manufacturing FDI in Central and Eastern Europe increases with openness of the economy in sectors, for which international trade flows are important. Culem (1988), Edwards (1990), and Hausmann and Fernandez-Arias (2000) found positive effects of openness on FDI without considering in their analysis potential heterogeneity by type of FDI received. Following the existing literature we employ the share of trade (import + export) to GDP as a proxy for openness and we expect ambiguous effect as in previous analysis.

Unemployment

Most studies agree, that FDI has a positive effect on employment (Balcerak 2011; Craigwell 2006; Okoro 2014), however, effect of unemployment on FDI is ambiguous. Analysing EU countries, Davidescu et al. (2014) concluded, that unemployment may be seen as both opportunity and threat. Higher unemployment led to higher FDI in case of Romania, Czech Republic and Slovakia and the same measure was deterrent of FDI in case of Hungary, Malta, Bulgaria and Estonia. Hence, Foreign investors may appreciate locations with the availability of the work force or they may see high unemployment as an indicator of instability. Lastly, Ashby and Ramos (2013) did not find any association between unemployment and FDI in Mexico

Exchange rate

We employed Real effective exchange rate (REER) which represents weighted average of a country's currency relative to major currencies basket (so called „CPI based REER"). This variable may be described as a measure of the level of 'competitiveness' of domestic and foreign goods. Increase in REER, described as depreciation, is expected to lead to increase in FDI since relative lower prices in host country bring „locational advantage" (Froot and Stein 1991; Blonigen 1997). Decrease in REER is termed appreciation and may be a barrier for investments since investors incentive to produce domestically increases. However, it also depends on investors motives for FDI and future movements of this variable. Goldberg (1996) also argues, that if evolution of REER is anticipated, effects on FDI may be diminished at all.

Wages and human capital

When we talk about impact of wages we have to mention also human capital. Theoretically, it is agreed, that low wages should attracts FDI and although some studies did not find any significant effect or even positive one, most analyses[34] concluded that higher host country salaries deter foreign direct investments. But foreign investors also demand certain level of skills which is usually not associated with the lowests wage. ODI (1997) concluded that when the cost of labour does not vary much over a region the skills of labour matters the most, the other way round, when the skills are the same, investors will seek for lower wages.

[34] Goldsbrough (1979), Flamm (1984), Schneider and Frey (1985), Culem (1988)

Other theory developer by Zhang and Markusen tells us that there is an inverse U-shaped relationship between human capital and FDI, therefore, high income countries with high human capital and low wage countries with low human capital are not likely to attract substantial FDI. Their finding was supported by the study of Akin and Vlad (2011).

So what is the case of Latin America? Latin America belongs to middle income region and wages vary from country to country, however, FDI into this region is also generally market seeking and since higher wages are associated with bigger markets, a positive effect might prevail.

Measuring Human capital is always associated with education. It is noticeable that Latin America results in terms of quality of education are almost the worst in the world. The Programme for International Student Assessment (PISA), which tests knowledge of 15 years old students in reading, mathematics and science (with a focus on mathematics) ranked Chile as the best Latin America performer in 2012, however, even this country has an average score which is 10 percent below the global average.

As our proxy for human capital we chose the secondary enrollment rate. We expect higher enrollment ratio to have significant positive effect on FDI inflows although this variable is likely to miss part of the information as it does not control for the quality/effectiveness of the educational system.

6 Results

Our empirical research consists of three parts. We analyzed the impact of organized crime on overall, sectoral and industrial FDI using four proxies for the presence of organized crime and additional control variables. *Table 1* shows descriptive statistics of the variables employed.

Throughout all the models, F-test p-values are almost zero, hence, at least one β coefficient is different from zero and our models are statistically significant[35]. R^2 statistics show that all models explain enough the variation in dependent variable.[36] In order to inform our model selection choices, we run autocorrelation, normality and heteroskedasticity tests.

As expected, correlations between four crime variables are high (*Table 2*). Organized crime index is positively correlated with business cost of crime index (0,88) and business cost of terrorism index (0,64). Surprisingly, organized crime index (as well as other two indexes) is negatively correlated with homicide rate (-0,72). Possible explanation is that homicide rate tells only a part of the story as organized crime consists of more aspects. While homicides may increase, other measures included in the index such extortion or kidnappings may dramatically decrease. Besides raw data, indexes also consist of public opinions on the extent of the phenomena.

The correlations among the control variables are not very high with the exceptions of GDP and openness (-0,76). GDP is also positively correlated with enrollment (0,63) and market potential (0,47). Since market potential is measured as GDP per capita, the interplay between this measure and GDP is logical.

In the fist four regressions, we analyzed impact of crime variables on overall FDI. The results seen in *Table 3* show that the better the country score in organized crime index and business cost of crime index the higher FDI it receives. As expected, higher homicide rate deters FDI and surprisingly, impact of terrorism is opposite than expected: the better the country score (which means the better situation in such country), the less FDI it receives. It is however important to say, that only organized crime index is statistically significant, more specifically, one percent increase in organized crime index increases FDI as a share of GDP by 4,16 percent.

[35] H_0: All **β** coefficients are 0
H_1: At least one beta is different from 0
[36] R^2 range from 47 to 80 %

Table 1

Summary statistics

Variable	Description	Mean	Std.dev.	Min	Max	Source
$Ln(FDI_{i,i,t})$	Inward FDI flows as a share of GDP (%)	4,25	2,89	0,01	14,86	UNCTAD
$Ln(Homicide_{i,t-1})$	Homicides per 100,000 people	2,67	0,73	0,47	4,26	UNODC
$Ln(OC\ index_{t-1})$	Organized crime index (1-7)	1,38	0,26	0,6	1,86	GCR
$Ln(BC\ of\ terrorism_{t-1})$	Business cost of terrorism index (1-7)	1,63	0,21	0,92	1,91	GCR
$Ln(BC\ of\ crime_{t-1})$	Business cost of crime index (1-7)	1,19	0,23	0,56	1,61	GCR
$Ln\ (Instit.\ quality_{i,t})$	Corruption index (1-7)	0,96	0,28	0,41	1,62	GCR
$Unemployment_{i,t}$	Unemployment (% of total labor force)	6,8	2,96	2,6	16,4	WB[37]
$Ln\ (market\ potential_{i,t-1})$	GDP per capita (current $)	8,63	0,7	7,12	9,96	WB
$Ln\ (openness_{i,t-1})$	% share of trade (import+export) to GDP	4,13	0,47	3,1	5,06	WB
$Ln\ (market\ size_{i,t})$	GDP (current $)	25,14	1,58	22,63	28,59	WB
$exchange\ rate_{i,t}$	Real Effective Exchange Rate [38]	110,92	17,7	62,81	162,74	Unctad
$Human\ capital_{i,t-1}$	Gross secondary education enrolment ratio (%)	80,64	13,37	32,01	107,95	WB

All GCR indexes ranges from 1 = the worst to 7= the best score. For instance, when country score 7 in Organized Crime Index, it means, there is no problem with organized crime at all.

Table 2

Correlation matrix

	variable	1	2	3	4	5	6	7	8	9	10	11
1	$Ln\ (Homicide_{-1})$	1,00										
2	$Ln\ (Organized\ crime_{t-1})$	-0,72	1,00									
3	$Ln\ (B.\ cost\ of\ crime_{t-1})$	-0,76	0,88	1,00								
4	$Ln\ (B.\ cost\ of\ terrorism_{t-1})$	-0,46	0,64	0,42	1,00							
5	$Ln\ (Market\ potential_{t-1})$	-0,10	0,17	0,01	0,29	1,00						
6	$Enrollment_{t-1}$	-0,24	0,15	0,11	0,12	0,47	1,00					
7	$Unemployment_{i,t}$	0,20	0,00	-0,01	-0,08	0,07	0,01	1,00				
8	$Ln\ (Openness_{t-1})$	-0,01	0,15	0,09	-0,01	-0,25	-0,55	-0,35	1,00			
9	$Ln\ (GDP_{i,t})$	-0,09	-0,14	-0,04	0,07	0,54	0,63	0,10	-0,76	1,00		
10	$Ln\ (Corruption_{i,t})$	-0,33	0,35	0,36	0,12	0,41	0,23	-0,11	0,08	0,06	1,00	
11	$Exchange\ rate_{i,t}$	0,10	0,15	0,04	0,00	0,20	0,14	-0,20	0,04	-0,07	0,29	1,00

[37] Worldbank
[38] CPI (Consumer Price Index) based

Table 3 - Fixed effects regression results.

Dependent variable: *total FDI as a % of GDP*				
variables	(1) **homicide**	(2) **OC index**	(3) **BCOST**[39]	(4) **TERR**[40]
Ln (Crime$_{t-1}$)	−0,38	4,16***	1,7	−0,13
	(0,73)	(1,58)	(1,69)	(2,04)
Ln (Market potential $_{t-1}$)	−3,59**	−3,97***	−3,75***	−3,52**
	(1,38)	(1,35)	(1,39)	(1,39)
Enrollment $_{t-1}$	0,012	0,01	0,016	0,012
	(0,02)	(0,02)	(0,02)	(0,02)
Unemployment	−0,41**	−0,45**	−0,45**	−0,43**
	(0,21)	(0,19)	(0,2)	(0,2)
Ln (Openness $_{t-1}$)	2,43	3,28*	2,32	2,29
	(1,69)	(1,66)	(1,69)	(1,76)
Ln (GDP)	3,62**	4,8***	3,64**	3,52*
	(1,74)	(1,74)	(1,73)	(1,79)
Ln (Corruption)	−0,91	−1,54	−1,31	−0,95
	(1,4)	(1,37)	(1,44)	(1,4)
Exchange rate	0,006	−0,004	0,006	0,005
	(0,02)	(0,02)	(0,02)	(0,02)
Constant	−62,83*	−97,68***	−64,07*	−60,78
	(34,57)	(36,07)	(34,46)	(37,72)
Observations	135	135	135	135
LSDV R-squared	0,81	0,82	0,81	0,81

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (standard errors)

Several control variables are significant through all four models. While market size tends to deter investments (1 percent increase in GDP per capita is expected to lead to decrease on FDI in the range 3,52-3,97 percent), GDP performs in the opposite way: one precentage increase in GDP leads to 3,52-4,8 percent increase in FDI. These findings imply, that investors are influenced by aggregate rather than per capita GDP, in another words, size of the market matters. Significantly negative effect of unemployment on FDI implies, that unemployment is not seen as opportunity for investors but it seems to act rather as an indicator of low stability of the economical enviroment. Higher levels of openness of the host country also tend to support FDI, however, this measure is significant only in the second

[39] Business cost of crime
[40] Business cost of terrorism

model. Human capital represented by secondary enrollment ratio, corruption index and real exchange rate are not significant in any model.

Since more than 50 percent of population in this region is situated in Mexico and Brazil, we run additional regressions without these countries to examine, whether the results are driven by the biggest economies. We found, that effect of crime on FDI is the same, so our findings may be represented as general for the whole region. This is also true for sectoral and industrial analysis, results for overall analysis are in *Table 5* in the appendix. *Table 6* in the appendix presents results of robust errors test for overall FDI. Statistical significance of some control variable is significantly reduced when correcting for hetheroskedasticity but the reassuring aspect with respect to our main hypothesis is that the organized crime index remained significant.

In the second set of regressions, we examined impact of homicide rate and organized crime index on primary, seconday and tertiary sectors. We did not find any effect of organized crime variables on FDI into primary sector, however, we found that one percent increase in homicide rate deters flows of FDI to secondary sector by 0,37 percent and one percent increase in organized crime index leads to increase in FDI to tertiary sector by 2,78 percent (*Table 4*).

Concerning control variables, as in previous models, market size inhibits and GDP promotes inflows of FDI. Openness has significantly positive influence on FDI into the secondary sector for both crime variables and into primary sector for organized crime index. According to „tariff jumping hypothesis“, it suggests, that investors in the secondary sector are export orientated and prefer as opened economy as possible since trade restrictions such tariffs bring higher transaction costs. While corruption deters FDI into primary sector, surprisingly, it is associated with higher FDI inflows in tertiary sector. Finally, the higher the real exchange rate, the higher the FDI in primary sector and the lower in the tertiary.

Our estimations of the impact of organized crime on FDI are consistent with both the theoretical and empirical papers described above. Bennett (2002) argues, that investors in primary sector, which is characterized by long-term investments and high sunk costs, learned how to deal with difficulties that crime enviroment brings. Despite of the fact that primary sector industries are location constrained and organized crime should therefore deter FDI, they have enough experience to avoid negative impact of crime and invest even in dangerous areas. Organized crime acts as a tax on business: it increases costs but it has a limited effect in

discouraging activities. Our conclusion is the same as in the work of Blanco, et al. (2015). Investments in secondary sector are driven by cost advantages. Our estimations for Latin America and Caribbean are in contradiction to both Ashby and Ramos (2013) Mexican study and Blanco et al. (2015) Latin American study. In our case, the rate of return seems to be not high enough to offset the costs of organized crime, measured by homicide rate. Like in primary sector, firms in tertiary sector also need to be geographically present in particular market. Daniele and Marani (2011) state, that firms in the retail sector are likely to be victims of extortion, hence, it is expected that the presence of organized crime should significantly deter FDI. We found the same negative effects of organized crime on tertiary sector as Ashby and Ramos (2013) and Blanco et al (2015).

In the last section, we attempted to find, whether the effect of organized crime on FDI varies across the seven sub-sectors belonging to the tertiary sector: „Construction" „Trade" „Hotels and restaurants", „Transport, storage and communications", „Finance and business activities" „Electricity, gas and water" and „Other services" which consist of Community and Social Services, Professional, Technical and Personal Services. We found evidence, that organized crime has a negative impact on „Transport, storage and communications" and „Finance, business activities and real estate" (*Table 7* in appendix), homicides deter FDI into „Hotels and restaurants" and „Construction" (*Table 8* in appendix). More specifically, one percent increase in organized crime index leads to 1,05 percent increase in FDI to „Transport, storage and communications" and 2,03 percent increase in FDI to „Finance, business activities and real estate", one percent increase in homicide rate deters FDI to „Construction" by 0,31 percent and „Hotels and restaurants" by 0,17 percent. There is no evidence of negative association between crime and FDI in „Trade", „Utilities" and „Other services." Control variables are rarely significant through models. Interestingly we find a positive impact of corruption on „Utilities" and „Other services." This result seems to suggest that foreign investors might use a corrupt enviroment to their favour. It makes sense in terms of „Utilities", which were for a long time under the state control in this region. Recent privatization process, which might involve significant corruption (Bjorvatn and Soreide 2005), gave chance to both local and foreign investors to penetrate this market. However, more detailed analysis is needed.

Table 4 - Fixed effects regression results.

Dependent variable: *sectoral FDI as a % of GDP*

variables	(5) **H1**	(6) **H2**	(7) **H3**	(8) **OC1**	(9) **OC2**	(10) **OC3**
Ln (Crime$_{t-1}$)	0,18	−0,37*	−0,02	1,69	−0,15	2,78*
	(0,53)	(0,22)	(0,68)	(1,18)	(0,48)	(1,50)
Ln (Market size $_{t-1}$)	−0,93	−0,79*	−2,04	−1,15	−0,71*	−2,32*
	(1,02)	(0,41)	(1,3)	(1,01)	(0,42)	(1,29)
Enrollment $_{t-1}$	0,02	0,003	−0,01	0,02	0,003	−0,009
	(0,01)	(0,006)	(0,02)	(0,01)	(0,005)	(0,02)
Unemployment	−0,21	−0,04	−0,18	−0,20	−0,06	−0,19
	(0,15)	(0,06)	(0,19)	(0,15)	(0,06)	(0,18)
Ln (Openness $_{t-1}$)	1,78	1,16**	−0,03	2,22*	1,02*	0,60
	(1,24)	(0,5)	(1,59)	(1,24)	(0,51)	(1,58)
Ln (GDP)	3,62	1,12**	3,02*	0,10	1,001*	3,85**
	(1,74)	(0,51)	(1,63)	(1,30)	(0,54)	(1,66)
Ln (Corruption)	1,79*	0,16	−2,85**	1,56	0,16	−3,26**
	(1,02)	(0,41)	(1,31)	(1,02)	(0,42)	(1,30)
Real Exchange rate	0,03**	0,0003	−0,02	0,02**	−0,0001	−0,02*
	(0,01)	(0,005)	(0,02)	(0,01)	(0,005)	(0,01)
Constant	7,43	−24,86**	−48,60	−7,73	−22,44**	−72,63**
	(25,32)	(10,23)	(32,56)	(27,01)	(11,19)	(34,48)
Observations	135	135	135	135	135	135
LSDV R-squared	0,73	0,58	0,75	0,73	0,57	0,75

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (standard errors)

7 Conclusion

It is believed that foreign capital is an important element of economic growth in Latin America and Caribbean and policy makers agree that FDI flows contribute to long-run growth more than other forms of capital inflows. Hence, there is strong need to know, what are the determinants of FDI flows into this region. Many papers attempted to analyze these flows, however, despite of the fact that Latin America has been for decades the most violent region in the world, a limited number of papers has considered how organized crime might affect investor´s decision.

This paper contributes to existing literature by analysing the impact of organized crime on overall, sectoral and industrial FDI. We employ four different and alternative proxies for capturing the presence of organized crime: homicide rate, organized crime index, business cost of crime index and business cost of terrorism index. While we found highly significant impact of organized crime index on overall FDI, other three measures were weakly significant. Analysing primary, secondary and tertiary sectors revealed, that there is no significant effect of crime on primary sector, however, homicide rate deters FDI into secondary sector and better score in organized crime index is associated with higher FDI inflows into the tertiary sector. These results are in line with our expectations.

Taking into account that long-term investments in natural resources are associated with high sunk costs, investors in primary sector have accumulated enough skills to deal with difficulties that crime enviroment brings, although primary sector industries are location constrained and organized crime should deter FDI. FDI in the secondary sector tend to be provided by export orientated firms which are motivated by cost advantages. Negative impact of homicide rate on FDI in this sector implies, that rate of return is not high enough to offset the costs of organized crime. However, we did not find such relationship when using the organized crime index. As expected, this measure was highly significant in the tertiary sector, where the geographical presence of firms on the market they serve is required. Capital intensive organized crime groups are tough competitors, firms in the tertiary sector are likely to be victims of extortion or other criminal techniques that scare them to enter or remain on the market.

Analysing industries in tertiary sector in more details we found evidence that organized crime has a strong negative impact on „Transport, storage and communications“ and „Finance, business activities and real estate“ industries through organized crime index and homicides deter FDI into „Hotels and restaurants“ and „Construction“ industries. We did not find evidence on negative impact on „Trade“, „Utilities“ and „Other services“ which represent Community and Social, Professional, Technical and Personal Services. Interestingly we found a positive relationship between corruption and FDI in „Utilities“ and „Other services“, which would imply, that foreign investors can use corruption enviroment in those industries to their favour and offset potential negative effects of crime.

However, a note of caution is necessary given the limited number of countries and the relatively short time span used in our analysis. A wider and better dataset is needed in order to confirm the robustness of the finding of this study. We believe, that there is a strong need to analyse the effect of organized crime on FDI in Latin America, and more in general its impact on these economies. This work has been a small contribution in that direction.

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Appendix

Table 5

Fixed effects regression results.

Mexico and Brazil excluded

Dependent variable: *total FDI as a % of GDP*				
	(11)	(12)	(13)	(14)
variables	**homicide**	**OC**	**BCOST**	**TERR**
Ln (Crime$_{t-1}$)	−0,36	4,86***	2,25	0,29
	(0,97)	(1,76)	(1,88)	(2,38)
Ln (Market potential $_{t-1}$)	−3,73**	−4,14***	−4,01**	−3,76**
	(1,54)	(1,48)	(1,54)	(1,55)
Enrollment $_{t-1}$	0,015	0,019	0,02	0,015
	(0,02)	(0,02)	(0,02)	(0,02)
Unemployment	−0,42*	−0,50**	−0,45**	−0,43*
	(0,22)	(0,21)	(0,22)	(0,22)
Ln (Openness $_{t-1}$)	2,38	3,17*	2,41	2,46
	(1,9)	(1,84)	(1,88)	(1,93)
Ln (GDP)	3,79*	5,10***	3,97**	3,90*
	(1,94)	(1,90)	(1,92)	(1,98)
Ln (Corruption)	−1,44	−2,60	−2,05	−1,40
	(1,58)	(1,57)	(1,66)	(1,58)
Exchange rate	0,008	−0,003	0,009	0,007
	(0,02)	(0,01)	(0,02)	(0,02)
Constant	−64,64	−102,39**	−70,33*	−68,96
	(39,63	(39,51)	(38,82)	(41,54)
Observations	117	117	117	117
LSDV R-squared	0,81	0,82	0,81	0,81

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (standard errors)

Table 6

Fixed effects regression results.

ROBUST errors

Dependent variable: *total FDI as a % of GDP*				
	(15)	(16)	(17)	(18)
variables	**homicide**	**OC**	**BCOST**	**TERR**
Ln (Crime$_{t-1}$)	−0,38	4,16*	1,7	−0,13
	(0,62)	(2,27)	(1,79)	(1,92)
Ln (Market potential $_{t-1}$)	−3,59**	−3,97***	−3,75**	−3,52**
	(1,38)	(1,31)	(1,35)	(1,43)
Enrollment $_{t-1}$	0,012	0,01	0,016	0,012
	(0,02)	(0,02)	(0,02)	(0,02)
Unemployment	−0,41	0,24*	−0,45*	−0,43*
	(0,24)	(0,19)	(0,24)	(0,24)
Ln (Openness $_{t-1}$)	2,43	3,28*	2,32	2,29
	(1,46)	(1,83)	(1,54)	(1,59)
Ln (GDP)	3,62*	4,79**	3,64*	3,52
	(1,99)	(2,03)	(1,86)	(2,16)
Ln (Corruption)	−0,91	−1,54	−1,31	−0,95
	(1,84)	(2,01)	(2,03)	(1,82)
Exchange rate	0,006	−0,004	0,006	0,005
	(0,02)	(0,02)	(0,02)	(0,02)
Constant	−62,83	−97,68**	−64,07	−60,78
	(39,10)	(44,22)	(38,07)	(46,96)
Observations	135	135	135	135
LSDV R-squared	0,81	0,82	0,81	0,81

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (robust errors)

Table 7

Fixed effects regression results

Crime variable: *Ln (OC index $_{t-1}$)*

Dependent variable: *industrial FDI as a % of GDP*

variables	(19) **Construct**	(20) **Trade**	(21) **Rest**	(22) **Trans**	(23) **Finance**	(24) **Utility**	(25) **Other**
Ln (Crime$_{t-1}$)	−0,34	−0,15	−0,12	1,05*	2,03**	0,08	0,24
	(0,25)	(0,53)	(0,15)	(0,63)	(0,78)	(0,37)	(0,87)
Ln (Market size $_{t-1}$)	−0,09	0,38	−0,13	−0,06	−0,74	0,28	−1,96**
	(0,21)	(0,45)	(0,13)	(0,54)	(0,67)	(0,32)	(0,75)
Enrollment $_{t-1}$	−0,001	0,003	−0,007	−0,005	−0,007	0,002	−0,005
	(0,002)	(0,006)	(0,001)	(0,007)	(0,009)	(0,004)	(0,01)
Unemployment	−0,05	0,004	0,01	−0,1	−0,17*	0,10**	−0,007
	(0,03)	(0,07)	(0,01)	(0,08)	(0,09)	(0,04)	(0,11)
Ln (Openness $_{t-1}$)	−0,13	−0,64	0,12	0,42	1,25	−0,78**	0,39
	(0,26)	(0,56)	(0,15)	(0,66)	(0,83)	(0,39)	(0,92)
Ln (GDP)	−0,26	−0,24	−0,06	0,41	−0,14	0,24	3,91***
	(0,27)	(0,59)	(0,16)	(0,69)	(0,87)	(0,41)	(0,97)
Ln (Corruption)	0,18	0,055	0,15	−0,69	0,35	−0,83**	−2,49***
	(0,21)	(0,46)	(0,13)	(0,55)	(0,68)	(0,32)	(0,76)
Exchange rate	−0,001	−0,004	0,001	−0,002	0,002	0,003	−0,02***
	(0,002)	(0,005)	(0,001)	(0,005)	(0,006)	(0,004)	(0,009)
Constant	9,01	6,36	2,03	−10,87	3,62	−5,61	−77,38***
	(5,70)	(12,23)	(3,44)	(14,42)	(18,03)	(8,56)	(20,04)
Observations	135	135	135	135	135	135	135
LSDV R-squared	0,82	0,74	0,58	0,47	0,57	0,70	0,37

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (standard errors)

Table 8

Fixed effects regression results

Crime variable: *Ln (Homicide $_{t-1}$)*

Dependent variable: *industrial FDI as a % of GDP*

variables	(26) **Construct**	(27) **Trade**	(28) **Rest**	(29) **Trans**	(30) **Finance**	(31) **Utility**	(32) **Other**
Ln (Crime$_{t-1}$)	−0,31***	0,18	−0,17**	0,27	0,02	−0,008	−0,002
	(0,10)	(0,23)	(0,06)	(0,28)	(0,36)	(0,16)	(0,39)
Ln (Market size $_{t-1}$)	−0,18	0,4	−0,17	0,09	−0,52	0,28	−1,93
	(0,20)	(0,45)	(0,12)	(0,54)	(0,69)	(0,32)	(0,75)
Enrollment $_{t-1}$	−0,001	0,003	−0,001	−0,001	−0,008	0,002	−0,005
	(0,002)	(0,006)	(0,001)	(0,007)	(0,009)	(0,004)	(0,01)
Unemployment	−0,03	−0,007	0,01	−0,11	−0,16	0,10	−0,007
	(0,03)	(0,07)	(0,01)	(0,08)	(0,10)	(0,04)	(0,11)
Ln (Openness $_{t-1}$)	0,03	−0,66	0,19	0,09	0,78	−0,80	0,33
	(0,24)	(0,55)	(0,15)	(0,66)	(0,84)	(0,39)	(0,91)
Ln (GDP)	−0,09	−0,24	0,02	0,04	−0,75	0,21	3,84***
	(0,25)	(0,57)	(0,15)	(0,68)	(0,86)	(0,40)	(0,93)
Ln (Corruption)	0,16	0,02	0,15	−0,56	0,65	−0,81	−2,45***
	(0,20)	(0,46)	(0,12)	(0,54)	(0,69)	(0,32)	(0,76)
Exchange rate	−0,001	−0,005	0,001	−0,001	0,006	0,003	−0,02***
	(0,002)	(0,005)	(0,001)	(0,007)	(0,008)	(0,004)	(0,009)
Constant	5,09	5,57	0,47	−1,02	21,26	−4,93	−75,31***
	(5,11)	(11,32)	(3,09)	(13,5)	(17,30)	(7,94	(18,60)
Observations	135	135	135	135	135	135	135
LSDV R-squared	0,83	0,75	0,57	0,46	0,57	0,71	0,38

Statistical significance as follows: ***=1%, **=5%, *=10%. Coefficients (standard errors)