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Under the Swedish Shadows: Tracing the Impact of Organized Crime on FDI through Music Streams

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Abstract: This paper investigates the complex relationship between organized crime and Foreign Direct Investment (FDI), amid rising concerns about its impact on the nation's global reputation and investment climate in Sweden. Utilizing a bivariate correlation analysis and an instrumental variable (IV) analysis with gangster rap music streams as an innovative proxy, the research examines whether direct indicators such as shootings, and indirect indicators such as music streams, significantly affect FDI. Despite the alarming increase in organized crime, the results indicate that while organized crime has discernible social repercussions, its direct impact on FDI is not statistically significant, potentially mitigated by Sweden's robust institutional framework. These results hold even when lagged effects are considered. This research contributes to a nuanced understanding of the economic implications of organized crime on FDI, emphasizing the need for considering both tangible impacts and broader societal perceptions, building a solid foundation for future research.

Keywords: Foreign Direct Investment, Organized Crime, Sweden, Gang Violence, Gangster Rap Music Streams, Investment Climate, Risk Perception, Media Portrayal, Business Confidence, Bivariate Analysis, Instrumental Variable

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1. Introduction

In an era characterized by globalization, nations are becoming increasingly interconnected, with capital, goods and services moving across borders. Amidst this landscape, foreign direct investment (FDI) has played an important role in shaping economic advancement worldwide (Swadzba, 2020). With a considerable presence of companies and start-ups, Sweden prides itself as one of the world's leading innovative nations, and has been able to attract investors globally (Leiram, 2022). As a result of its long standing stable political environment, transparent regulatory framework, and high living standards, FDI and the rapid globalization has been serving as a cornerstone for its economic strategy (Ministry for Foreign Affairs of Sweden, 2023).

However, the recent surge in gang violence has threatened the stability of Swedish society, casting particular uncertainty over the business environment and economic prospects (Sunnemark, 2023). Although organized crime has long been prevalent in Sweden, its recent escalation has been significant (Dyvik, 2024). Over the past decade, incidents of gun and explosive-related crimes have steadily risen, with fatal shootings more than doubling, and occurrences of explosions becoming increasingly frequent (Sunnemark, 2023). Gun and explosive-related crimes in Sweden are predominantly perpetrated by criminal gangs, underscoring their central role in these concerning trends (Johansson, 2021). In 2022 alone, Sweden recorded 405 shootings and 90 explosions (Polisen, 2024). Tragically, these incidents resulted in 62 fatalities, positioning Sweden among the nations grappling with alarmingly high rates of gun and explosive-related homicides in Europe (Agency France-Presse, 2023).

The surge in gang violence in Sweden is believed to have profound implications, impacting not only domestic affairs but also potentially altering the country's international image (Savage, 2023). The alarming increase in shootings and explosive-related crimes has cast a shadow over Sweden's reputation as a safe and secure destination for investment. Once celebrated as a paragon of societal stability, Sweden now finds itself grappling with a growing perception of insecurity. This narrative has been further exacerbated by international media, generating widespread anxiety among Swedish businesses (Holst & Wallin, 2023).

According to a recent study conducted by the Stockholm Chamber of Commerce (2023), 90 percent of businesses in the Stockholm Metropolitan Region believe that rising organized crime and gang violence will tarnish Sweden's global image. These companies are concerned that criminal activities portray Sweden as a high-risk and unstable business environment. The report highlights that 20 percent of businesses are already impacted by gang-related crimes, including an increase in shootings. Additionally, 80 percent of the respondents indicate that the escalation in crime complicates attracting investments and deters new business establishments (Stockholm Chamber of Commerce, 2023).

However, despite the pressing concerns raised by Swedish businesses, existing literature offers conflicting insights into the direct impact of organized crime on FDI. The United Nations Office on Drugs and Crime (UNODC) (2018) highlights the challenges in measuring and monitoring organized crime, due to its clandestine nature. This complexity leads to a scenario where it is difficult to draw definitive conclusions. In contrast to conventional economic indicators, the activities of organized crime networks are designed to evade detection, resulting in

lack of reliable data. This scarcity complicates efforts to accurately determine the extent and economic impacts of organized crime (UNODC, 2018). Notably, Sweden has not been the subject of research within this field.

Given the significant concerns among Swedish firms, this study aims to address existing ambiguities in the literature. The research question driving this study is:

How does organized crime, as evidenced by direct indicators such as shootings and indirect indicators such as gangster rap music streams, influence foreign direct investment in Sweden?

We hypothesize that the perceived increase in organized crime in Sweden does not exert a direct detrimental effect on FDI. This hypothesis is grounded on several considerations. First, Sweden's strong institutions and legal systems could mitigate the potential economic disruptions caused by crime. Second, it is conceivable that investors can differentiate between localized criminal activities and the broader business environment. In Sweden, even amidst challenges related to organized crime, the business climate is likely to remain competitive and distinguished by a robust commitment to innovation. Furthermore, existing empirical evidence does not conclusively support a direct negative correlation between organized crime and FDI, suggesting that the actual impact may be less significant than speculated.

This study seeks to investigate the outlined considerations, aiming to unfold the actual influence of organized crime on the attractiveness of Sweden as an investment destination. Specifically, in the Swedish context, shootings emerge as a strong indicator and a measurable dimension that captures the severity of organized crime (Polisen, 2024). Therefore, to test this hypothesis, we will conduct a bivariate analysis between FDI and shootings to establish a foundational understanding of this relationship. Furthermore, to enhance our analysis, we will employ an instrumental variable (IV) analysis, using the innovative variable gangster rap music streams as the instrument. In both models, we will account for temporal effects through lagged models. The results of the bivariate and IV analyzes both showed an insignificant relationship between organized crime and FDI.

This paper is organized as follows: Section two offers an in-depth background on the rise of organized crime in Sweden, its connection to gangster rap, the determinants and historical patterns of FDI inflows. Section three reviews relevant literature and previous empirical findings. In section four, we present our research methodology, followed by a detailed description of our data in section five. The results of our study are revealed in section six. The findings and the study's limitations are discussed in section seven. Finally, section eight concludes our research, offering a comprehensive understanding of the complex dynamics at play.

2. Background

2.1 Organized Crime and the Rise of Gang Violence in Sweden

Organized crime is a multifaceted phenomenon that poses significant threats to societies (United Nations, 2023). According to the Swedish Police (2024), the European Union standards articulate that for an activity to be classified as organized crime, it must meet several criteria. Essential

among these are the collaboration of more than two people, a structured division of labor, and the pursuit of activities over a long or indefinite period. The crimes must involve either the use of commercial structures, the application of violence, or exerting undue influence on political, media, or economic spheres (Polisen, 2024). Echoing these definitions, the UNODC (2018) identifies a broad array of activities typically associated with organized crime, including money laundering, fraud, firearms trafficking, drug production and trafficking (UNODC, 2018).

Research on the organizational frameworks of criminal gangs has identified two primary archetypes, namely the organized instrumental-rational model and the disorganized informal-diffuse model (Decker & Pyrooz, 2011; Decker et al., 2014). The instrumental-rational model is characterized by a hierarchical structure, with well-defined leadership roles and strategic coordination of criminal activities. Such organizations maintain discipline within their ranks and are goal-oriented, effectively planning and executing their criminal objectives. In contrast, the informal-diffuse model depicts gangs as having a more egalitarian structure where leadership is fluid and contingent on circumstances. These gangs operate more as collections of individuals pursuing personal profit than as cohesive units. Studies indicate that the majority of gangs tend to exhibit characteristics of the informal-diffuse model, suggesting that high levels of organization within gangs are less common (Decker and Pyrooz, 2011; Diem et al., 2012).

Transitioning to the Swedish context, the landscape of organized crime has transformed significantly in recent years (Pakdemir, 2023). Historically, the criminal underworld was dominated by motorcycle gangs that adhered to the instrumental-rational model. However, recent developments have witnessed a shift towards more volatile and fluid street gangs, which operate according to the informal-diffuse model (Decker & Pyrooz, 2011; Decker et al., 2014; Pakdemir, 2023). Experts note that the earlier, more organized system somewhat contained violence through its inherent controls and hierarchies. In contrast, today's landscape resembles a "wild west," where the lack of a controlling structure has led to increased chaos and violence (Pakdemir, 2023).

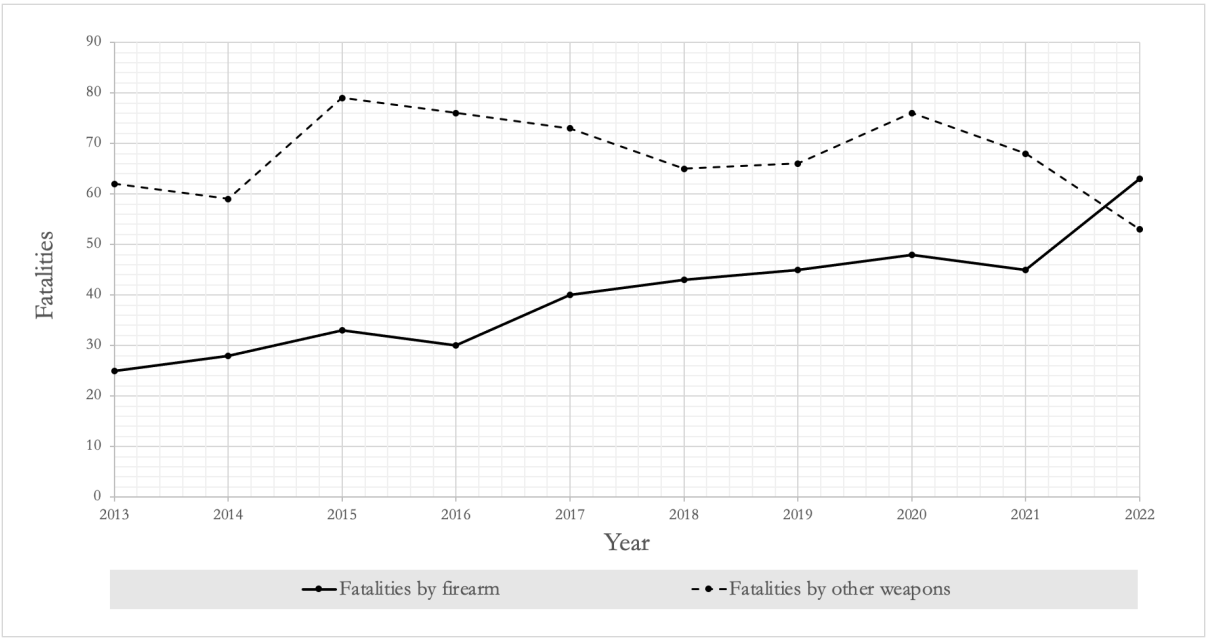

Figure 1: This chart illustrates the number of fatalities from firearms and other weapons from 2013 to 2022. Firearm-related deaths demonstrate an increasing trend over the decade. In contrast, data for fatalities involving other weapons indicate a decreasing trend (Brottsförebyggande rådet, 2024).

Violence fundamentally shapes street gang culture. This is vividly illustrated during initiation rites, where new recruits are often tasked with carrying out violent acts to prove their loyalty. Beyond initiation, violence serves as a vital mechanism for members and leaders alike to assert or reinforce their positions within the gang's structure (Hughes, 2005; Decker & McGloin, 2010). Empirical studies confirm that gang affiliation markedly increases violent behaviors, significantly affecting members' actions and interactions within their social networks (Matsuda et al., 2012; Esbensen & Melde, 2012). Moreover, violence within gangs often follows a cyclical, retaliatory pattern. The murder of a gang member not only threatens the gang's status but also invokes norms of reciprocity that demand revenge (Decker et al., 2013).

This propensity for violence is particularly pronounced in Sweden, where the transition from motorcycle gangs to street gangs has led to a marked increase in gun-related crimes. According to the Swedish National Council for Crime Prevention (Brottsförebyggande rådet) (2024), firearms have become the weapon of choice, contributing to a sharp increase in shootings, predominantly driven by gang conflicts (*Figure 1*). Although Sweden saw a general decline in fatal violence reaching its lowest levels in 2012, the recent surge in gun violence represents a disturbing reversal of this trend, largely due to the cyclical and retaliatory pattern (Decker et al., 2013; Brottsförebyggande rådet, 2024).

The deterioration in Sweden's security situation is further underscored by its criminality score. The Global Organized Crime Index (2024) reported a worsening of Sweden's score from 4.56 in 2021 to 4.7 in 2023. This evolving scenario points to a critical need for renewed strategies and interventions to address the disordered state of organized crime in Sweden.

The stark increase in shootings underscores the rationale for our study's focus on shootings as a critical and escalating indicator of organized crime. Notably, unlike the consistent presence of drug-related crimes, shootings in Sweden have experienced one of the highest increases in incidents in Europe since 2000 (Rostami, 2021). From 2012 to 2022, the escalation in fatal shootings has been dramatic, becoming a major national concern and significantly impacting perceptions of public safety and national security (Brottsförebyggande rådet, 2024).

The Swedish National Council for Crime Prevention reports that approximately 80 percent of these shootings occur within criminal environments, predominantly in socioeconomically disadvantaged areas around Sweden's major cities. These environments not only fuel the growth of criminal organizations by providing a sense of belonging and identity to disenfranchised youth, but also push individuals towards crime due to factors like economic inequality, unemployment, and social exclusion (Brottsförebyggande rådet, 2024).

The decentralized and adaptive nature of these networks presents significant challenges for law enforcement and public policy, highlighting the importance for foreign investors to carefully consider these factors when evaluating investment opportunities abroad. Politicians and the media have recognized the severity of street gang violence, declaring it one of the country's most pressing issues (Justitiedepartementet, 2023). Given this background, this study explicitly centers on the dynamics linked to street gangs, intentionally excluding motorcycle gangs and other criminal networks. This deliberate focus allows for a concentrated examination of the impacts of gang-related organized crime in Sweden, particularly concerning its influence on the perceptions of foreign investors.

2.2 Swedish Gangster Rap as a Reflection of Organized Crime

In recent years, the Swedish music scene has undergone a transformative shift, particularly within the genres of hip hop and rap. This transformation, as highlighted by Saveska (2023), marks a shift from the genre's earlier carefree period of the 1970s and early 1980s to what is known as gangster rap today (Kubrin, 2005). Emblematic of this new wave are notable Swedish figures like Yasin, along with artists such as Jaffar Byn, 1.Cuz, Eínar, and Dree Low, who have propelled their dynamic music into the mainstream (Salihu, 2021). Their music resonates deeply across diverse demographic groups and provides a platform for segregated communities to express their lived experiences and address societal challenges (Saveska, 2023).

In exploring organized crime in Sweden, particularly regarding street gangs, the evolution of gangster rap offers a revealing lens. Known for its explicit portrayal of violence and personal experiences, gangster rap reflects the realities of gang-related conflicts (Ilan, 2020). Lyrics rich in references to real-life disputes not only depict struggles but also have the potential to exacerbate them, highlighting music's role in shaping urban social dynamics (Salihu, 2021; Coscarelli & Marshall, 2022).

Public discussions and media coverage often highlight gangster rap's controversial portrayal, with critics accusing the genre of glamorizing violence (Densley et al., 2017). These discussions reflect broader societal concerns, revealing the intricate interplay between artistic expression and its perceived influence on public attitudes and behaviors (Johnson & Schell-Busey, 2020). This portrayal positions the genre as both a reflection of societal issues and a catalyst in shaping Sweden's social structure, challenging the notion that art is merely observational and prompting a reevaluation of its real-world impacts (Demirian, 2022). Incidents like the assault on rapper Yaffar Byn in a Stockholm suburb following the release of a song about a rival gang member illustrate how the genre can transcend artistic expression to potentially influence or instigate street-level violence (Angvarson et al., 2023).

Recent investigation has also revealed the intersection of gangster rap with organized crime, extending its influence into economic realms (Brīvule & Zeppa-Priedīte., 2024). According to Densley and Storrod (2017), gangster rap music has shifted its focus from explicit violence to boasting about the financial gains gangs achieve through criminal activities. Drawing from law enforcement data, the FBI's National Gang Intelligence Center (2011) found that gang members are increasingly adept at leveraging new technologies to facilitate criminal activities. Artists like Yasin, Eínar, and Dree Low, have received prestigious music awards and nominations for their music, suggesting there is a market for gangster rap music related content (Sveriges Radio, 2020; Fernstedt, 2021; Månsson, 2023). The Internet serves as a potential avenue for gang members to establish themselves as record labels, presenting lucrative business opportunities (Densley & Storrod, 2017).

Criminal networks have exploited music streaming platforms like Spotify to launder money from various illicit activities, including drug trafficking and contract killings in Sweden (Agency France-Presse, 2023). Prominent figures in the scene have even established their own record labels, directing revenues into these enterprises, thus merging their musical achievements with criminal undertakings. Investigations reveal that these gangs convert proceeds into cryptocurrency to buy fake listeners on Spotify, thereby artificially manipulating their tracks to

top charts, initiating a cascade effect where an increasing number of people begin to listen, and therethrough generate significant revenue (Brīvule & Zeppa-Priedīte., 2024).

This background establishes gangster rap as a critical factor in the socio-economic landscape of Sweden. Focusing on its tangible effects, notably its involvement in economic activities like money laundering, we seek to empirically analyze how gangster rap music streams intersect with organized crime.

2.3 Foreign Direct Investment in Sweden

FDI stands as the primary instrument driving the globalization of the international economy (Carril-Caccia & Pavlova, 2018). Across various sectors, FDI is perceived as indispensable for stimulating economic growth. Its significance lies in the economic advantages it brings, including increasing competition, technological advancements, innovation, and augmented employment opportunities (World Economic Forum, 2013).

FDI is defined as the acquisition of an ownership stake in a domestic company or project by a business, government, or investor from another country, with management conducted from the investor's home country. To meet the criteria, the foreign entity must own at least 10% of the ordinary voting rights in the domestic company, either directly or indirectly. The scope of direct investment includes a variety of financial transactions, such as new establishments, acquisitions, mergers, and reinvested earnings (Statistiska Centralbyrån, 2024). For the purposes of our study, FDI is quantified as the cumulative amount of equity capital, reinvested earnings, other long-term and short-term capital, excluding stock purchases in domestic companies from foreign entities (Statistiska Centralbyrån, 2024).

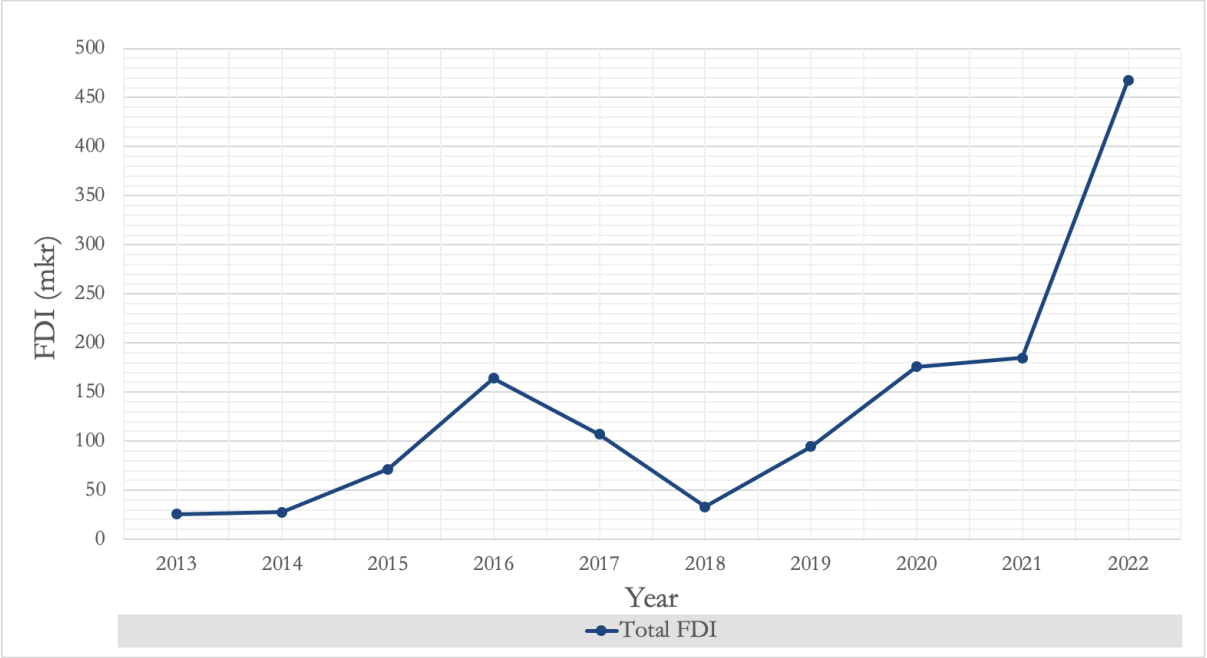

Figure 2: This chart illustrates the total FDI inflow to Sweden from 2013 to 2022, which demonstrates an increasing trend over the decade (Statistiska Centralbyrån, 2024).

Since joining the European Union in 1995, Sweden has enjoyed high economic growth and a period of extensive deregulation and privatization, maintaining its attractiveness for foreign investors due to numerous factors (European Union, 2024). Sweden has historically seen fluctuations in its FDI in line with the broader economic climate. However, in recent years, the country has bucked this trend and attracted significant foreign investments even during periods when the rest of Europe and the global economy were underperforming (*Figure 2*). From a modest 33 billion SEK in 2018, FDI inflows into Sweden surged to 185 billion SEK by 2021, reaching a record high of 468 billion SEK in 2022 (Statistiska Centralbyrån, 2024).

FDI plays a crucial role in Sweden's economy, significantly contributing to employment and business growth. This robust inflow of capital has supported nearly 15,000 foreign companies, employing around 750,000 people across the nation (Sellgren, 2023). The sustained attractiveness of Sweden to foreign investors can be attributed to several key factors. Firstly, Sweden's reputation as a global leader in innovation has been a major draw for investors. The country consistently achieves high rankings in various global innovation indices, underscoring its capacity for creative and technological advancement. Notably, Sweden placed first in the European Commission's 2022 European Innovation Scoreboard, third in the World Intellectual Property Organization, and fifth in Bloomberg's Innovation Index (U.S. Department of Commerce, 2023).

Second, Sweden's strengths lie in its human capital, technological advancements, and well-developed physical infrastructures. These characteristics have been highlighted in the International Institute for Management Development World Competitiveness Ranking 2022, where Sweden held the fourth position and ranked eighth in the most recent World Economic Forum's Competitiveness Report (U.S. Department of Commerce, 2023).

Additionally, Sweden has maintained a long-standing perception of political and macroeconomic stability, where the Transparency International ranked Sweden as the fifth least corrupt country out of 180 nations in 2022 (U.S. Department of Commerce, 2023). This has been a significant factor for the positive investment perception of Sweden.

While Sweden's innovative environment and strong economic fundamentals have contributed to this impressive performance, the country has not been immune to structural business challenges. The Ministry for Foreign Affairs of Sweden (2023) states that high personal and VAT taxes, the high cost of labor, and rigid labor legislation have historically posed hurdles to doing business in Sweden. Recently, an additional layer of complexity has emerged with the surge in organized crime, which introduces a new dimension of uncertainty that could impact future FDI inflows. This increase in organized crime challenges the traditionally positive perception of Sweden as a stable and secure investment destination, potentially escalating costs and risks for businesses (Stockholm Chamber of Commerce, 2023). As our study focuses on the tangible impacts of organized crime, particularly its effect on economic activities like money laundering, understanding how these dynamics may alter investor behavior and FDI inflows becomes crucial.

The presence of organized crime in an investment destination typically raises the costs associated with doing business. These costs can manifest as increased security expenditures, higher insurance premiums, and even potential losses from theft, extortion, or property damage. Additionally, organized crime can lead to greater regulatory scrutiny and delays, further increasing operational costs and reducing overall business efficiency (Garriga & Phillips, 2022).

From an economic perspective, the presence of heightened risk due to organized crime can deter investment. The risk-return trade-off model, a fundamental concept in finance, explains this phenomenon. According to this model, investors require higher returns, an additional risk premium, to compensate for higher risks. In scenarios where organized crime raises the level of risk, the expected return on investments must similarly increase to sustain investor interest. However, the type of risk introduced by heightened organized crime is not one that investors can readily quantify, manage, or diversify against, unlike typical market or business risks. Rather, it represents a systematic risk that fundamentally undermines the stability of investment environments. If these increased returns cannot be reliably secured, FDI is likely to decline (Beqiraj et al., 2014).

Moreover, the real options theory in corporate finance provides further insights. This approach views investment as a series of options that can be exercised under certain conditions, with the aim to mitigate the risk of an investment. In the context of an international investment, the foreign investor obtains the right but not the obligation to take a future action, such as reinvesting, deferring or abandoning. High uncertainty, like that introduced by organized crime, increases the value of waiting and may lead investors to defer or abandon investment decisions (Li & Rugman, 2007).

Despite Sweden's historical resilience in attracting FDI, the escalating organized crime rates complicate this outlook. The increased uncertainty could lead to a reassessment of risk and potentially curtail the inflow of FDI, especially if investors perceive that the costs of managing or mitigating risks outweigh the potential returns. Thus, understanding this dynamic is crucial for assessing both current and future investment strategies in Sweden.

3. Literature Review

The determinants of FDI have long been a focal point in economic research, revealing that various factors at both the firm and country levels significantly influence FDI. This interest spans through both international and national contexts, highlighting key determinants that shape the volume of FDI inflows. While much of the existing literature has focused on developing countries, recent research commissioned by the European Union, such as the study by Dellis et al. (2017), shifts this focus towards advanced economies. This pivot is particularly pertinent to our investigation of FDI determinants in Sweden.

Dellis et al. (2017) identified several key factors that attract significant FDI, including a large market size indicated by economic activity, substantial GDP per capita, competitive labor costs, trade openness, low unemployment rates, and a favorable taxation environment. This study also emphasizes the critical role that high-quality economic structures and robust legal, political, and institutional systems play in attracting FDI. Notably, the study points out that weak institutional frameworks, marked by crime, violence, and corruption, can deter investment by increasing operational costs for businesses and reducing the attractiveness of the host country to foreign investors.

Moreover, the specific impact of crime on FDI has garnered considerable attention, underscoring how criminal activities affect investment decisions worldwide. While extensive research has examined the general impacts of crime on FDI, the unique challenges posed by

organized crime have led to a diverse range of findings. The covert nature and the difficulty in obtaining reliable data indicates that the influence of organized crime on economic indicators like FDI requires careful and nuanced exploration.

Existing research, including studies by Daniele and Marani (2011) and Brown and Hibbert (2017), sheds light on how organized and violent crimes affect FDI through various measures. Daniele and Marani examined the correlation between organized crime and FDI across Italian regions, finding a significant negative impact. Their findings indicate that high levels of certain crimes may be perceived as signaling an unfavorable local socio-institutional environment for FDI, acting as a deterrent to foreign investors. Similarly, Brown and Hibbert's global analysis from 1997 to 2012 confirmed that violent crime significantly reduces a region's appeal to potential investors by increasing the operational costs and risks associated with doing business in high-crime areas.

Contrary, a study by Garriga and Phillips (2022) examined the impact of organized crime on FDI in Mexican states, revealing nuanced findings that contrast with earlier research. Unlike other studies that measure the effects of crime rates like homicides on FDI, their study focused specifically on the presence of criminal groups. The results did not find a significant correlation between crime rates and FDI. However, they discovered that an increase in the number of criminal groups significantly deterred FDI inflows, highlighting that the structured presence of organized crime is a more significant deterrent to investment than the broader crime rate itself.

Further deepening our understanding, a recent study by Rostami (2021) provided insightful context into how organized crime can affect economic stability in countries like Sweden. Rostami's research explores how organized crime exploits legal business structures to fund their illicit activities. This infiltration into the corporate realm not only undermines the rule of law but also erodes public trust in institutions, potentially making Sweden less attractive to foreign investors.

These varied findings illustrate the divergence in research on the impact of organized crime on FDI. While objective measures like the number of criminal incidents provide quantifiable data, subjective perceptions of safety and security also influence investment decisions. This is further emphasized by a study indicating that country risk, including economic and political risks, negatively impacts FDI inflows (Adewale, 2022). Barry and DiGiuseppe (2018) also highlight how political instability related to crime can deter FDI by increasing perceived risks among investors, suggesting that enhancing market capabilities and improving institutional structures are vital for attracting foreign investment.

Moreover, most existing research has focused on developing countries, where perceived levels of crime and corruption are typically higher. This geographic focus often overlooks regions like Europe. The recent increase in gang violence and organized crime in Sweden, as detailed by Rostami (2021), underscores the urgent need for focused research in such contexts. Studies by Garriga and Phillips (2022) and Belascu et al. (2023) suggest that the general perception of lower corruption in European countries may not adequately reflect the emerging challenges posed by organized crime, which can significantly deter FDI.

The inconsistent results of existing studies and the gap in the literature on developed countries, particularly Sweden, presents an opportunity for our study. By examining the relationship between organized crime and FDI in Sweden, our research aims to contribute novel insights, differing from patterns observed in developing contexts. Our focus on Sweden,

characterized by its recent upsurge in organized criminal activity, will help to better understand the unique dynamics at play and the broader implications for FDI.

4. Methodology

4.1 Bivariate Analysis

In our study, we employ a quantitative approach to assess the impact of organized crime on FDI in Sweden, focusing on one specific indicator for organized crime, shootings, and two indicators for FDI, total FDI and reinvested earnings. As highlighted in the background, given the Swedish context, our selection of shootings as a primary measure of organized crime is particularly relevant due to the country's distinct challenges with gun-related violence (Johansson, 2021; Sunnemark, 2023; Polisen, 2024).

In our analysis, we have opted to examine both total FDI and reinvested earnings to gain a comprehensive understanding of FDI inflows into Sweden. This dual approach is designed to provide insights into both the initial inflow of FDI and the ongoing investment behaviors of foreign entities within the Swedish economy. Analyzing total FDI inflows allows us to evaluate Sweden's broader appeal as an investment destination. Conversely, focusing on reinvested earnings sheds light on the confidence and long-term commitment of these investors, as it reflects profits that foreign subsidiaries choose to reinvest locally rather than distribute as dividends to their parent companies (Lundan, 2006). By incorporating both of these metrics into our analysis, we aim to paint a complete picture of the investment landscape in Sweden, acknowledging both the immediate impacts and deeper, longer-term engagements that define FDI in the country.

Consequently, our analytical framework comprises two bivariate models, examining how our organized crime proxy, shootings, affects total FDI and reinvested earnings. By employing an Ordinary Least Squared (OLS) regression methodology, we analyze these relationships in a clear and straightforward structure. The two models are as follows:

$$Model\ 1\text{: } FDI_t = a_0 + a_1 \times C_t + u_t$$

$$Model\ 2\text{: } RE_t = \beta_0 + \beta_1 \times C_t + \varepsilon_t$$

In the specified models, FDI_t denotes the total FDI inflows into Sweden at time t, RE_t represents the reinvested earnings at the same time period, and C_t measures the level of organized crime through shootings. The variables a_i and β_i are the coefficients estimated within the models, capturing the impact of organized crime on FDI, respectively. The terms u_t and ε_t are the error terms, representing unobserved factors that affect the dependent variables FDI and reinvested earnings, respectively.

Opting for a bivariate correlational analysis at this initial stage allows us to directly observe and measure the strength and direction of the relationships between organized crime and FDI. This streamlined approach helps in delineating basic patterns and confirming potential correlations without the confounding effects of other economic variables. This step is important for establishing a baseline understanding of the dynamics at play, providing a more robust foundation for further investigations.

4.2 Lagged Bivariate Analysis

In addition to our primary bivariate analysis outlined above, we also conducted a lagged analysis. This extended approach involved lagging the shootings data by one to four time periods to better understand the temporal dynamics between organized crime and the indicators for FDI. The models are as follows:

$$Model\ 3\text{: } FDI_t = \Sigma_0 + \Sigma_1 \times C_{t-n} + \Phi_t$$

$$Model\ 4\text{: } RE_t = \Delta_0 + \Delta_1 \times C_{t-n} + \sigma_t$$

Similarly, the variables Σ_i and Δ_i are the coefficients estimated within the models, capturing the impact of organized crime on FDI, respectively. The terms Φ_t and σ_t are the error terms. Different from earlier models, C_{t-n} in *Model 3* and *4* captures the measures of organized crime though shootings lagged by n periods (n = 1, 2, 3, 4).

The rationale for this lagged analysis is rooted in the potential delayed effects that organized crime may have on economic indicators such as FDI. Economic responses to increases in crime rates might not be immediate due to the time it takes for these conditions to influence investor perceptions and decision-making processes. By introducing lags, we aim to capture any delayed responses and observe whether the impact of shootings on FDI and reinvested earnings becomes more pronounced or significant after a certain period. This method allows us to assess the persistence and longevity of crime's impact on economic activities, providing a more nuanced understanding of how temporal factors influence the relationship between organized crime and FDI.

4.3 Instrumental Variable Analysis

The use of an IV method in our study was driven by several challenges associated with the direct measurement of organized crime's impact on FDI. The complexities include measurement errors, omitted variable bias, and potential reverse causality, each of which can distort the estimated effects of organized crime on economic outcomes.

In our study, the proxy of organized crime, shootings, may be subject to measurement errors due to potential underreporting or misreporting. This is a probable issue with data concerning activities such as organized crime, which inherently aim to evade detection. Such measurement inaccuracies can lead to attenuation bias in our analysis, resulting in a systematic underestimation of the true impact of organized crime on FDI. This bias occurs because the

errors associated with underreporting or misreporting dilute the observed strength of the relationship between our variables, skewing the estimated effects toward zero and potentially obscuring significant influences.

Additionally, our analysis might be influenced by the exclusion of variables that are correlated with the intensity of both organized crime and FDI. For instance, economic downturns could simultaneously elevate crime rates and depress FDI (Detotto & Otranto, 2010). Similarly, regions with weaker law enforcement might experience higher levels of crime alongside reduced FDI. The omission of such variables, driven by the limited historical depth of our dataset, could introduce omitted variable bias. This bias might result in an overestimation or misattribution of the effect assigned to organized crime, as this coefficient could absorb the influence of these unobserved factors.

Furthermore, the possibility of reverse causality adds another layer of complexity to our analysis. Worsening economic situations, due to a decrease in FDI, could cause an escalation in crime. If such reverse causality exists and is not accounted for, it could result in biased estimates that misrepresent the direction of influence between organized crime and FDI. Understanding and addressing this potential reverse causality is crucial for producing accurate and reliable conclusions about the relationship between these variables.

To address the aforementioned challenges, we adopt an innovative approach using gangster rap music streams as an IV to explore the impact of organized crime on FDI in Sweden. By leveraging this unique proxy, we aim to circumvent the inherent biases in directly measuring such clandestine activities and better isolate the exogenous variations in organized crime from the economic factors influencing FDI. By applying the IV approach, we seek to enhance the precision of our causal estimates, providing deeper insights into how organized crime might affect economic indicators without other confounding effects.

4.3.1 The Rationale for Using Music Streams as an Instrumental Variable

To qualify as an IV, the instrument music streams must meet two key criteria. First, it must adhere to the relevance assumption, indicating a correlation between music streams and the presumed endogenous explanatory variable, organized crime. Second, it must comply with the exclusion restriction, which stipulates that music streams can influence the dependent variable only through its association with organized crime and not through any direct causal links to FDI. We argue that music streams satisfy both conditions, making it a robust proxy for this analysis.

4.3.1.1 The Relevance Assumption

Research on the lyrical content of gangster rap music consistently reveal numerous references to gang-culture and street gang ideals such as toughness, aggression, and violence (Kubrin, 2005; Ilan, 2020). Studies show that gangster rap lyrics delineate the norms of acceptable and unacceptable behavior, instructing listeners on how to react when these norms are violated, thus prescribing violence as a method of social control in urban environments where gangs operate (Anderson, 1999; Kubrin, 2005).

Although some music recordings offer a raw reflection of the violence inherent in gang life, many go further, by including specific threats to rival gang members, along with provocative remarks regarding recent incidents where members of rival gangs were seriously injured or killed (Butler et al., 2013; Johnson & Schell-Busey, 2020). Previous studies state that such content ignites conflict by challenging the status and reputation of specific gang members, thus inciting some form of retaliation which can manifest in the form of a response music record, containing similar threats of violence (Anderson, 1999; Johnson & Schell-Busey, 2020). This retaliation may result in real-world violence, often serving as an effective tactic for gang members to safeguard or elevate their status and reputation (Densley, 2012; Harding, 2014).

With the rise of social media, gang members can more effectively distribute their music and reach a broader audience. This increased visibility helps them generate buzz and enhance their reputation (Decker et al., 2014). Furthermore, due to the wider audience reach, these platforms make insults and threats more permanent than in traditional street confrontations (Van Hellemont, 2012).

Johnson and Schell-Busey (2020) reveals that the gangster rap music content was linked to two shootings, indicating a potential connection between online gang behavior and real-world violence. The same results are confirmed by Van Hellemont (2012) and Decker and Pyrooz (2011), and exemplified by incidents like the assault on the Swedish rapper Yaffar Byn mentioned previously (Angvarson et al., 2023).

Moreover, some gang members themselves have acknowledged that the provocative content of these music records does contribute to violence. They are aware that law enforcement agencies are using social media content as evidence for charging and convicting individuals (Johnson & Schell-Busey, 2020). However, they believe that the benefits of appearing in these records, such as potential status, fame, and financial gain, outweigh the risks (Décary-Hétu & Morselli, 2011; Densley et al., 2017). These links represent a potential direct impact of music streams on organized crime, while indirectly affecting FDI inflows through societal perceptions and behaviors.

Gangs leverage the simplicity of creating and sharing recordings, often in the form of gangster rap, not only for its widespread and rapid dissemination, but also for the implied financial gains. The recent phenomenon of music streaming platforms being used as means to launder money further supports the relevance assumption (Brīvule & Zeppa-Priedīte, 2024). Referring back to the FBI's National Gang Intelligence Center report (2011), gang members are increasingly skilled at using new technologies to support their criminal endeavors. This has led to revenue generation through new platforms such as Spotify. An investigation suggests that streaming revenue from Spotify could potentially channel more funds into criminal activities (Agency France-Presse, 2023). Consequently, music streams serve as a facilitator for organized crime by providing the financial resources necessary for its operations.

4.3.1.2 The Exclusion Restriction

We argue that music streams do not have a direct effect on the dependent variable, FDI, but only affect it through the independent variable, organized crime. FDI involves a diverse range of investors, including multinational corporations, sovereign wealth funds, and institutional investors. These entities prioritize financial returns and risk management in their investment decisions, involving significant capital and long-term commitments (Hayes, 2024). These

institutional investors often adhere to strict investment mandates and guidelines that prioritize economic stability and growth over cultural trends (Dellis et al., 2017). The investment decisions are often based on thorough economic analysis, market research, and consideration of factors such as potential returns, market stability, and regulatory frameworks (Adewale, 2022). The enduring nature of FDI decisions suggests that they are less susceptible to short-term cultural influences, such as fluctuations in music streaming patterns. Therefore, while music streams may reflect cultural preferences within specific regions, they are unlikely to significantly sway the investment decisions of investors operating on a global scale. For these reasons, we argue that while music streams may impact societal perceptions and indirectly affect the environment for foreign investment, such as through organized crime, it does not directly alter the fundamental economic considerations that drive FDI.

4.3.2 IV Model and Method

Our methodology employs a two-stage least squares (2SLS) regression analysis to enhance the credibility of our causal inferences. The first stage of a 2SLS regression model, using music streams as an IV, primarily aims to validate the relevance assumption. This stage establishes the predictive relationship between music streams and our endogenous explanatory variable, organized crime. Specifically, it seeks to demonstrate that variations in music streams are significantly correlated with variations in levels of organized crime. This validation is crucial as it enables the use of music streams to capture the indirect effects of organized crime on the dependent variable, FDI, in the subsequent analysis stage. The first stage model is estimated as follows:

$$Model\,5\text{: } \widehat{C_t} = \lambda_0 + \lambda_1 \times M_t + \Omega_t$$

In *Model 5*, music streams, M_t, predicts the level of organized crime, $\widehat{C_t}$. The variables λ_i are the coefficients estimated and Ω_t is the error term.

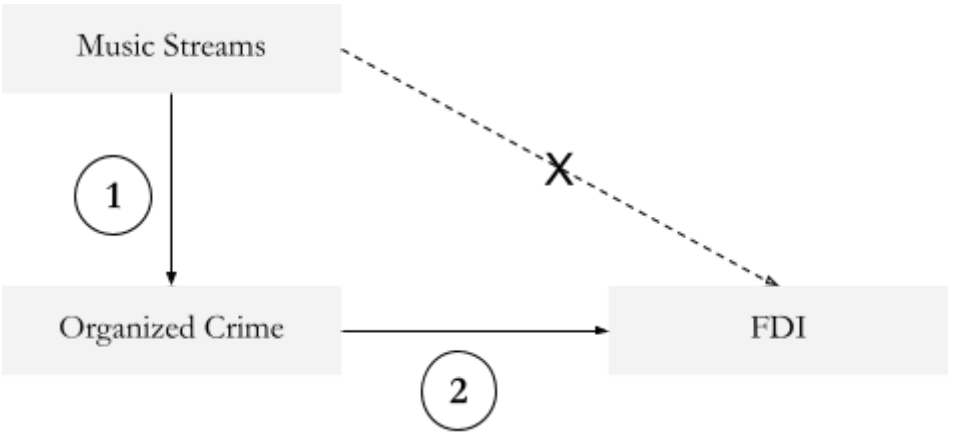

Figure 3: This diagram visualizes the IV model used to estimate the causal impact of organized crime on FDI, with music streams serving as the instrument. Arrow 1 represents the first stage where music streams are used to predict variations in organized crime, establishing the relevance of the IV. Arrow 2 illustrates the second stage, using the predicted values of organized crime to determine its effect on FDI. The dashed arrow indicates the theoretical exclusion of a direct path from the IV to the dependent variable, crucial for satisfying the exclusion restriction of the IV approach.

After obtaining the predicted values of organized crime from the first stage, these values replace the actual organized crime data in the second stage. This substitution is crucial because it only uses the component of organized crime that is explained by the exogenous variations in music streams, effectively isolating and removing any endogenous factors that might have influenced organized crime. The regression then assesses the impact of this predicted version of organized crime on total FDI and reinvested earnings (*Figure 3*). These two models estimate the strength and direction of the causal relationship, operating under the assumption that music streaming impacts FDI solely through its effect on organized crime levels. The second stage models is estimated as follows:

$$Model\ 6\text{: } FDI_t = \eth_0 + \eth_1 \times \widehat{C_t} + \pi_t$$

$$Model\ 7\text{: } RE_t = \gimel_0 + \gimel_1 \times \widehat{C_t} + \mu_t$$

In the models, $\widehat{C_i}$ is the predicted value of organized crime from the first stage. The variables $\eth_i$ and $\gimel_i$ are the coefficients estimated within the models, capturing the impact of the predicted organized crime on FDI, respectively. μ_t and π_t are the error terms.

4.4 Lagged IV Analysis

Similar to the bivariate analysis, building on our initial IV analysis, we also implemented a lagged approach to examining the influence of predicted organized crime on FDI. In the second stage of the IV analysis, we incorporate lags to the predicted organized crime variable, assessing its impact over subsequent periods. This approach aims to detect any delayed effects of organized crime on economic indicators, acknowledging that the influence of such activities on investment decisions might not be immediate. The models are as follows:

$$Model\ 8\text{: } FDI_t = \Theta_0 + \Theta_1 \times \widehat{C_{t-n}} + \daleth_t$$

$$Model\ 9\text{: } RE_t = \rho_0 + \rho_1 \times \widehat{C_{t-n}} + \tau_t$$

Similarly, in the specified models, $\widehat{C_{t-n}}$ captures the measures of organized crime though shootings lagged by n periods (n = 1, 2, 3, 4). The variables Θ_i and ρ_i are the coefficients estimated within the models, capturing the impact of organized crime on FDI, respectively. The terms $\daleth_t$ and τ_t are the error terms.

5. Data

The scarcity of systematic data collection poses a significant challenge in studying the impact of organized crime, particularly in Sweden. The systematic collection of shooting data only began in 2017, resulting in limited historical records for analysis. Additionally, the lack of publicly available data on music streams further complicates efforts to understand the relationship between gangster rap and organized crime. However, despite these hurdles, the relevance of the topic, as underscored by media attention and the growing concern among companies, cannot be overstated (Holst & Wallin, 2023; Stockholm Chamber of Commerce, 2023). Given the lack of research specifically addressing this issue in Sweden, any insights garnered from our study provide a valuable starting point for understanding the intricate relationship between organized crime and FDI.

Moreover, the importance of FDI for the Swedish economy cannot be overstated. FDI plays a crucial role in driving economic growth, creating jobs, and fostering innovation. Understanding whether there is a relationship between organized crime and FDI is essential for the government to comprehend the broader impacts on Swedish society and the economy. Furthermore, the Swedish government has highlighted organized crime as one of the most significant threats to society, emphasizing the urgent need to comprehend its multifaceted impacts, particularly its potential influence on economic stability and investor confidence (Ministry for Foreign Affairs of Sweden, 2023). By discerning the nature of this relationship, policymakers can allocate resources more effectively and develop targeted strategies to address organized crime's adverse effects. Our study aims to shed light on this relationship, providing valuable insights that can guide governmental efforts in combating organized crime and safeguarding Sweden's socio-economic well-being.

The lack of existing literature examining this specific topic further emphasizes the novelty and importance of our research endeavors in contributing to the academic and policy discourse on this pressing issue. Thus, while acknowledging the limitations imposed by data scarcity, the exploration of this uncharted territory promises to shed light on critical aspects of Sweden's economic landscape and inform future research endeavors in this field.

5.1 Organized Crime Data

Our analysis incorporates organized crime data sourced directly from official Swedish police statistics (Polisen, 2024). This dataset provides a comprehensive account of the total number of shootings on a monthly basis across all Swedish regions, covering the period from 2017 to 2024 (Appendix A).

Variable	*Number of Observations*	*Mean*	*Standard Deviation*
Shootings	112	87.61	18.61

Table 1: This table shows the descriptive statistics of the organized crime data in Sweden, as proxied by shootings, used in our study (Polisen, 2024)

To align this data with our FDI data, which is recorded quarterly, we transformed the monthly shootings data into a quarterly format. This transformation was achieved by calculating the average of the monthly data within each quarter, thereby ensuring that our analysis reflects consistent time intervals and allows for an accurate comparison between the organized crime metrics and FDI inflows.

5.2 Foreign Direct Investment Data

The data on our dependent variable, FDI, which includes both total FDI inflows and reinvested earnings, is sourced from Statistics Sweden. Total FDI inflows is quantified as the cumulative amount of equity capital, reinvested earnings, other long-term and short-term capital, excluding stock purchases in domestic companies from foreign entities. Reinvested earnings represent the earnings retained by subsidiaries or associated entities in Sweden that are not remitted to their foreign parents, indicating a reinvestment in the local economy (Statistiska Centralbyrån, 2024).

While our FDI data from Statistics Sweden provides a comprehensive quarterly overview of both total FDI inflows and reinvested earnings over an extended period, our analysis is somewhat constrained by the more limited availability of organized crime data. The organized crime statistics, specifically relating to shootings, only extend back to 2017 (Polisen, 2024). This nascent commencement of systematic data collection on shootings limits our use of FDI data to the period from 2017 to 2024. Although this timeframe restricts the historical depth and long-term trend analysis, it allows for a meaningful initial exploration of the potential relationships within this specific period.

Variable	*Number of Observations*	*Mean*	*Standard Deviation*
Total FDI	28	49109	69000
Reinvested Earnings	28	24065	17025

Table 2: This table shows the descriptive statistics of the FDI data, total FDI and reinvested earnings, in Sweden used in our study (Statistiska Centralbyrån, 2024).

5.3 Music Streams Data

The data for our IV, music streams, was sourced from Songstats, a platform distinguished for its real-time music analytics tailored to artists and labels (Songstats, 2024). In choosing our IV, we focused on the monthly streams of five key figures in the gangster rap scene: Dree Low, Haval, Yasin, Einár, and Z.E. This selection was not arbitrary, it was strategic and informed by the necessity to comprehensively represent the genre. Each artist is notably linked to organized crime themes, either through their lyrics, public personas, or media portrayals, making them relevant to our study of organized crime's influence.

The chosen artists are among the genre's most influential voices, possessing substantial listener bases that not only amplify their impact but also shape the genre's direction. Their considerable reach and the cultural weight they carry mean that they play a critical role in influencing how gangster rap is perceived in relation to organized crime. This is crucial for our

analysis, as it allows us to examine the potential societal and economic impacts of these perceptions on FDI.

The decision to limit the number of artists to five was driven by a focus on maintaining a manageable and robust dataset that allows for precise analysis while adhering to our stringent selection criteria. Including more artists could potentially dilute the specificity and relevance of our IV due to varying degrees of association with organized crime themes and public personas. Moreover, expanding the pool of artists might introduce variability in the data due to differences in regional popularity, genre crossover, and individual artist influence, which could complicate the interpretation of the results. By concentrating on a select group of influential artists who strongly represent the intersection of gangster rap and organized crime, we ensure that our analysis remains tightly focused on exploring the most significant and relevant impacts of this music genre on economic indicators like FDI. The selection of music artists for this study was based on the following criteria, serving as essential filters to identify artists whose contributions are aligned with the specific focus of our research question:

1) Activity period: We selected artists whose active or music is considered relevant during 2017 to 2024, aligning with the timeframe of available data on shootings. This ensures that our analysis captures contemporary trends and dynamics within the gangster rap scene and its relation to organized crime during relevant years.

2) Genre specificity: Each artist has consistently produced work within the gangster rap genre, which is crucial as this genre often explores themes closely tied to urban crime and violence. Focusing on a single genre ensures a coherent analysis of the cultural and societal impacts associated with these musical narratives, reflecting organized crime's portrayal.

3) Direct connection to crime: The artists selected have documented histories of engagement with criminal activities or are frequently associated with such themes either through their personal lives or their public personas. This criterion is vital as it provides a tangible link between the music content and real-world organized crime activities, enriching our understanding of how these themes influence and reflect societal issues.

SongStats records daily music streams data for artists. We collected streaming data for the five specific artists and aggregated it to calculate the average daily streams for this group of five artists. In order to align our music streaming data with our FDI data, which are recorded on a quarterly basis, we converted the daily streaming statistics into quarterly averages. This involved calculating the average streaming numbers for each three-month period, thereby syncing the timelines of the data sets and ensuring that our analysis of the impact of organized crime on FDI is both robust and temporally consistent.

However, the availability of comprehensive data on these artists are only fully available starting from the end of 2020. Therefore, our analysis includes data from 2020 to 2024. Although this time period is limited, it provides initial insights into the recent dynamics between organized crime representations in gangster rap and their potential economic impacts. This period captures contemporary trends and responses in a rapidly evolving musical and social landscape, offering valuable insights despite the shorter timeframe.

5.3 Controls

As our dataset is limited in terms of historical depth, with systematic recording of shootings beginning only in 2017 and comprehensive data on artists only being fully available starting from the end of 2020, we have decided to refrain from incorporating control variables into our regression models. This decision is motivated by the risk of overfitting, particularly given the limited number of data points available. Overfitting could obscure the fundamental relationships under examination, undermining the accuracy and reliability of our findings. By focusing exclusively on the variables of interest, shootings, music streams, total FDI, and reinvested earnings, our analysis remains targeted, yielding insights untainted by extraneous influences or correlations.

6. Results

6.1 Results of the Bivariate Correlational Analysis

Model	*Dependent Variable*	*Independent Variable*	*Estimate*	*Standard Error*	*t-value*	*Pr (>|t|)*
1	Total FDI	Shootings	397.4	722.80	0.5497	0.5872
2	Reinvested earnings	Shootings	52.20	179.08	0.2915	0.7729

Table 3: The table presents the bivariate OLS regression results analyzing the impact of organized crime, proxied by shootings, on different components of FDI. The table is structured into two models, *Model 1* and *Model 2*. *Model 1* assesses the relationship between total FDI and shootings, and *Model 2* examines the relationship between reinvested earnings and shootings. For each model, the table lists the regression coefficient (Estimate), standard error, t-value, and the p-value.

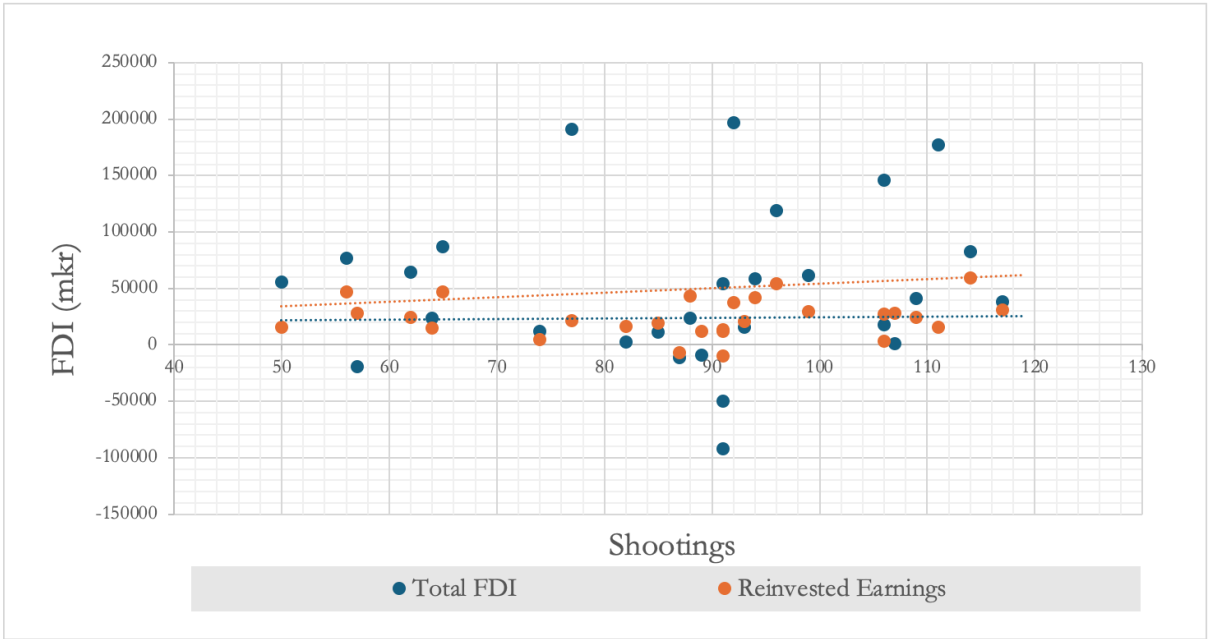

Figure 4: The scatter plot displays total FDI and reinvested earnings as functions of the number of shootings, with each point representing a data pair for a specific time period. Linear trend lines for both total FDI and reinvested earnings are also included to depict the general direction of the relationships.

The results from the bivariate correlational analysis, indicate that there is no significant impact of our organized crime proxy, shootings, on either total FDI or reinvested earnings (*Table 3*). As seen in *Model 1*, the coefficient for shootings is positive (397.4), but with a large standard error (722.8) relative to the estimate, resulting in a t-value of 0.5497 and a p-value of 0.5872. Similarly for *Model 2,* the coefficient is positive (52.20) with a large standard error (179.08), which is reflected in the t-value of 0.2915 and a p-value of 0.7729.

The positive coefficients, indicating a counterintuitive relationship where one additional case of shooting would correspond to increases in total FDI by 397 million SEK and reinvested earnings by 52.2 million SEK, is not supported by statistical significance due to the high p-value. This finding challenges conventional expectations that crime negatively impacts FDI, but given the statistical insignificance, it does not provide a reliable basis for asserting a definitive relationship within this model's framework (Daniele & Marani, 2011).

Despite these results, the contrasting magnitudes of the coefficients for total FDI inflows and reinvested earnings are noteworthy. This difference underscores how foreign companies might perceive and react differently to Sweden's short-term risks compared to its long-term economic prospects. The higher coefficient for total FDI suggests that new investments might be more reactive to short-term economic fluctuations and policy uncertainties, such as increases in organized crime like shootings. In contrast, reinvested earnings, which indicate a long-term commitment to the Swedish market, appear less affected by such fluctuations, reflecting a deeper level of stability and confidence in Sweden.

Figure 4 further visualizes these findings by plotting the relationship between shootings and FDI. The scattered data points and the trend lines for both total FDI and reinvested earnings do not indicate strong or significant relationships. The nearly horizontal trend line for reinvested earnings suggests stability, showing little to no impact from variations in shooting incidents. Further, the trend line for total FDI, albeit slightly positive, fails to suggest a strong or statistically significant relationship, mirroring the bivariate analysis results.

6.2 Results of the Lagged Bivariate Analysis

Model	***Dependent Variable***	***Independent Variable***	***n (number of time periods lagged)***	***Estimate***	***Standard Error***	***t-value***	***Pr (>|t|)***
3	Total FDI	Shootings	1	1087.28	899.4361	1.2088	0.2396
			2	629.48	960.7801	0.6552	0.5191
			3	687.76	913.7218	0.7527	0.4596
			4	495.67	832.459	0.5954	0.5576
4	Reinvested earnings	Shootings	1	42.92	222.84	0.1926	0.8490
			2	186.18	229.5281	0.8111	0.4260
			3	286.85	213.6212	1.3428	0.1930
			4	131.52	199.5272	0.6592	0.5166

Table 4: The table presents the lagged bivariate OLS regression results analyzing the impact of lagged organized crime, proxied by shootings, on different components of FDI. The table is structured into two models, *Model 3* and *Model 4*. *Model 3* assesses the relationship between total FDI and shootings, and *Model 4* examines the relationship between reinvested earnings and shootings. Each model evaluates the effect over four lagged time periods (1 to 4). For each lag, the table lists the regression coefficient (Estimate), standard error, t-value, and the p-value.

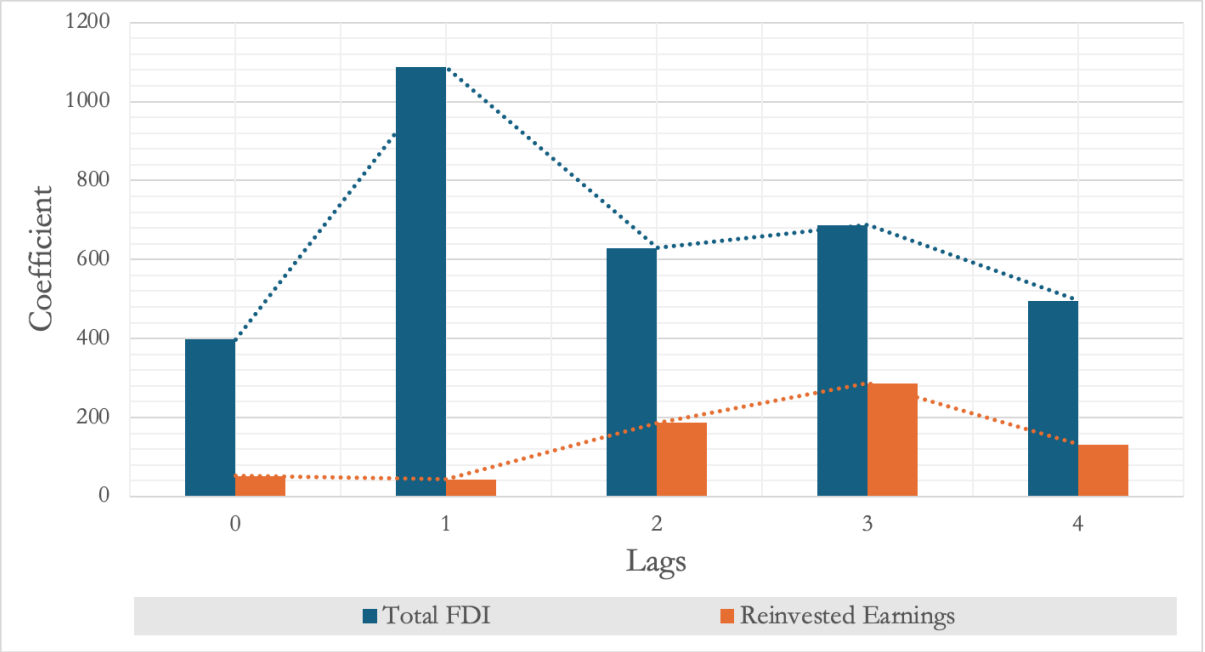

Figure 5: The bar plot visually represents the regression coefficients (Estimates) from *Table 4*. It compares the impact of lagged shootings on total FDI and reinvested earnings across four lags.

The results for the lagged bivariate analysis suggest that while there might be some immediate or short-term fluctuations in FDI following changes in shootings, these changes do not establish a significant or persistent pattern over time. As seen in *Table 4,* the coefficient for total FDI increases with a one-period lag, suggesting a temporary rise in FDI following an increase in shootings, reaching the highest estimate of 1087.28. However, as seen in *Figure 5,* as the number of lag periods increases, the coefficient values generally decrease. None of these results are statistically significant, as indicated by the high p-values (ranging from 0.2396 to 0.5576). Similar to total FDI, the effects on reinvested earnings are not statistically significant. The coefficients are relatively smaller compared to those for total FDI, with the highest impact observed at a three-period lag (286.85). The p-values remain consistently high (0.4260 to 0.8490), reinforcing the conclusion that shootings do not significantly impact reinvested earnings over time.

The lack of statistical significance across different lags reinforces the conclusion that organized crime, as proxied by shootings, does not have a discernible, lasting impact on foreign direct investment or reinvested earnings in Sweden. This analysis provides further insight into the temporal dynamics of the relationship between organized crime and economic activity, underscoring the complex and potentially indirect ways in which such societal issues might influence economic indicators.

6.3 Results of the Instrumental Variable Analysis

Model	*Dependent Variable*	*Independent Variable (lagged)*	*Estimate*	*Standard Error*	*t-value*	*Pr (>|t|)*
(First Stage)						
5	Organized Crime (Shootings)	Music Streams	0.0002	0.0000	3.2892	0.0072
						F-statistic: 10.81892
(Second Stage)						
6	Total FDI	Predicted organized crime	-58.83	1995.92	-0.0295	0.9770
7	Reinvested earnings	Predicted organized crime	367.23	482.86	0.7605	0.9456

Table 5: This table presents the outcomes of our IV analysis. *Model 5* displays results of the first stage, where music streams are regressed against our proxy for organized crime (shootings). *Model 6* and *Model 7* display results of the second stage, examining the relationship between predicted organized crime on total FDI and reinvested earnings.

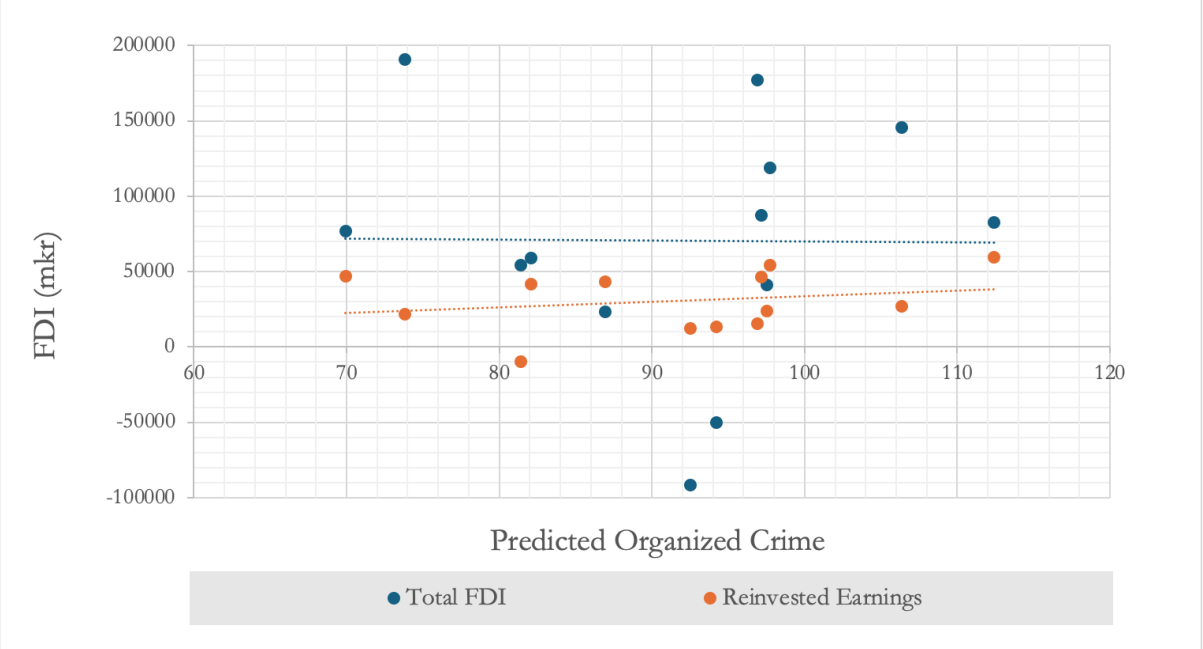

Figure 6: The scatter plot displays total FDI and reinvested earnings as functions of the predicted organized crime, with each point representing a data pair for a specific time period. Linear trend lines for both total FDI and reinvested earnings are also included to depict the general direction of the relationships.

The results derived from our IV analysis (*Table 5*) suggest that the average music streams exhibit statistical significance at the one percent confidence interval. In the first stage of the IV analysis (*Model 6*), music streams were used as an instrument to predict the level of organized crime. The estimate for the coefficient on music streams is 0.0002 with a standard error of 0.0000, and a t-value of 3.2892. This result is statistically significant at one percent significant levels, indicated by the p-value (0.0072), suggesting a strong and valid instrument. This stage confirms that variations in music streams are indeed predictive of variations in organized crime levels. The F-statistic of 10.81892 also supports the strength of this instrument, suggesting that it is likely not weak.

In the second stage, the predicted organized crime from the first stage is used to estimate its impact on FDI. The estimated impact of predicted crime on total FDI inflows is -58.83, with a large standard error of 1995.92, leading to a t-value of -0.0295 (*Model 7*). This coefficient is not statistically significant, indicated by the p-value (0.9770), suggesting that the model does not find a robust effect of organized crime on total FDI inflows. The wide standard error suggests high variability in the data that may be contributing to the lack of significance. Similarly, the effect of predicted crime on reinvested earnings is estimated at 367.23 with a standard error of 482.8607, resulting in a t-value of 0.7605 (*Model 6*). This result is also not statistically significant with a p-value of 0.9456. Similar to the FDI model, this suggests that there is no clear, statistically supported impact of organized crime on reinvested earnings based on the data and model used.

Figure 5 further visualizes these findings by plotting the relationship between the predicted level of crime and FDI, where the scatter of data points and the trend lines for both total FDI and reinvested earnings do not indicate strong or meaningful relationships. The nearly horizontal trend lines suggest stability, showing little to no impact from variations in shootings.

The results indicate that while there is a predictive relationship between music streams and organized crime, the subsequent impact of this crime on economic measures such as FDI inflows and reinvested earnings is not statistically significant in this sample.

6.4 Results of the Lagged Instrumental Variable Analysis

Model	***Dependent Variable***	***Independent Variable***	***n (number of time periods lagged)***	***Estimate***	***Standard Error***	***t-value***	***Pr (>|t|)***
8	Total FDI	Predicted Organized Crime	1	167.39	1758.876	0.09517	0.9268
			2	-1476.54	2089.098	-0.7068	0.5025
			3	1434.726	1784.755	0.8039	0.4479
			4	-177.14	1832.612	-0.0967	0.9257
9	Reinvested earnings	Predicted Organized Crime	1	-397.73	397.7322	-0.6188	0.5557
			2	-75.51	810.5221	-0.0932	0.9284
			3	460.6487	677.6054	0.6798	0.5185
			4	-349.103	675.0326	-0.5172	0.6210

Table 6: This table presents the outcomes of our lagged IV analysis. *Model 8* and *Model 9* display results of the second stage analysis, examining the relationship between our lagged predicted organized crime on total FDI and reinvested earnings, respectively. Each model evaluates the effect over four lagged time periods (1 to 4). For each lag, the table lists the regression coefficient (Estimate), standard error, t-value, and the p-value.

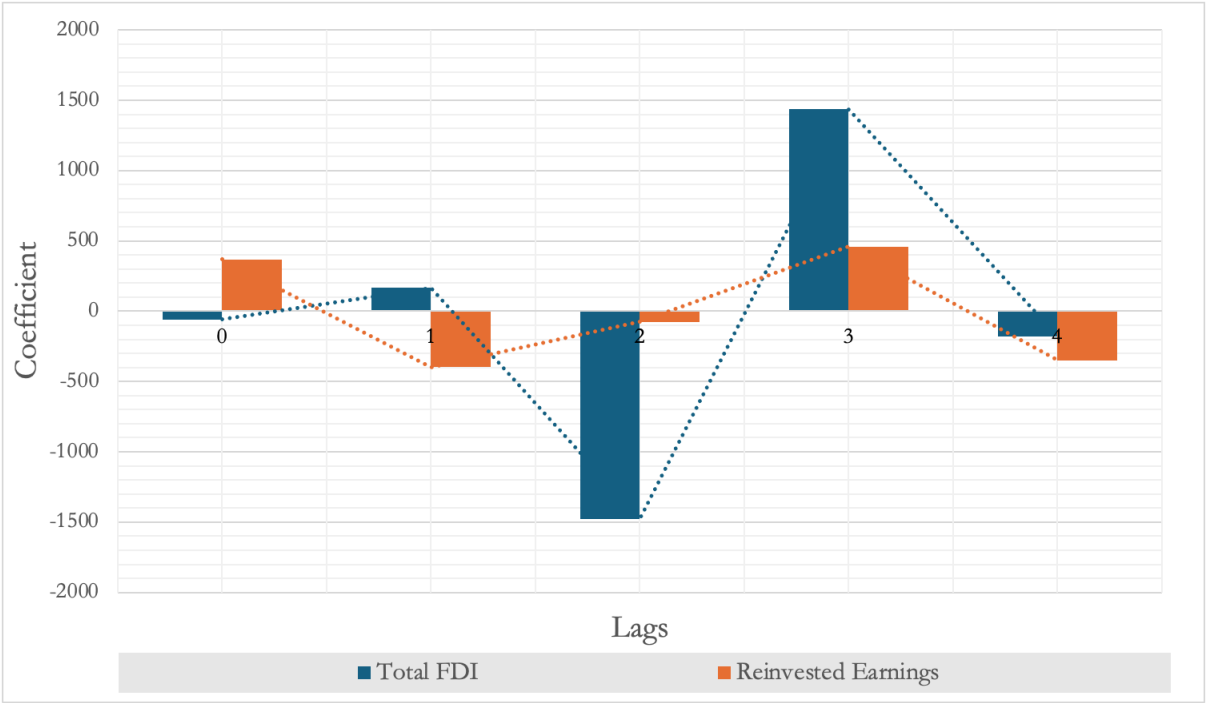

Figure 7: The bar plot represents the regression coefficients (Estimates) from *Table 6*. It compares the impact of lagged predicted organized crime on total FDI and reinvested earnings across four lags.

The results from the lagged IV analysis (*Table 6*) indicate varying and statistically insignificant effects of predicted organized crime on both total FDI and reinvested earnings in Sweden, across different lag periods. The coefficients fluctuate widely for both dependent variables over the lag periods, reflecting inconsistent relationships (*Figure 7*).

For total FDI, the coefficients vary drastically from positive in lag 1 and 3 to negative in lag 2 and 4. The high standard errors contribute to the high t-values and p-values, indicating that these results are not statistically significant. This lack of significance suggests that the predictive power of organized crime on total FDI is uncertain and varies depending on the time lag considered.

Similarly, for reinvested earnings, the coefficients also show no consistent pattern or significant impact from the predicted organized crime, with all p-values above the 0.05 threshold for statistical significance. The changes in coefficients from negative to positive across different lags do not present a clear or interpretable effect on reinvested earnings.

7. Discussion

7.1 Analysis of the Results

The impact of organized crime on FDI in Sweden, investigated through both the bivariate and IV methods, reveals complex dynamics that defy straightforward conclusions. The initial bivariate analysis, where we investigated the effects of shootings on both total FDI and reinvested earnings, did not reveal any statistically significant effects. This is in line with our initial hypothesis, suggesting that the direct influence of organized crime on investment decisions

might be less pronounced than anticipated by Swedish companies (Swedish Chamber of Commerce, 2023).

Subsequently, the IV analysis, utilizing music streams as an instrument to refine the measure of organized crime, reaffirmed the results of the bivariate analysis. While the first stage effectively established music streams as a predictor of organized crime, the second stage failed to reveal any significant impact on total FDI and reinvested earnings. This absence of a notable negative impact implies that while organized crime may influence local social dynamics and perceptions, these influences do not directly translate into substantial economic disincentives for foreign investment.

Moreover, the examination of lagged variables in both bivariate and IV contexts adds depth to our understanding of organized crime's temporal impact on FDI. The lagged bivariate analysis showed no significant effect of organized crime on FDI over various lags, indicating that any potential influence on FDI inflows is neither immediate nor enduring. Similarly, the lagged IV analysis demonstrated inconsistent and statistically insignificant effects of predicted organized crime on FDI across different lag periods. This variability in results, with coefficients fluctuating significantly across lags without forming a clear or significant pattern, underscores the uncertain and time-varying predictive power of organized crime on FDI.

Our findings reveal no significant impact of organized crime on either the initial influx of FDI or the sustained investment behaviors of foreign entities within the Swedish economy. The lack of significance in total FDI inflows suggests that Sweden's appeal as an investment destination remained unaffected. Similarly, the absence of significance in reinvested earnings implies that there is no discernible effect on the confidence and long-term commitment of these investors. This metric reflects the profits that foreign subsidiaries choose to reinvest locally rather than distribute as dividends to their parent companies (Lundan, 2006).

These findings stand in contrast to previous studies from economies with less robust institutional frameworks, where organized crime exerts a more pronounced negative impact on FDI (Daniele & Marani, 2011; Brown & Hibbert, 2017). Our analysis emphasizes that while organized crime may theoretically be expected to negatively influence FDI inflows, the actual impacts in the context of Sweden are neither straightforward nor significant, even when considering lagged effects.

This complexity may stem from various factors, including the nuanced nature of organized crime's impacts over time and the mitigating effect of Sweden's stable economic and political environment. As highlighted by Barry and DiGiuseppe (2018), macroeconomic factors such as GDP levels and fiscal health may wield a more decisive influence on FDI inflows. This underscores the possibility that Sweden's strong governance and effective law enforcement structures may buffer the investment climate from adverse effects and alleviate perceived risks associated with fluctuations in organized crime (Adewale, 2022).

Nonetheless, it is worth noting that the analyzed period and data scope of our findings may not yet be comprehensive enough to potentially deter FDI. Rostami's study (2021) suggests that increased organized crime could subtly erode public trust in institutions, potentially diminishing Sweden's appeal to foreign investors over time. Although Sweden's historical stability may have mitigated the immediate effects of organized crime on FDI, the latent threat could persist, affecting investment stability and growth. This impact might not be immediately evident but could manifest in the long-term implications for investment.

Furthermore, the portrayal of organized crime in both Swedish and international media as a primary political issue suggests that its long-term effects on FDI might still be unfolding (Ministry for Foreign Affairs, 2023). Media narratives play a significant role in shaping public perception and, by extension, the investment climate. The relationship between how organized crime is depicted and the perception of risks in a country is complex. Media representation can amplify concerns, potentially distorting the investment environment (Holst & Wallin, 2023). The role of media in crafting economic narratives is crucial, suggesting that perceptions of rising crime could influence investment decisions as significantly as actual crime rates. This calls for further exploration of how media portrayals and public discourse about crime impact the broader economic narrative and investment decisions.

Our analysis underscores the importance of maintaining a favorable perception of country risk to ensure sustained investor confidence in Sweden. Currently, Sweden's reputation as a stable and low-risk investment destination may protect it from the immediate effects of rising crime rates. However, if the increase in organized crime continues, it could gradually undermine this perception, highlighting the critical need for vigilant monitoring and robust policy measures to protect economic interests.

7.2 Limitations

The methodology utilized in this research encompasses limitations that could influence the outcomes of both the bivariate analysis and the IV method. Understanding these limitations is critical for contextualizing the findings and shaping future research directions.

7.2.1 General Limitations

7.2.1.1 Limited Data Set

The availability of comprehensive data for our variables restricts our analysis to a relatively brief timeframe. Recent initiatives in systematic data collection on shootings pose challenges in assessing historical depth and long-term trends, limiting our ability to fully explore the historical impact of organized crime on investment trends in Sweden. Similarly, the music streaming data, available only from late 2020, narrows the scope of our IV analysis. Again, this limitation may undermine the robustness and depth of our findings, as it hampers a comprehensive observation of long-term effects and trends. Therefore, there is a pressing need for further research to broaden this analytical framework and deepen our understanding of the impact of organized crime on FDI in Sweden.

7.2.1.2 Observation of Long-Term Effects

The recent increase in gang violence and the emergence of money laundering through music streaming platforms are relatively new developments in Sweden. Given that FDI represents a long-term investment, our limited dataset, alongside the novelty of these phenomena, adds possible constraints to the conclusions of our research. As these trends continue to evolve and more data becomes available, different insights may emerge. Thus, our findings should be viewed as an initial exploration into the complex interplay between organized crime and FDI. The inability to observe and analyze the long-term effects due to the short span of data collection

means we might be missing critical insights into how organized crime trends stabilize or fluctuate over extended periods, potentially affecting long-term economic indicators and investment climates.

7.2.1.3 Lack of Control Variables Resulting in Confounding Variables

Our models do not include control variables that might account for other factors influencing FDI and organized crime, such as economic conditions, policy changes, or international events, potentially confounding the results. For instance, the bivariate analysis presumes a direct correlation between shootings and FDI outcomes without considering potential mediating or moderating variables that could influence this relationship. This simplification may overlook other relevant dynamics affecting FDI inflows in Sweden. The interaction between the potential confounding variables is complex and not fully accounted for in our study. The bidirectional causality between FDI and organized crime further complicates the causal inference, challenging the validity of using music streaming as a sole instrumental variable.

7.2.2 Methodological Limitations

7.2.2.1 Endogeneity Concerns

Using music streaming as an IV estimator to examine the correlation between organized crime and FDI introduces significant endogeneity concerns. There is a possibility that increased organized crime affects the number of gangster rap music songs available on music streaming platforms, consequently affecting the music streaming rates. This suggests that music streams and organized crime might not be unidirectional. The more organized criminal activity occurs, the more media attention it might garner. This dynamic could create a feedback loop where organized crime influences music content, which in turn shapes societal perceptions and behaviors, risking reverse causality. This complex causal pathway challenges the isolation of music stream's direct influence on organized crime, making it difficult to claim definitively that shifts in music streaming rates directly reflect changes in organized crime levels.

7.2.2.2 Temporal Variability

The use of lagged variables aims to capture delayed effects but also introduces challenges due to the fluctuating nature of both organized crime rates and economic indicators over time. The impacts of organized crime on FDI are not consistently significant across different time periods, indicating variable influences that are difficult to accurately capture.

7.3 Implications for Future Research

Our findings emphasize the need for further research to deepen our understanding of the complex relationship between organized crime and FDI in Sweden. Future studies should broaden the dataset, add control variables, and thoroughly investigate long-term impacts. While this research establishes a fundamental framework, it also highlights the necessity for more detailed analyses to grasp the nuanced dynamics involved. The identified limitations point to the critical need for ongoing research to elucidate the subtle and enduring effects of organized crime on investment landscapes, particularly in stable economies like Sweden. Such insights are vital for

policymakers and economists who are developing strategies to enhance the investment climate and mitigate the effects of organized crime.

8. Conclusion

The objective of this research paper was to examine the impact of organized crime, as evidenced by direct indicators such as shootings and indirect indicators such as gangster rap music streams, on FDI. Utilizing both a bivariate correlation analysis and an IV analysis, we have identified several key findings.

Our results suggest that, within the scope of this study, direct indicators of organized crime, such as shootings, do not exert a direct impact on FDI inflows or reinvestment patterns in Sweden. Similarly, indirect indicators such as gangster rap music streams, do not exert a significant impact on the FDI indicators. These results are true when considering the temporal dynamics through the lagged models as well. The absence of statistical significance implies that while organized crime may have societal repercussions, its effect on FDI decisions may be tempered by other unaccounted factors, including the broader economic landscape and various forms of perception, including economic, financial, and political risks, as well as media portrayal. While objective measures, such as shootings, provide quantifiable information, subjective perceptions of safety and security also play a crucial role in shaping investment decisions. It underscores the critical necessity for future research to address both the tangible and perceived impacts of crime on investment decisions.

The nuanced impact of organized crime on FDI warrants further investigation, and it is premature to definitively assert a direct relationship without additional examination. Additionally, our findings necessitate a cautious interpretation due to the limitations. However, our research lays a foundational basis for future analysis, prompting inquiries into whether similar results would be obtained in other countries or when examining FDI over a longer timeframe with more data points available.

Furthermore, exploring the potential implications of governmental policies and societal responses to combat organized crime, consequently its influence on FDI, could offer valuable guidance for policymakers and stakeholders seeking to mitigate its adverse effects on the investment climate and global perception in Sweden.

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10. Appendix

Appendix A: Quarterly Data on Shootings and Foreign Direct Investment in Sweden

	Independent variable	*Dependent variable*	
Time period	*Shootings*	*FDI (mkr)*	*Reinvested earnings (mkr)*
2017Q1	50	55884	15909
2017Q2	64	23491	14649
2017Q3	93	15372	20500
2017Q4	74	12189	4539
2018Q1	57	-19057	28104
2018Q2	82	2172	16356
2018Q3	99	61226	29263
2018Q4	87	-11259	-6596
2019Q1	62	64719	24264
2019Q2	106	17882	3075
2019Q3	107	926	27859
2019Q4	85	10950	18999
2020Q1	92	196681	37610
2020Q2	89	-9031	11980
2020Q3	117	38180	31115
2020Q4	91	-50036	13418
2021Q1	56	76783	46701
2021Q2	91	-91801	12066
2021Q3	106	145636	27209
2021Q4	91	54283	-9848
2022Q1	94	58838	41744
2022Q2	111	176892	15368
2022Q3	109	41297	24068
2022Q4	77	190715	21659
2023Q1	88	23464	43429
2023Q2	96	118935	54274
2023Q3	114	82581	59449
2023Q4	65	87148	46657

Note: This table presents quarterly data spanning from the first quarter of 2017 to the fourth quarter of 2023, utilized to examine the relationship between organized crime and foreign direct investment (FDI) indicators in Sweden. The independent variable, "shootings," quantifies the number of shooting incidents and serves as a proxy for organized crime levels. The dependent variables, FDI and reinvested earnings, are correlated with the independent variable by quarter. Each row of the table provides data for the bivariate regression analysis discussed in the study (Polisen, 2024; Statistiska Centralbyrån, 2024).

Appendix B: Quarterly Data on Shootings, Music Streams, and Foreign Direct Investment in Sweden

	Proxy for organized crime	*Instrumental variable*	*Dependent variable*	
Time period	*Shootings*	*Monthly music streams*	*FDI (mkr)*	*Reinvested earnings (mkr)*
2020Q4	91	573515.533	-50036	13418
2021Q1	56	414820.733	76783	46701
2021Q2	91	562353.133	-91801	12066
2021Q3	106	652565.267	145636	27209
2021Q4	91	489829.933	54283	-9848
2022Q1	94	494067.2	58838	41744
2022Q2	111	590970.133	176892	15368
2022Q3	109	594851.2	41297	24068
2022Q4	77	440173.667	190715	21659
2023Q1	88	525728.667	23464	43429
2023Q2	96	596278.4	118935	54274
2023Q3	114	692217.333	82581	59449
2023Q4	65	592574.8	87148	46657

Note: This table displays quarterly data from the fourth quarter of 2020 to the fourth quarter of 2023, which is utilized in our IV analysis. In the first stage of the analysis, the independent variable, music streams, represents the average quarterly streams of music from five selected artists. Shootings, used as a proxy for organized crime, correlates with the music streams. In the second stage, the dependent variables, FDI and reinvested earnings, are analyzed to assess their relationship with organized crime (Polisen, 2024; Songstats, 2024; Statistiska Centralbyrån, 2024).

Appendix C: Use of Generative AI

In preparing this paper, we utilized ChatGPT for language and grammar enhancements. This AI, developed by OpenAI, helped refine the text's clarity and grammatical accuracy without altering the research content or analysis. Its use was strictly confined to editing tasks, aiming to improve the document's readability and professionalism.