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Abstract: This report, Deliverable 2.3 of the FALCON project, analyses the impacts of various forms of corruption, focusing on public procurement, sanctions, and border corruption. It highlights the economic inefficiencies caused by corruption in public procurement, the mixed effectiveness of sanctions, and the variation of economic losses due to border corruption. The report provides empirical evidence in form of case studies and statistical analysis to estimate these impacts and quantify the losses associated with corruption. The findings underscore the critical need for effective anti-corruption measures due to direct effect corruption has on effective distribution of public resources.

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List of Authors

Partner	Author
QoG	Marina Nistotskaya, Emanuel Wittberg
AAF	Sławomir Śnieżko
GTI	Daniel Kofran, Viktoriia Poltoratskaya, Bence Toth
BIG	Jacopo Costa

List of Contributors

Partner	Author
BPTI	Kostas Griska
CDBP	Dimitrina Boianova
GTI	Aly Abdou, Mihaly Fazekas
RAD	Mircea Mihail
RBP	Dragon Alistar
VSAT	Okockis Laurynas, Skirmantas Evaldas

List of Reviewers

Partner	Author
ABI	Anzellotti Emiliano
BDI	Yantsislav Yanakiev

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Glossary

AI	Artificial Intelligence
BCP	Border Crossing Point
CCTV	Closed-circuit television
CoI	Conflict of Interest
CRI	Corruption Risk Index
CRM	Common Representational Model
CSO	Civil society organization
EU	European Union
FGD	Focus Group Discussion
FIU	Financial Intelligence Units
GDP	Gross Domestic Product
GDP pc	Gross Domestic Product per capita
GIS	Geographic Information System
HR	Human Resources
IMF	International Monetary Fund
IT	Information Technology
LEA	Law Enforcement Agency
NGO	Non-governmental organization
PEP	Politically Exposed Person
PPP	Purchasing power parity
PSP	Payment Service Provider
QoG	Quality of Government institute
SME	Small and medium-sized enterprises
SOE	State Owned Enterprise
UC	Use Case
WB	World Bank
WP	Work Package

Executive Summary

This report is Deliverable D2.3 of the FALCON project, related to the task T2.3 “Comprehensive impact analysis of different forms of corruption”. The report enumerates, both conceptually and empirically, the different impacts of corruption, focusing on a) public procurement (including conflict of interest), b) sanctions against kleptocrats and oligarchs, and c) border corruption. It is structured according to the FALCON use cases, bringing UC1 and UC4 under the same chapter, each addressing a specific aspect of corruption and offering insights into estimations of its impacts.

The first chapter covers corruption and conflict of interest in public procurement. A variety of fraudulent practices in this domain can lead to inflated prices, low quality, suboptimal allocation of resources, as well as other inefficiencies as reviewed in the taxonomy of corruption costs section. The chapter also estimates the relationship between the Corruption Risk Index (CRI, as introduced in D2.2) and prices using Bulgaria and Croatia as examples. Our findings show that high-risk contracts lead to substantial extra spending due to corruption. For example, our models predict that a contract with the highest risks of corruption is around 9.4 percentage point more expensive than a contract without any risks in Bulgaria. The positive relationship between risks and prices is further amplified if the awarded supplier is politically exposed person (PEP). Our results indicate that mitigating these risks could lead to significant savings.

The second chapter examines the effectiveness of sanctions, a common tool used by the EU to achieve foreign policy objectives. This section provides an overview of possible measures of sanctions effectiveness, as well as case studies from court cases and media investigations that illustrate the potential losses from sanctions evasion. First, the effectiveness of sanctions in achieving these objectives is debated. While some studies show success in certain cases, others argue that sanctions often fail to achieve their intended goals. Economic sanctions impose significant costs on target countries by limiting trade, hence ultimately lowering their GDP. For example, the 2022 sanctions on Russia resulted in notable declines in GDP and trade. However, targeted countries frequently employ complex schemes to circumvent sanctions, which reduces their effectiveness. The costs of sanctions are also borne by the sanction-imposing countries. The report highlights the need for improved enforcement and monitoring mechanisms to enhance the impact of sanctions.

Lastly, chapter three reviews the impacts of border corruption, including activities such as rent-seeking, smuggling, and financial crimes. These activities lead to substantial economic losses and undermine state revenue. The report suggests methods to quantify both the direct and indirect costs of border corruption, using case studies to illustrate the impact on specific sectors, such as tobacco or textile production. The findings emphasize the significant economic burden of border corruption and the importance of robust mechanisms to combat these activities.

Introduction

This report aims to provide a comprehensive overview of the various impacts of corruption in three areas: public procurement, borders, and sanctions. First, it provides a detailed overview of the types of corrupt transactions that exist in these areas, as well as their consequences. The typology of corrupt transactions is partly built on D2.2 of the FALCON project. Second, it suggests possible measures of the costs of corruption based on existing literature. Third, it provides an estimation of (at least some of the) impacts of different types of corruption either through case studies or, where possible, quantifying losses by statistical analysis.

The report is divided into three sections according to the FALCON use cases. The first and fourth use cases are discussed together in Chapter 1 - Corruption and Conflict of Interest in Public Procurement, which provides an overview of the impacts of both general corruption risks and conflict of interest risks. Based on the literature review, four possible impacts are identified: impacts on quality, allocative efficiency, prices, and indirect costs. A separate section reviews the impact of conflicts of interest on the same dimensions. The data and methodology section provides a brief overview of the public procurement datasets (Bulgaria and Croatia) used for the analysis and explains the methodology for modelling the cost of corruption on contract prices. The results section discusses the estimates of the impact of corruption risks and the presence of politically exposed persons on contract prices.

The second use case (Chapter 2) - provides an overview of the state of the literature on the effectiveness of sanctions in terms of economic costs for both targeted and sending states. The chapter begins with an overview of the nature and goals of sanctions, their various forms and purposes, and the evolving strategies employed. The next section describes the methodology and data sources used in the analysis. It then reviews approaches to evaluate the effectiveness of sanctions, including existing studies that measure their impact. The chapter further provides empirical evidence on the effectiveness of sanctions through case studies at the level of country and individual costs. It concludes with the discussion on sanctions costs for the sender, as well as suggested ways forward.

The third use case (Section 3) examines the costs and impacts of border corruption and related crimes that occur at border posts. First, the section provides an overview of existing types of border corruption and related crimes. It distinguishes between rent-seeking, trade offenses, and financial crimes. The next section presents ways of identifying the costs of each type of border corruption. It suggests distinguishing between direct and indirect, and between quantifiable and non-quantifiable costs. The chapter concludes with case studies, using examples collected from FLACON partners and media investigations, to provide approximate estimates of the costs of various types of border corruption.

1. Costs and impacts of corruption and conflict of interest in public procurement

Public procurement, an important method of implementing government budgets, can be highly vulnerable to corruption (International Monetary Fund IMF, 2019). Estimates of losses from procured spending are around 10-20%, even in countries with relatively high integrity procurement systems in the European Union (Hafner et al., 2016). The consequences for public finances can be severe, as public procurement accounts for about 12% of global Gross Domestic Product (GDP), or $11 trillion per year (Bosio et al., 2020). Corruption can lead to higher deficits and lower growth due to (among other things) inadequate quality and level of infrastructure (Schwartz et al., 2020).

This chapter of the report reviews and enumerates the impact of corruption in public procurement, including contracts involving politically-exposed persons. The assessment framework provides an overview of existing studies on impacts of corruption on prices, quality, allocation efficiency as well as indirect costs. It then uses public procurement data to estimate the price of corruption and conflict of interest for public procurement contracts, building on the modeling used in Abdou et al. (2022) which is further elaborated in the Data and Methodology section. Using data on Bulgarian and Croatian public contracts, we show the association between corruption risks and prices. The red flags are based on the existing literature on corruption in public procurement and validated in D2.2. The individual red flags are grouped into cumulative Corruption Risk Index (CRI) [1].

The Chapter is structured as follows: first, we explain the concept of active waste in public procurement and follow it up with various costs which could occur in public tenders due to corruption, including quality, allocative efficiency, price and indirect costs. We also provide a separate overview of the costs related to the presence of political connections. Next, we provide an overview of the individual red flags that are included in the cumulative CRI, which is used as a predictor of price changes in individual contracts. We also provide an overview of the methodology used in this section to estimate the impact of corruption on public procurement prices, and briefly explain the datasets involved. Finally, we present the results of the models, first with estimates of the impact of CRI on prices, and second with estimates of additional spending due to corruption risks.

1.1. Taxonomy of corruption costs in public procurement

First of all, it is important to distinguish between a so-called active and passive waste in public procurement that influences the prices and quality of contracts, as well as allocative efficiency (Bandiera, Prat, and Valletti, 2009). Active waste occurs when a public decision maker derives personal benefit from a service, resulting in a loss of benefit to the decision maker if the waste is reduced. Corruption is an example of this type of waste. In contrast, passive waste provides no additional benefit to the public decision maker, but still results in lower value for money and

[1] Fazekas, M., Tóth, I.J. and King, L.P., 2016. An objective corruption risk index using public procurement data. European Journal on Criminal Policy and Research, 22, pp.369-397

reduced efficiency, negatively impacting the overall value for money of the procurement process. An example of passive waste is excessive regulatory burden, or simply the lack of managerial knowledge in the public sector to minimize contract prices. Such inefficiencies – i.e. passive waste – can often have a greater impact on prices than corruption. For example, Bandiera, Prat, and Valletti (2009) shows that increased prices for public procurement in Italy are primarily due to such administrative inefficiencies.

Corruption undermines fair competition, distorts the procurement process and can lead to sub-optimal outcomes. The presence of corruption risks in public procurement can lead to inflated prices in the contracts awarded, as well as reduced quality and leads to suboptimal allocative efficiency. Various corrupt practices, such as bribery or favoritism, can result in contracts being awarded to less qualified or more expensive suppliers. As a result, goods, works and services procured are of lower quality and higher price, and certain individuals and companies benefit privately.

Besides direct impacts, corruption in public procurement might have more general indirect costs. Corruption can deteriorate trust in public institutions (Clausen et al. 2011), decrease overall quality of public infrastructure such as education, transportation or medical services (Hanf et al. 2011; Gupta, Davoodi, and Tiongson 2000); reduce foreign direct investments (Wei 2000); distort general public spending structure (Dzhumashev 2014).

1.1.1. Corruption and quality

The impact of corruption on quality of delivered goods, services or works, while could be significant, is hard to measure objectively due to measurement constraints. Reliable and universal data, which is comparable across different products for quality assessment is difficult to obtain. At the same time, quality assessment by itself creates potential for corruption in public procurement, as the acceptance of delivery is often based on evaluation of delivered goods and services, or proposals quality, which could be manipulated through bribes (Wang 2020). Burguet and Che (2004) propose a formal model which suggests that with complete information and no corruption, the efficient firm will win the contract; however, when the buyer is corrupt and has large manipulation power, the bribery makes it costly for the efficient firm to secure a sure win, so in equilibrium the efficient firm loses which leads to lower quality of delivered works. Following this logic, Huang & Xia (2019) introduced a concept of “quality manipulation corruption”. The authors explain that a procurement auction typically includes an agent who acts as a go-between for the buyer and the supplying company. This agent has some leeway in evaluating quality, which they might exploit to solicit a bribe from a corrupt supplier. The issue of quality manipulation emerges when the agent falsifies the quality scores of bids. Specifically, the agent can inflate the quality score of the corrupt supplier, increasing their chances of securing the contract.

One possible indirect measure of quality in public procurement is **delays in the delivery** of works, services or goods. Delays in delivery could be an indicator of inefficiencies in the procurement process, as well as signs of direct manipulation to extract rent. For example, if there has been a deliberate effort to favour certain suppliers, this may result in delayed deliveries, as these suppliers may not be as prompt or efficient in meeting project deadlines. On the other hand,

intentional inefficiencies in procurement may involve compromises in the quality of goods or services. Subsequent delays may occur as corrections and improvements are required to meet required standards. Finally, delays can be inadvertently caused by bureaucratic hurdles, or due to opportunistic behaviour of the suppliers (e.g. as was shown by D'Alpaos et al (2013), there is a certain amount which a supplier is "willing to pay" to postpone the delivery date).

Some studies attempted to measure the impact of corruption on **implementation quality** through surveys. For example, the World Bank report (2007) shows that corruption can lead to poor quality construction, theft of materials, and reduced economic returns in developing countries. Using the survey results the study suggests that corruption can result in mark-ups of 10-30% on construction contracts and significantly reduces the quality of work. A significant chunk of corrupt transactions are paid to cover for the lower quality of implemented contracts to auditing officials. While delays in construction projects are relatively easy to identify, evaluating the quality of implementation is more challenging, as the impacts often become evident only after several years. Research by Breen and Gillanders (2013), utilizing data from World Bank surveys, indicates a significant positive correlation between perceived corruption and the proportion of firms citing transportation quality as a major obstacle, both on a national and regional level.

1.1.2. Corruption and allocative efficiency

Many studies have looked at the relationship between corruption and resource allocation. For example, Baron and Narciso (2015) showed that presence of organized crime positively affects the probability of obtaining funding and the amount of public funds in Italy. Boudreaux et al. (2018) further showed that increased corruption shifts resources toward the construction industry and away from the education industry and professional, scientific, and technical service industries in the US. Giordano and Lopez-Garcia (2018) showed that firm-level bribes are positively associated with the inefficiency of labor and capital misallocation[2] dynamics within sectors in Central and Eastern European countries. The authors argue that corruption directly affects how well individual companies perform by either supporting or hindering their productive activities. Indirectly, corruption can impact how efficiently resources are distributed among companies in a particular industry. It does this by diverting resources away from the most productive companies and towards the least productive ones.

It is expected in the literature, that corruption distorts spending structure, shifting public investment towards more expensive and complex projects. For example, Giorno et al. (2024) demonstrated that presence of corruption in public procurement in Italy has a negative impact on market efficiency (measured as covariance between size and productivity), with variation in impact depending on territorial factors such as institutional quality, extra-large governance organizations, GDP and others. Brugues et al. (2024) demonstrates that politically-connected companies experience a higher likelihood of getting public procurement contracts but are less efficient at the same time (which is measured as the average gap in revenue productivity and

[2] In the literature the inefficiencies are frequently measured using covariance between size and productivity otherwise called "OP gap" (OECD 2019).

capital share of revenue). The authors conclude that political connections create welfare losses ranging from 2 to 6% of the procurement budget.

1.1.3. Corruption and prices

Many different studies attempt to answer the question whether corruption in public procurement leads to inflated contract prices, hence resulting in direct public budget losses across different countries. For example, a study conducted in India demonstrates that introduction of new measures to detect corruption result in reduction of costs and improved quality of goods and services (Banerjee et al., 2016). Another research conducted in Argentina shows that prices paid by hospitals for basic supplies such as ethyl alcohol and hydrogen peroxide, decreased by 15 percent during the first 9 months of the corruption crackdown in the country (Di Tella and Schargrodsky, 2003). Palguta and Pertold (2017) calculated losses to the public budget in Czechia by analysing a policy reform that gave public agencies the autonomy to pre-select potential contractors below newly defined discretionary thresholds. Manipulation is revealed through the bundling of procurements just below the thresholds in the construction sector. Among manipulated contracts, the authors document a threefold increase in the probability that contracts are awarded to anonymous firms that can hide their owners. Comparing the prices of public contracts awarded to firms with transparent ownership with similar contracts awarded to firms with hidden ownership, the authors find that the price of construction contracts awarded to the latter group is 8.9 percentage points higher. Coviello and Mariniello (2014) showed that increased publicity requirement in public procurement induces more entry and higher winning rebates, which as a result, reduce the costs of procurement and rationalize public spending (reduction of 0.7% of Italian GDP). However, the fact that corrupt behavior can lead to higher prices paid does not necessarily mean that the impact is significant or that reducing the impact is economically worthwhile. Moreover, sometimes the observed relationship could be due to other factors. For example, in Fazio (2022) it is shown that increased discretion in awarding public procurement contracts results in higher prices, yet two-fifths of this price difference is attributed to the procurement of higher-quality products.

There are a few ways how one can measure the impact of corruption risks on prices in public procurement. The first method involves analysing the **unit price** at the time the contract is awarded. This method is well-documented in the literature (e.g., Bandiera, Prat, and Valletti 2009; Fazekas et al. 2021; Soudek and Skuhrovec 2016; Yakovelv et al. 2016). The unit price is calculated by dividing the total value of contracted items by the standardized quantity of these items, which allows for easier comparison within a single market. However, this method has limitations: it often neglects quality assessment by assuming uniform quality across the market, overlooks contract changes made after the award, and can exaggerate price differences due to unique contract characteristics like delivery schedules.

The second pricing method is calculating **cost overruns during contract delivery**. Significant cost overruns may indicate budget deviations and inefficiencies in the procurement process, especially common in construction projects (see Creedy et al. 2010; Flyvbjerg et al. 2013). Cost overruns can signal several manipulations, such as deliberate cost underestimation during bidding to manipulate the procurement process, contract manipulation by awarding contracts at unfair rates, or quality compromises that necessitate later corrections and improvements. Yet,

cost overruns can often be due to other procurement inefficiencies besides corruption risks, or tender's complexity. Furthermore, such data is rarely available in public procurement datasets.

The third method involves calculating the **relative price** at the time of contract award. Relative price is the final contract price divided by the initial estimated value, reflecting discounts offered by firms relative to a reference price (Coviello & Mariniello, 2014). This method addresses the standardization issue inherent in the unit price approach and is more suitable for a broader range of products, including unique construction projects. However, it is important to acknowledge the limitation of such an approach, given that initial price might change as a result from intentional or unintentional factors, since initial prices are subject to a variety of factors (Fazekas et al. 2023).

1.1.4. Corruption and indirect costs

Besides having direct impacts on prices, quality and allocation, corruption has plenty of indirect general effects over a country's development. In Clausen et al. (2011), the authors analysed the results of the 2008 and 2009 Gallup World Polls in 150 countries to assess whether individuals' perceived level of corruption is correlated with their **level of trust in public institutions** in the country. The authors found that higher levels of perceived corruption in the country are negatively correlated with trust in public institutions, while low levels of trust in public institutions reduce individuals' participation in the political life of the state. The authors make a broader argument that high perceptions of corruption have an overall negative impact on a country's development. This argument is very much in line with findings from Bentzen (2012). The author used an indirect measure of corruption in the Quality of Governance (QoG) database[3] to identify the relationship between corruption proxies (e.g. culture) and the level of economic productivity in the country. The paper confirms that corruption proxies are negatively correlated with the **economic prosperity of the state**.

To further investigate the mechanisms through which corruption impacts economic development of the country, one can look at its impact on key infrastructure of the state, such as transportation, education or healthcare. As demonstrated by Dridi (2014) increased corruption reduces significantly **access to schooling** (with one unit increase in corruption resulting in decrease of enrolment rates by almost 10 percentage points). The author came to this conclusion using data from the International Country Risk Guide database, UNESCO statistics and the World Bank's Development Indicators. The literature explains this relationship through various mechanisms. Some authors argue that within the institutional design prone to corruption, people tend to not invest in human capital and rather focus on accumulating political capital to engage in rent-seeking activities (Ehrlich and Lui 1999). Others explain this mechanism through the positive effect corruption has on **inequality and poverty**, which further results in lower education level (Jong-Sung and Khagram 2005, Chetwynd et al. 2003). Corruption is also found to impact the **quality of healthcare.** For example, Hanf et al. (2011) using Transparency International corruption perception index, as well as child mortality rate discovered that roughly more than 140000 annual children's deaths could be indirectly attributed to corruption. This is in line with cross-national analysis by Achim et al. (2020), which discovered that corruption (measured

[3] QoG institute data. URL: https://www.gu.se/en/quality-government/qog-data. Accessed on 24/06/2024

through Corruption Perceptions Index) significantly affects physical health (expressed as life expectancy and Mortality rate) and mental health (expressed by happiness). Furthermore, Gupta et al. (2000) showed that increased corruption (measured through corruption perception index) results in increased child and infant mortality rates, higher percent of low-birthweight babies, and higher primary school dropout rates. The authors attribute it to the mechanism through which corruption shifts the composition of public spending away from social sectors (i.e. higher corruption is associated with rising military spending and lower operations and maintenance spendings).

Corruption also impacts the investment inflow of the country. In Wei (2000) it is reported that an increase in the corruption (measured through perception index in various surveys) level has a negative effect on inward **foreign direct investments (FDI)** from twelve source countries to 45 host countries. This result was further confirmed by Habib and Zurawicki (2002) on IMF data. Wang et al. (2020) also demonstrated that corruption weakens the environmental standards in China, which then leads to the inflow of low-quality FDI. This leads to the spillover effect of FDI and indirectly causes further environmental pollution.

1.1.5. Costs of corruption involving conflict of interest

There are various ways in which conflict of interest and political favouritism can result in outcomes costly for voters, the public budget or inefficient distribution of resources by private entities influenced by political favouritism.

Political favouritism can shift the allocation of resources from being needs-based to serving the personal interests of politicians and bureaucrats. This tends to result in **suboptimal policy provision**. For example, in Diaz-Cayeros et al. (2016) it is discovered that poverty relief programs in Mexico are somewhat inefficient since instead of being determined by objective indicators, they are driven by discretionary particularistic transfers which are used as vote-buying mechanisms for the party in power. Another study by Zhang et al. (2022) came to similar conclusions. The authors discovered that Chinese firms participating in poverty alleviation programs often do so for reciprocal favour exchanges which they facilitate through political connections, but they fail to manage these programs efficiently. Furthermore, Titl et al. (2021) found out that efficiency of public procurement provision (measured as the ability of the government to transform public procurement spending into the actual provision of public goods in the policy areas of education, healthcare, and infrastructure) in Czechia is lower when a larger share of public procurement contracts is awarded to firms donating to the party in power.

Political connections can lead to **variation in efficiency at the level of private companies** too. The findings are somewhat contradictory. For example, Chen et al. (2018) demonstrated that Chinese cities impacted by political regional favouritism (measured as birthplace of party secretary or province governor) tend to have significantly less efficient corporate investment. Since firms located in the favoured cities or regions have better access to debt financing and receive more government subsidies they tend to overinvest and make their investment choices less efficient. On the other hand, some other studies demonstrate that politically connected firms have a possibility to bypass the competition and get access to extra benefits. For instance, in Lee and Wang (2017) it is shown that Chinese companies hiring politicians as directors, particularly

central-government-affiliated directors, helps these privately controlled firms to reduce stock price crash risk. Bencheikh and Taktak (2017) demonstrated that the presence of political connections for companies in Tunisia helps them to quicker access loans. Yet while politically connected companies might indeed experience higher market share, lower taxes, and more credit access than other companies (Faccio and Parsley 2009), this might still signal the bypass of competition and gaining access to such benefits not based on actual merits but due to political connections exclusively. For example, Nikolova et al. (2022) show that in Bulgaria politically connected firms are more profitable than unconnected firms, but at the same time less productive (measured as average value added per worker). The lower productivity is not due to lower capital, and moreover - controlling for market, size, and age of the firm - politically connected firms as a group had total factor productivity (TFP) that was 5 percent lower than that of firms of the same size and age in the same sector.

1.2. Data and Methodology

There are several ways to measure corruption risk in public procurement data, including focusing on different stages of the procurement process, such as tender design, evaluation, and delivery, and on different actors involved (e.g., suppliers and buyers) (FALCON D2.2). We expect the following corruption risks to be associated with potentially elevated public procurement prices:

- **Single Bidding:** When a contract is awarded through a single bidding process, it clearly indicates limited competition in public tenders. This scenario can signal potential corrupt practices in public procurement because corruption is more likely to arise and is easier to organize when only one company participates. This lack of competition often leads to inflated prices as there is no competitive pressure to keep costs low (Klasnja 2015, Charron et al. 2017, Fazekas, Tóth, et al., 2016).
- **Procedure Type:** The extensive misuse of non-open procedures can favour certain bidders. These procedures often exclude potential competitors, making it easier to award contracts to preferred companies. This favouritism can result in higher prices, as favoured companies may not feel pressured to offer competitive pricing. Identifying non-open procedures requires observing tender outcomes and analysing procedural rules, which can vary across countries and change over time (Auriol, Flochel, and Straub 2016, Fazekas, Tóth, et al. 2016).
- **Call for Tender Publications:** Not publishing the tender call in the Official Gazette restricts the number of potential bidders, favouring those with insider knowledge. This lack of transparency can lead to higher prices since the reduced competition allows for price inflation by the favoured bidders (Fazekas & Kocsis 2017).
- **Length of Advertisement Period:** A very short advertisement period from tender publication until the bid deadline can be a red flag for corruption. It restricts the time available for bidders to prepare their submissions, thereby favouring those who were notified in advance. This restricted competition can lead to inflated prices. Conversely, an excessively long advertising period may indicate legal challenges or extensive modifications to the tender terms, which could also suggest favouritism and potentially result in higher prices (Abdou et al. 2022, Fazekas & Kocsis 2017).
- **Length of Evaluation Period:** If the period from the bid deadline to the contract signature is unusually short, it may indicate that the buyer had already chosen a preferred bidder,

suggesting corruption. This can lead to inflated prices as the preferred bidder is not under competitive pressure. On the other hand, an excessively long evaluation period may suggest extensive contract modifications or informal negotiations with suppliers, potentially involving bribery, which can also result in higher contract prices (Fazekas & Kocsis 2017).

- **Buyer Spending Concentration:** When a significant concentration of contracts is consistently awarded to specific bidders by the same buyer, it indicates potential corruption. This reduces the participation of other bidders, leading to a lack of competition. Without competitive pressure, favoured bidders can inflate their prices, resulting in higher costs for the public procurement contracts (Abdou et al. 2022).
- **Tax haven:** If a supplier is registered in a tax haven country, this could point to several potential issues related to corruption. Tax havens are often characterized by their low tax rates, financial secrecy, and minimal regulatory oversight. Suppliers registered in such locations might use these benefits to engage in unethical practices, including but not limited to tax evasion, money laundering, and corrupt procurement activities.
- **Distinct market**: measures the number of distinct markets a supplier is present in, divided by the number of contracts the supplier holds. A high value indicates that the supplier operates in an unusually high number of markets compared to their number of tenders, which can be a red flag for potential corruption. The presence of a single supplier in multiple markets might distort fair competition, leading to long-term economic inefficiencies.
- **Unusual market entry**: refers to a situation where a supplier suddenly enters a market where it has not been active or present in the previous year. This unexpected move can be a red flag indicating potential corruption. Contracts awarded to unqualified suppliers can result in higher costs due to poor performance, delays, or the need for rework.
- **Local supplier**: this red flag indicates a situation where the buyer and the supplier both operate from the same postcode. While this might naturally occur in local procurement, it raises concerns when it happens in larger-scale procurements, suggesting potential corruption. Procurement officials might favour suppliers from the same locality due to personal relationships, shared interests, or mutual benefits. This can lead to biased decision-making and the unfair awarding of contracts, which might come with inflated prices, leading to a waste of public funds.
- **Presence of politically-exposed person from supplier's side:** political connections could affect distribution of public contracts through favouritism towards certain suppliers, which distorts the open competition. This can result in higher prices due to suboptimal contracts allocation (Brugues et al. 2024).

In the analysis, when we look at the relationship between tender level corruption risks and prices, we use the Corruption Risk Index (CRI). The CRI is calculated after each individual indicator has been validated[4]. The CRI is the unweighted average of the non-missing individual corruption indicators described above (except the flag on suppliers with a connection with a politically exposed person) that have a positive and significant partial autocorrelation with single bidding. Single bidding is also included in the CRI as a red flag, with equal weight in the calculation of this average, as it aligns with the theoretical logic of corruption. As the different individual indicators

[4] Further details regarding the validation of the individual indicators can be found in D2.2.

correspond to different aspects of corruption, the CRI proves to be a robust corruption measure that allows quantitative data analysis on corruption.

1.2.1. Modelling

The countries selected for analysis - Bulgaria and Croatia - are used for the estimation of corruption costs using methodology we apply in this report. The countries were selected as showcases because of the good availability of both public procurement (PP) and assets and interest declaration data, which allows us to show comparatively both the costs of corruption in PP data and the costs of the presence of politically exposed persons in contracts. The exact process of data collection, as well as descriptive statistics for these two datasets are available in D2.2 Section 1 and Section 4 data chapters. In this section we assess the effect of CRI on the relative prices of contracts.

As previously introduced, relative price is defined as the ratio of the final price of the tender to the estimated initial price of the tender. Values of relative price above 1 indicate that the tender cost more than the prior expectations would imply, whereas values below 1 indicate that the tender cost less than expected. Most tenders have relative price values close to 1, whereas values far from 1 are considered as outliers and are excluded from the models presented below. Given the clear divergence in the impact of CRI for contracts with relative prices greater or less than 1, the contrast between these effects is also presented in the analysis.

First, we model the relationship between relative price and CRI in a linear regression (OLS) model. We include a set of control variables- - tender value, buyer type, buyer location, purchase type, year of the tender, and market code of the contract. These factors are presumed not to be directly related to corruption but might explain some of the variation in relative prices. Hence, we want to make sure by including them as controls that these factors are not playing a more significant role in changes of relative prices than corruption risks themselves.

Second, we also model the relationship between relative prices and suppliers connected with politically exposed persons (PEPs). These estimations correspond to UC4, which is about conflict of interest in public procurement. We use the same Bulgarian dataset with such PEP connected suppliers as in D2.2.

As only a limited number of companies could be identified as suppliers with PEP connections, a suitable control group was identified with coarsened exact matching (CEM). CEM coarsens data into broad stratas, and exact matches are found within these stratas. For example, one of the covariates by which the matching could be done is bid price. Instead of finding exact match for each value, CEM method splits bid values into categories or bins (e.g. quantiles) and finds a match within those bins (Iacus et al. 2011). It allows to include multiple covariates for matching and finds exact matches within coarsened categories. This method achieves the best covariates balance after matching, yet has its limitations: because of the high precision a lot of values end up without a perfect match, hence the final sample after matching is quite limited albeit perfectly balanced. In current analysis the number of observations is high enough to afford this method. This allows for the comparison of contracts with suppliers with PEP connections to a more similar set of control contracts, which eventually allows us to estimate the relative price effect of a PEP connection more accurately.

We model the relationship between prices and PEP connections by interacting CRI with PEP connected companies. This enables us to see if the relationship between tendering risks (CRI) and prices are higher or lower due to the supplier having a PEP connection. As we show below (Modelling results section), the same tendering risks on a contract awarded to a PEP connected supplier indeed lead to significantly higher prices.

1.3. Modelling results

The relationship between relative price and CRI is shown in Table 1 and illustrated in Figure 1. A statistically significant positive correlation is observed between relative price and CRI for the entire data set, with the relationship being stronger for contracts with a relative price below 1 for both countries. A weaker, but still statistically significant positive correlation can be observed for Croatia between the two variables for contracts with a relative price above 1, while a statistically significant negative correlation is seen for Bulgaria. The impact of the CRI is observed to be greater in Croatia than in Bulgaria, for all groups. In Bulgaria if the CRI changes from 0 to 1, it is associated with a 0.094 increase in relative prices on the selected sample including contracts with relative prices between 0.5-1.3. This means that a contract with no red flags indicating corruption would have a 9.4 percentage point higher associated total contract value to estimated contract value if all individual red flags indicated corruption risk. For Croatia this effect is even greater, a CRI change from 0 to 1 would indicate a 24.6 percentage point higher relative price ratio.

Table 1: Relative price regression with CRI and selected control variables for Bulgaria and Croatia, for different relative price ranges

Regression Results Including Only CRI						
Dependent variable						
Relative price						
	Bulgaria			Croatia		
	Relative price is between 0.5 - 1.3	Relative price is between 0.5 - 1	Relative price is between 1 - 1.3	Relative price is between 0.5 - 1.3	Relative price is between 0.5 - 1	Relative price is between 1 - 1.3
CRI	0.094 ***	0.153 ***	-0.027 **	0.246 ***	0.169 ***	0.103 ***
	(0.003)	(0.005)	(0.011)	(0.003)	(0.003)	(0.002)
Clustered standard errors	N	N	N	N	N	N
Used control variables:	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID
Number of Observations	44911	21378	2077	189763	126454	52314
R Squared	0.111	0.185	0.158	0.197	0.106	0.147

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

5

[5] Source: authors' calculations

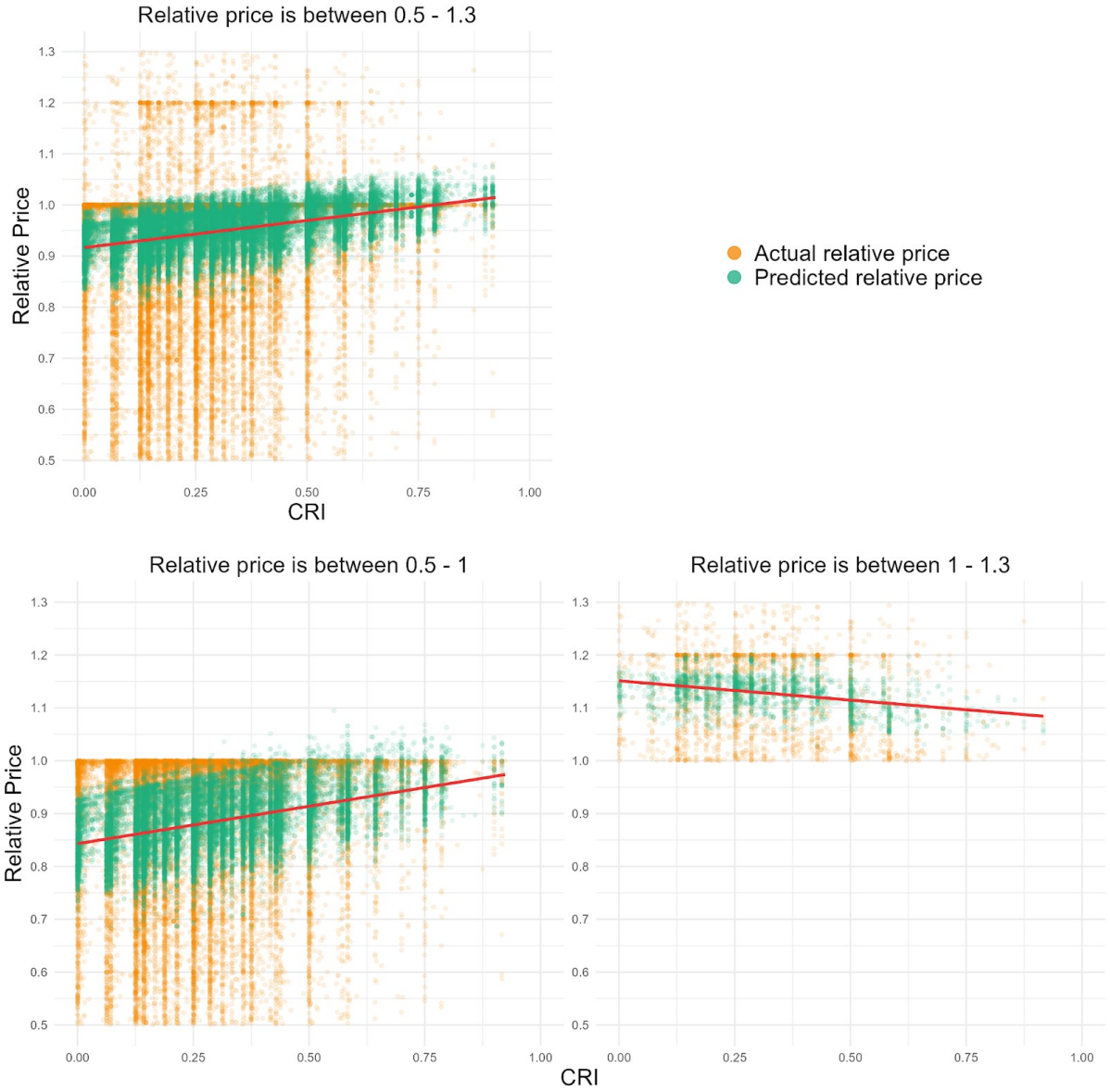
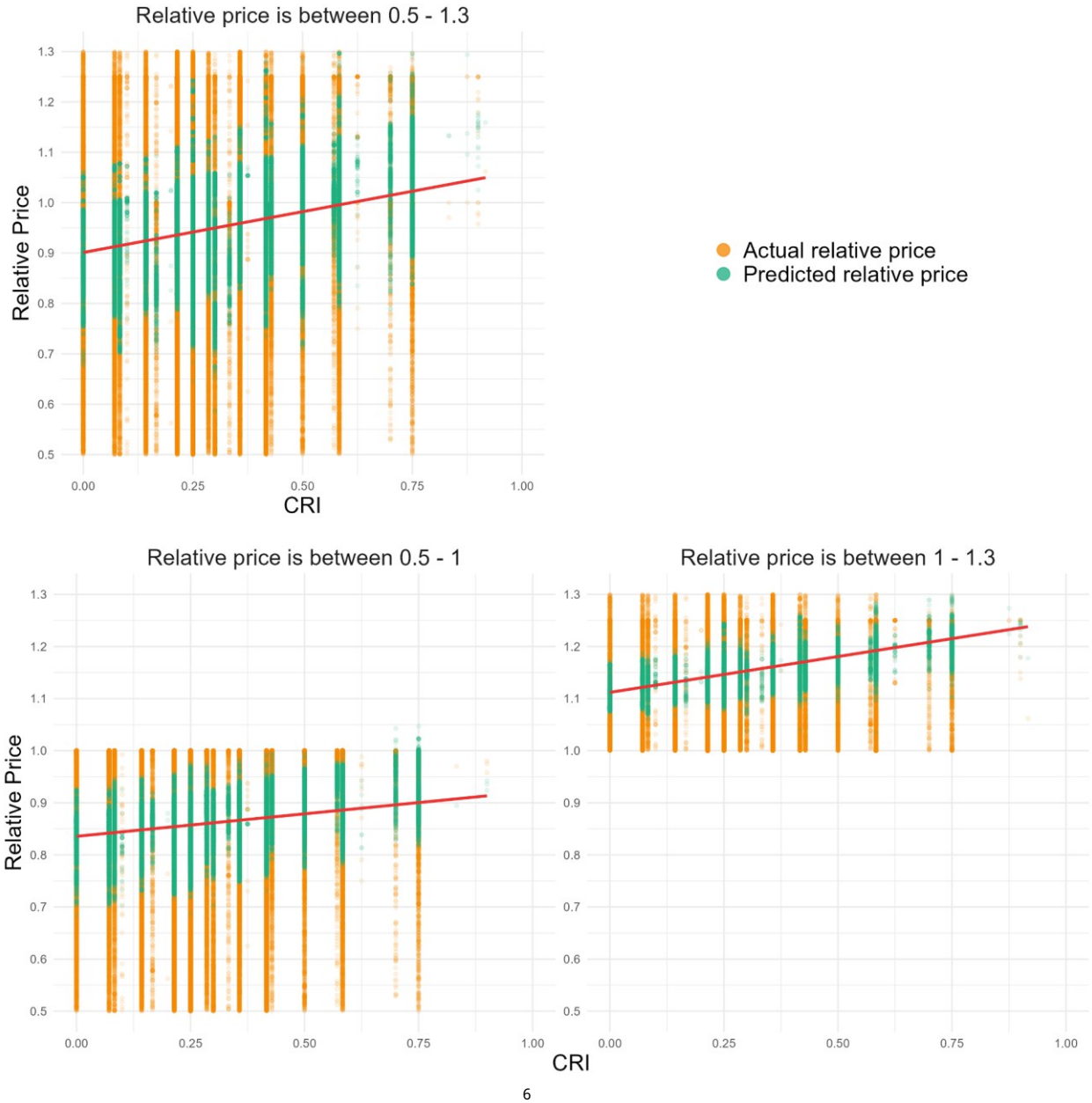


Figure 1: Relationship between CRI and relative price for Bulgaria on the selected interval (top row) and separately for lower and higher relative price than 1 (bottom row)



[6]

Figure 2: Relationship between CRI and relative price for Croatia on the selected interval (top row) and separately for lower and higher relative price than 1 (bottom row)

A positive and significant relationship between CRI and relative price is also observed between the different supply types, as shown in Table 2. For both countries, supplies is the most common supply type, followed by services and then works. The relationship between the two variables is 1.74 times larger for services than for supplies for both countries. However, with regard to works, a weaker yet still statistically significant positive relationship is observed between CRI and relative price in Bulgaria, while an even stronger relationship is present for Croatian works.

[6] Source: authors' calculations

Table 2: Relationship between CRI and relative price for different supply types for contracts with relative price between 0.5 and 1.3.

Regression Results Including Only CRI						
	Dependent variable					
	Relative price					
	Bulgaria			Croatia		
	Supplies	Services	Works	Supplies	Services	Works
CRI	0.070 ***	0.122 ***	0.092 ***	0.170 ***	0.296 ***	0.348 ***
	(0.004)	(0.005)	(0.007)	(0.004)	(0.005)	(0.006)
Clustered standard errors	N	N	N	N	N	N
Used control variables:	Contract value Buyer type Buyer NUTS Tender year Market ID	Contract value Buyer type Buyer NUTS Tender year Market ID	Contract value Buyer type Buyer NUTS Tender year Market ID	Contract value Buyer type Buyer NUTS Tender year Market ID	Contract value Buyer type Buyer NUTS Tender year Market ID	Contract value Buyer type Buyer NUTS Tender year Market ID
Number of Observations	19423	16470	9018	106414	47746	35022
R Squared	0.078	0.172	0.093	0.152	0.256	0.254

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

[7]

The effect of corruption involving conflict of interest in Bulgaria is presented in Table 3 and Figure 3. Notably, suppliers with PEP connections appear to have a significant negative correlation with relative price, whereas CRI continues to exhibit a positive correlation with it, regardless of whether a contract was awarded to a supplier with a PEP connection. However, when the two variables are considered together in interaction, the relationship shows that for contracts with PEP connections, the effect of CRI is nearly doubled, resulting in a much steeper slope for contracts with PEP connections in Figure 3. This also indicates that contracts awarded to suppliers with PEP connections have a higher average relative price for contracts with high CRI values. When PEP Supplier is present, the effect of CRI on the relative price is increased by 0.075 units compared to when PEP Supplier is absent.

[7] Source: authors' calculations

Table 3: Relationship between Supplier with PEP connection, CRI and relative price

	Dependent variable:
	Relative price
	Bulgaria
Supplier with PEP connection	-0.034 ***
	(0.011)
CRI	0.076 ***
	(0.020)
Supplier with PEP connection * CRI	0.075 ***
	(0.028)
Clustered standard errors	N
Used control variables:	Contract value Buyer type Buyer NUTS Tender supply type Tender year Market ID
Number of Observations	1784

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

[8]

[8] Source: authors' calculations

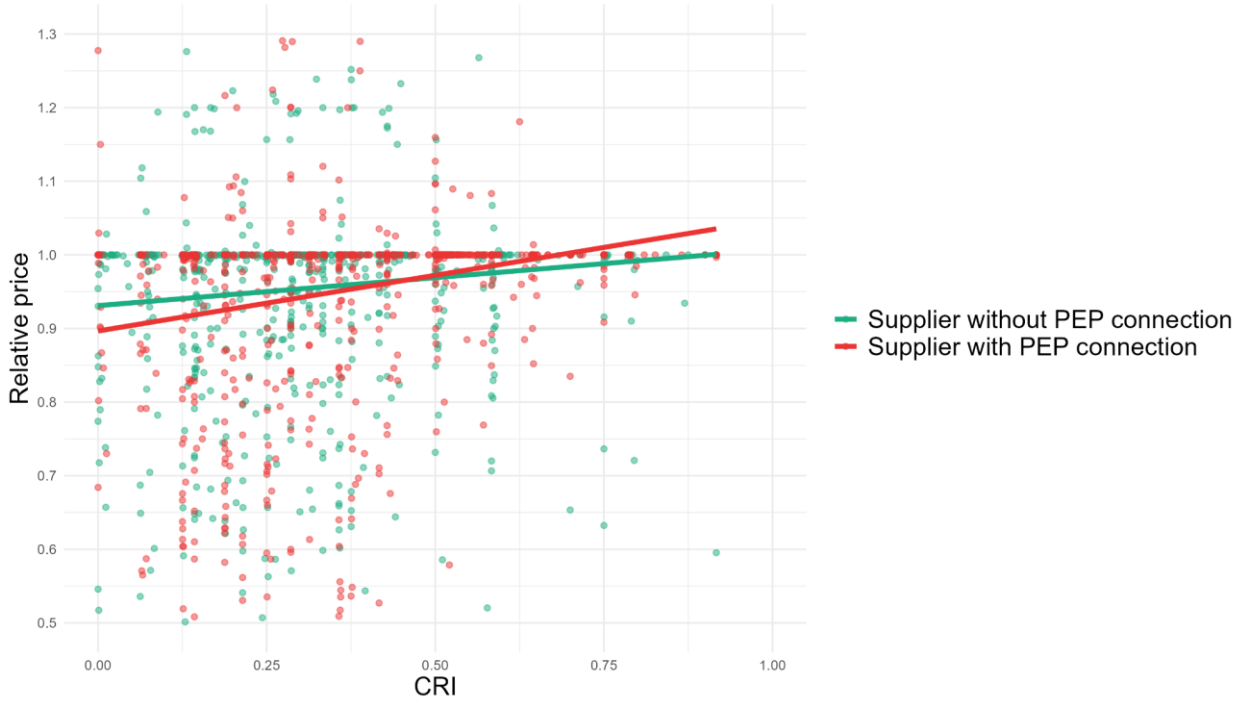


Figure 3: Relationship between Supplier with PEP connection, CRI and relative price

[9]

1.3.1. Modelling savings

This section introduces the calculation and results of the cost of corruption. The cost of corruption is defined as the economic loss resulting from the awarding of tenders in a corrupt manner. In order to calculate the cost of corruption, two values are required: the actual bid value of each tender and a loss ratio calculated from a corruption-free estimation and the actual estimation of relative price for each tender. To obtain these two estimations, two variations of the relative price are predicted from the model described above. Firstly, the relative price is predicted for each contract, with their CRI values set to 0. This prediction is intended to identify the relative price of the tender in the absence of any forms of corruption[10]. Secondly, the relative price is predicted for each contract based on the actual contract values[11]. The loss ratio is then calculated from these two estimations. Finally, the cost of corruption is obtained by multiplying the actual bid values with the loss ratio, thereby providing an estimation of the cost of corruption.

Figure 4 illustrates the cost of corruption (or estimated extra spending due to corruption risks) in the Croatian contracts awarded between 2008 and 2022, for different risk levels (low, medium

[9] Source: authors' calculations

[10] As CRI is only an approximation of corruption risk, this technique is sensitive to the quality of this approximation. If we accept CRI as a reliable corruption indicator, then this technique provides a reliable corruption-free relative price estimation.

[11] This is done in order to factor for the difference between the variation of the real relative price values and the variation between the predicted values, thereby producing a more robust estimation.

and high)[12]. The cost of corruption is low for the low-risk contracts in all years, while the share of the estimated extra spending due to corruption risks notably increases from low to medium, and from medium to high-risk contracts. It is also noteworthy that the aggregated yearly value of contracts is higher for low-risk contracts (12,027 million PPP USD on average) than for medium risk (5,864 million PPP USD on average), and high risk contracts (603 million PPP USD on average). The total estimated cost of corruption is 2,239 million PPP USD, 11,844 million PPP USD, and 4,099 million PPP USD, respectively[13].

[12] Low-risk contracts are defined as those with CRI values equal to or less than 0.3, medium-risk contracts are defined as those with CRI values greater than 0.3 and less than 0.7, and high-risk contracts are defined as those with CRI values equal to or greater than 0.7.

[13] A total of 65% of the total spending is attributed to low-risk contracts, 31.7% to medium-risk contracts, and 3.3% to high-risk contracts.

Figure 4: Estimated extra spending due to corruption risks for Croatian contracts, categorized by risk level and year

These results yield two major conclusions. First, the additional spending is most pronounced among high-risk contracts, suggesting that the cost of corruption could be reduced most effectively by focusing on these extreme cases. Our estimations suggest that eliminating all risks from these contracts could lead to a yearly 250-300 million PPP USD savings. Second, as a significant chunk of spending goes through medium-risk contracts, most of the potential savings can be achieved by lowering risks in this contract group. This indicates that corruption prevention should focus on eliminating as broad a spectrum of corruption techniques as possible.[14]

[14] Source: authors' calculations

2. Costs and impacts of sanctions

Sanctions play an increasingly important role in the European Union's common and foreign security policy. Sanctions are deployed to prevent conflict, protect human rights or promote democratic values and the rule of law (European Council, 2024). Currently, the EU enforces over 50 sanction programs affecting nearly 40 countries (Immenkamp, 2024). Understanding the effectiveness of these sanctions in compelling the sanctioned states to reassess and amend the policies that led to the imposition of sanctions is a pertinent policy concern.

The effectiveness of sanctions is a contested topic in the academic scholarship. While some scholars hold that sanctions achieve their policy objectives (Hufbauer et al., 2007; Marinov, 2005; Shagabutdinova and Berejikian, 2007), others argue that sanctions do not work (Doxey, 1996; Oechslin, 2014; Pape, 1997; Park, 2014). Furthermore, although scholars agree that sanctions should exert economic pressure to compel the target country to change its policies (Hufbauer et al., 2009), there is no consensus on whether the economic costs imposed are as large as intended (Abely, 2023; Allison et al., 2023; Kupatadze and Marat, 2023) and whether the cost for the senders and third-party states are as minimal as anticipated (Özdamar and Shahin, 2021). Although economic sanctions are aimed at the elites of targeted countries, they often also negatively impact the living standards of ordinary citizens (Ghomi, 2022; Rodríguez, 2024; Salehi-Isfahani, 2023;) and worsen situation with human rights and political and civil liberties (Adam and Tsarsitalidou, 2019; Ewing-Chow, 2006; Howlett, 2004; Peksen, 2009; Steinbach et al., 2023; Wood, 2008). Furthermore, there are unintended consequences of sanctions, such as child mortality (Daponte and Garfield, 2000) or the use by sanctioned states of more carbon-intensive energy resources (Hatipoglu et al., 2023).

Against this background, the aim of this section is to provide an overview of the current knowledge base regarding the effectiveness of sanctions in terms of economic costs for the targeted states as well as the sender states. It'll also present and discuss the available evidence regarding the cost of sanctions for the targeted firms and individuals.

This section is inspired by Use case 2 which focuses on the tracing of assets belonging to kleptocrats/oligarchs in cases of corruption, money laundering and sanction circumvention. These use cases highlight one of the major challenges in imposing successful sanctions: circumvention tactics that use complex schemes to exploit intermediaries, allowing assets and products to be covertly moved to the sanctioned entities. Such schemes undermine the effectiveness of sanctions by reducing the economic costs imposed on the targets.

While use case 2 serves as a source of inspiration for this section it should be noted that the focus of this section has been broadened somewhat compared to the strict description found in the use cases. Consequently, this section aims to provide an overview regarding costs from both targeted sanctions, which often are directed to specific individuals such as oligarchs or kleptocrats, and the economic costs imposed by sectoral or "conventional" sanctions, that target whole countries or industries within a sanctioned country. We have based this decision on the understanding that the accumulated economic costs imposed on targeted countries, such as Russia or Iran, are crucial from a policy perspective, given that most policies sanctions aim to influence are formed at the state level.

This section will proceed as follows. We begin by providing an overview of the nature and objectives of sanctions, their varied forms and purposes, and the evolving strategies employed, particularly focusing on the shift towards targeted sanctions aimed at political and economic elites. This is followed by a discussion on approaches to evaluate the effectiveness of sanctions, providing an overview of prior attempts to measure their impact and concluding with a description of the evaluation approach employed in this report. Next, is the method section that describes the methods and the sources utilized in the empirical section. Thereafter is the empirical section, which comprises two types of data. The first type includes summaries of findings from previous research on the economic costs of sanctions for target countries. The second type consists of case studies that illustrate the specific effects of sanctions on targeted individuals, such as oligarchs. The last subsection concludes with a summary of our findings and policy recommendations for the future.

2.1. Sanctions: background

Sanctions are foreign policy tools aimed at accomplishing foreign policy objectives (Doxey, 1996; Hufbauer et al., 2007: 5). Most often, sanctions are measures of coercion through which the sanctioning actors or the "sender" – typically a country or an international organization – try to induce the sanctioned actors or the "target" – typically other countries or non-state actors (specific groups within the state and even specific individuals) – to alter the course of actions that the sender deems unacceptable (Hufbauer et al., 2007; Drezner, 2011; Giumelli, 2011). However, sanctions may have other purposes, such as punishment, limitation of conflict, deterrence, countering terrorism, preventing or undoing nuclear proliferation, signaling sender's message to targeted or third states, and others (Doxey, 1996; Giumelli, 2011, Lopez, 2018).

The ultimate goal of sanctions is always political, and economic and other measures (for example, diplomatic sanctions) are means to achieve specific foreign policy objectives. For example, the objectives of the EU and USA imposed sanctions against Haiti in 2001-2005 were to remove Jean-Bertrand Aristide from power and improve human rights, and economic sanctions were used by the sender countries as means to achieve these goals (Hufbauer et al., 2012: 1).

Economic sanctions involve the imposition of costs on its target, usually a country, by banning target exports, restricting its imports and impeding the flow of finance, including commercial finance, credits by international organizations such as the World Bank or International Monetary Fund, and bilateral aid (Hufbauer et al., 2007: 44-48; Drezner, 1999, 2003). Economic sanctions can be broadly divided into sectoral sanctions in the form of certain commodity or financial restrictions, to comprehensive economic sanctions, such as exceptionally broad and severe measures imposed on Iran in 2012. Although economic measures remain the prevailing forms of sanctions imposed on countries, there are also military, diplomatic, sporting, cultural and media and communication sanctions (Lopez, 2018).

Furthermore, since the end of the Cold War, there has been a proliferation of sanctions directed not at entire countries, but at political and economic elites closely associated with the targeted regimes. Targeted or "smart" sanction – those that are "designed to hurt elite supports of the targeted regime, while imposing minimal hardship on the mass public. By altering the material incentives of powerful supporters…, these supporters will eventually pressure the targeted

government into making consessions" (Drezner, 2011: 96). Targeted sanctions directed at the culpable political elites include financial sanctions (mostly in the form of asset freezes and blocking financial transactions with designated individuals and entities), travel restrictions and diplomatic sanctions (Tostensen and Bull, 2002; Shagabutdinova and Berejikian, 2007).

2.2. Approaches to evaluate the effectiveness of sectoral sanctions

The effectiveness of sanctions is commonly evaluated through one of two primary approaches. The first approach centers on the policy outcomes of sanctions, evaluating whether they effectively influence the behavior that led to their imposition. The second approach focuses on measuring the economic costs incurred by the target because of the sanctions.

The policy outcome approach is based on Hufbauer et al. (1990)'s seminal work that evaluates the effectiveness of sanctions in terms of the extent to which "the policy result sought by the sender country was in fact achieved" and "the contribution to success made by sanctions" as opposed to other factors such as the mere passage of time (Hufbauer et al., 2009: 49). Each dimension is evaluated on a four-point scale, with a multiplicative score of nine or above indicating successful sanctions.

For example, the 2001-2005 sanctions by the E.U. and USA against Haiti were scored as "3" on the first dimension and "3" for sanctions contribution. With an overall score of "9", this sanctions episode meets the threshold for success (Hufbauer et al., 2012: 1). In contrast, the EU, USA and the African Union sanctions against Guinea in 2005-2010, despite achieving the intended policy results of a transition to democracy (policy result = 4), had a sanctions contribution scores of "2" ("little or no contribution"), deeming this sanction episode unsuccessful (Hufbauer et al., 2012: 6). Having evaluated all sanctions imposed between 1914 and 2000, Hufbauer et al. (2009) estimated that 34% of sanction episodes were at least partially successful. Notably, the success rate was 55% during the first two years of the sanction imposition[15]. However, even this modest assessment of sanctions effectiveness has been challenged. Hufbauer et al. (1990) study has been critiqued on the grounds of its definition of success as at least partial compliance (Pape, 1997) and for not distinguishing between sanctions imposed on relatively friendly regimes and those imposed to cause regime change (Drezner, 1999: 307-309; Oechslin, 2014; Whang, 2010). Having adopted a stricter definition of sanction success (full compliance rather than partial compliance), Paper (1997) concluded that only about 5% of sanction episodes can be deemed as success.

The literature has pointed out that success of policy outcomes of economic sanctions depends on important contextual factors (Hufbauer et al., 2009; Peksen,2019). A review by Peksen (2019) summarizes that economic sanctions are more likely to achieve their policy objective if they are led by international institutions; directed at allies rather than rivals; target more democratic regimes; and are imposed with moderate policy goals rather than ambitious ones such as regime change. These findings present a challenge as many of the EU's current sanction regimes are targeting non-democratic and non-allied countries.

[15] The global sanctions data base (GSDB), which presently covers 1,101 sanction episodes between 1950 and 2022 (Syropoulos et al., 2024), has preserved the Hufbauer et al. (2009) a four-point scale categorization of terminated/lifted sanctions as "total success", "partial success", "settlement", or "failure".

The preceding discussion highlights the inherent challenges in accurately assessing whether or not sanctions have achieved their intended policy outcomes. As Estrada and Koutronas (2022) note "policy objectives are subject to multidimensionality since objectives evolve, so sanctions' contribution to the policy outcomes becomes complicated" and the assessment of the policy outcomes often entails subjective evaluation.

Consequently, an alternative approach to gauging the effectiveness of sanctions is to estimate the economic costs incurred by the target. The rationale behind this approach is that sanctions are designed to increase the costs for the target in continuing activities deemed unacceptable by the sender, with the expectation that such pressure will induce a change in behavior (Hufbauer et al. 2009). While high costs are not an end goal, they are seen as a mediating factor impacting the overall effectiveness of sanctions (Bapat et al., 2013; Hufbauer et al., 2009; Morgan and Schwebach, 1997; Peksen, 2019).[16] Furthermore, there is an advantage to focusing on the economic costs of sanctions rather than on the achievement of policy outcomes as the availability of data such as GDPpc, GDP growth, trade and capital flow, or inflation many decades and for most countries of the world allows for more precise evaluation of the effectiveness of sanctions.

It is important to emphasize that the economic costs of sanctions for the target is only one aspect among several that must be considered in evaluating the effectiveness of sanctions. For example, economic sanctions have been identified as contributing to the deterioration of human conditions in the target country's population and adversely affecting the state's respect for human rights, particularly political rights and civil liberties (Ewing-Chow, 2006; Howlett, 2004; Peksen, 2009; Steinbach et al., 2023; Wood 2008). Furthermore, the comprehensive analysis of the economic cost of sanctions should also consider externalities for the global economy (Felbermayr et al. 2023; Hatipoglu et al., 2023a; Hausmann et al., 2024; Li et al., 2024) or the global environment (Le and Hoang, 2022). The exclusion of these factors from this section should not be misconstrued as diminishing their significance. Nonetheless, to maintain a concentrated examination of the economic costs of sanctions on the target, this report refrains from delving into these aspects.

2.3. Data, methods and sources

Estimating the economic costs experienced by the target, as well as the sender, is far from straightforward. First, there is no standard measure of the economic costs of sanctions. Instead, economic costs have been quantified using different indicators such as government revenue loss, inflation or decline in trade, levels of gross domestic product (GDP) and GDP growth. This variability complicates broad baseline comparisons. Second, sanctions impact multiple levels, including sectors of the economy, individual firms, and specific people, complicating the aggregation of costs into total effects. Additionally, the ultimate costs of sanctions are influenced by various contextual factors, making it difficult to generalize across different cases.

Given these complexities, instead of providing an estimate of the costs of sanctions, as it is done, for example, in UC1 for the costs of corruption in public procurement, this section provides a broad picture of the current knowledge base on the effectiveness of sanctions in terms of economic costs. Our review focuses on econometric studies based on a large number of episodes of

[16] High economic costs, however, is not a guarantee of policy success of sanctions (Demena et al. 2021; Torbat, 2005).

sectoral sanctions, as well as case studies, conducted within and outside academia. The most important sources will be research papers and reports that evaluate the costs imposed by specific sanction regimes on Russia, Iran, and South Africa. Additionally, in order to understand the magnitude of the costs of sanctions for sanctioned individuals, we synthesize information from media articles, including those penned by journalists from a global network of investigative journalists The Organized Crime and Corruption Reporting Project (OCCRP), public authorities, like the US Department of Justice, and NGOs such as the Institute of Legislative Ideas.

2.4. Estimating the cost and impacts of economic sanctions for the target

2.4.1. The impact of sectoral sanctions on GDP and GDP growth

Utilizing GDP and GDP growth measures are among the most common approaches to estimating the costs that economic sanctions impose on the target. The rationale is straightforward: economic sanctions aim to decrease the target's export income as well as to disrupt domestic production. If sanctions are successful, the resulting decrease in exports and production should translate into lower GDP and negative GDP growth for the target country.

Two studies utilizing large samples of sanction episodes found that indeed sanctions have a negative effect on GDP and GDP growth (Neuenkirch and Neumeier, 2015; Gutmann et al., 2023). Having employed an event analysis on 158 countries over the period 1960–2016, Gutmann et al. (2023) revealed a significant negative effect of sanctions not only on the GDP per capita and GDP growth rate, but also on domestic consumption and investment, foreign direct investment and trade.

Similarly, having analyzed all episodes of sanctions between 1976 and 2012 in a standard econometrics framework, Neuenkirch and Neumeier (2015) found that the imposition of UN sanctions was associated with the decrease in the target state's annual real per capita GDP growth rate by more than 2 percentage points, and these adverse effects last for a period of ten years, leading to an aggregate decline in the target country's GDP per capita of 26%. In contrast, the imposition of US sanctions decreases the target state's GDP growth by 0.75–1 percentage point, leading to an aggregate decline in GDP of 13.4% over seven years.

However, such cumulative results of GDP decrease caused by sanctions vary across cases. For example, the effect of economic sanctions imposed on South Africa in the 1980s is considered in the literature as limited as South Africa's government developed extensive measures to circumvent the sanctions by trading through third countries (Hufbauer et al., 1990; Levy, 1999; Waldmeir, 1997). The estimated cost of economic sanctions to the South African economy was in the region of 0.5 percent of GDP annually (Hufbauer et al., 1990: 246), which is "neither trivial, nor very large" (Levy 1999: 417). Similarly, Yang et al. (2004) found no significant adverse effect of the US's economic sanctions against China, and Torbat (2000) estimated the cost of the USA trade and financial sanctions of the 1990s to Iran to be about 1% of Iran's GDP and about 4.7% decrease in GDP growth per year.

In contrast, the UN lead sanctions against Iraq during the period 1990-2003 have been described as "an ideal case" for economic sanctions to work given the vulnerability of Iraq's economy at this time (Smeets 1990). The UN Resolution 661 on August 6 1990 prohibited all imports and exports with Iraq. At the time, Iraq was a small economy that relied heavily on oil exports to Western countries. It has been estimated that oil exports accounted for about 95% of Iraq's total export (Al-Roubaie and Elal, 1995, 55), while the oil sector contributed to more than 65% of government revenues (Shehabaldin and Laughlin, 1999, 2). Moreover, the imposed trade sanctions were implemented quickly and uniformly by a large number of countries (Shehabaldin and Laughlin, 1999). The estimated impact of an embargo of 90% of Iraq's exports was 23% of GDP in one year, and 66% over four years (Al-Roubaie and Elal, 1995, 59).

The initial impact of economic sanctions on the Iranian economy in the 2010s was also considerable. Gharehgozli (2017) estimated it to be 17% of GDP, and Ghomi (2022) estimated it in the region of 19% of GDP four years after the imposition of sanctions. However, Dizaji and van Bergeijk (2013) suggest that this effect was only significant in the first two years and turned negative after six to seven years, as adjustment of economic structures mitigates the economic and political impact of the sanctions. The limited durability of the costs imposed by the sanctions on Iran can potentially be attributed to the fact that the most far-reaching sanctions, which include an oil embargo and financial restrictions, mainly have been supported by Western countries. Thus, Iran has partly been successful in countering the sanctions by redirecting its oil exports to other economies such as China (Donovan and Nikoladze 2024) and India (The Economist, 2024).

Russia constitutes another example of sanctions that led to an initial economic decline, which followed by a recovery. The GDPpc effect of the 2014 sanctions against Russia was estimated to be a decrease of 2.4 percentage points by 2017 (Gurvich and Prilepskiy, 2015). Similarly, Bali et al. (2014) found that the EU and USA sanctions of 2014 were a major cause of the economic recession that Russia experienced between late-2014 and mid-2015. The Russian economy declined by 1.2 percent in 2022 following the intensified Western sanctions caused by Russia's invasion of Ukraine (Trade Economics 2024). However, the initial effect of the sanctions has not been sustained, as the economic decline of the 2022 was followed by an increase in Russian GDP by 3.6 percent in 2023 (ibid.). In addition, IMF has projected the Russian economy to grow by 3.2 percent in 2024 (Islam and Mullane, 2024). Thus far the limited effects of the Western sanctions against Russia have been explained by a variety of factors, among which sanction circumvention (Allison et al., 2023; Besedeš et al., 2017; Kupatadze and Marat, 2023) the redirection of oil exports to China and India (Donovan and Nikoladze, 2024; The Economist, 2024) have featured most frequently.

2.4.2. The impact of sectoral sanctions on trade

There is greater consensus in the literature regarding the trade consequences of sanctions on targeted states. Most empirical studies report a negative impact of sanctions on bilateral trade flows (Afesorgbor, 2019; Cheptea and Gaigné, 2020; Dai et al. 2021; Flach et al. 2024; Joshi et al., 2024), especially in the case of extensive and comprehensive sanctions (Caruso, 2003; Hufbauer et al., 2007). As countries export what they most efficiently and plentifully produce and import what goods and services that require resources they lack – as per the Heckscher-Ohlin theorem

of international trade (Leamer, 1995) – the logic behind sectoral economic sanctions is to impose costs on the target by depriving them of exporting goods in which they have a comparative advantage, and which, thereby, are important for the target's economy. Changes in trade after the introduction of sanctions are therefore a suitable measure to gauge the economic cost of sanctions.

The literature, however, has not reached a consensus regarding what type of trade sanctions – import, export or both – are most effective in terms of economic costs for the target. For example, while Caruso (2023) highlights the superiority of import over export sanctions, Joshi et al. (2024) conclude that import sanctions, and export plus import sanctions, are more effective than export sanctions alone.

The sanctions against Iraq (1990-2003) during Saddam Hussein's regime constitute an example of sanctions that were highly efficient in terms of costs that were imposed on Iraq as a consequence of decreased trade. Prior to the sanctions, oil exports accounted for about 95% of Iraq's total exports (Al-Roubaie and Elal 1995, 55). At the same time, domestic consumption and investment were highly dependent on imports when the sanctions were introduced. 70 percent of food consumption, 100 percent of capital goods and 50 percent of overall consumption came from imports at the beginning of 1990 (Shehabaldin and Laughlin 1999, 5). Late in 1990, it was reported that the sanctions had effectively shut off 90% of Iraq's imports and 97% of its exports (Alnasrawi 2001).

Using a standard trade model and monthly data on trade in goods, Crozet and Hinz (2020) estimated the impact of the 2014 Western sanctions against Russia on exports of the Russian Federation and all major economies – sanctioning or not – and found that the overall costs to total US$96 billion, or about 0.7% of total predicted trade of the countries involved, from the beginning of the conflict until the end of 2015, with 56% being borne by the Russian Federation. Put differently, between March 2014 and the end of 2015 losses for the Russian Federation amounted to US$53 billion or 7.4% of predicted total exports. However, the sanctioning countries have also been impacted with an estimated loss of 0.3% of their total exports.

Similarly, Flach et al. (2024) found that between 2014 and 2019 trade sanctions on Russia decreased imports of manufacturing goods from the EU by 12%, while exports of mining products to a large range of sanctioning countries declined "substantially" (p. 282).

According to the European Commission, two years since the imposition of sanctions on Russia because of the war against Ukraine, 58% of exports from the EU's 27 member states to Russia and 61% of pre-war imports are now banned (Malingre, 2024). In raw numbers, the EU has banned over €43.9 billion in goods that would have been exported to Russia and €91.2 billion in goods that would have been imported from Russia (European Commission, 2024). Although Russia has managed to circumvent trade sanctions through trade with the third countries (Kupatadze and Marat, 2023), such trade is associated with increased transaction costs, which are estimated to be in the region of US$16 billion over two years or 1,5% of the total imports a year (Nekrasov, 2024). Given than before the full-scale invasion to Ukraine in 2022, Russia only accounted for about 5% of the EU's total trade in 2020, while the EU accounted for 37% of Russian trade,

Felbermayr et al. (2023) estimate that trade sanctions would lead to about 7% of drop in welfare, compared to .13% of the EU's drop.

2.4.3. Financial costs of economic sanctions

Empirical evidence indicates a decrease in financial flows between senders and targets (Besedeš et al., 2017), a reduction in foreign direct investment (Biglaiser and Lektzian, 2011; Lektzian and Biglaiser, 2013; Mirkina, 2018) and consumer prices and inflation (Hinz and Monastyrenko, 2022), and an increased likelihood of currency and banking crises (Peksen and Byunghwan, 2015; Hatipoglu and Peksen, 2018). Having said this, using a panel of 133 countries over 1970-2005 period, Shin et al. (2016) found economic sanctions damaged neither net FDI inflows to target countries, nor foreign portfolio investment.

The findings regarding the financial costs of different sanction episodes against Russia is mixed. Sectoral sanctions against Russia in 2007-2015 led to bank "illiquidity, limited capital market access and a rise in state funding coupled with bank take-overs by governments" (Pak and Kretzschmar 2016: 577), and "decoupling" of the Russia stock market from the global one (Castagneto-Gissey and Nivorozhkin 2016). Furthermore, Gurvich and Prilepskiy (2015) found negative direct and indirect effects of the 2014 sanctions on Russia's financial market, manifested in "limited foreign borrowing opportunities for banks and companies in the fuel and energy and military-industrial sectors that are publicly held" and "in the form of decreasing foreign direct investment, fewer borrowing opportunities for companies and banks not directly targeted by the sanctions and lower capital inflow into the government debt market." Bali et al. (2017) found that sanctions decreased Russia's consumption, investments, and government spending, while simultaneously increasing capital flights and precautionary savings. However, neither the higher volatility in stock indices in Russia (Ankudinov et al. 2017), not the sharp depreciation of Russian ruble in 2014 (Dreger et al. 2016) were directly linked to the imposed sanctions.

Since the imposition of sanctions on Russia due to its aggression against Ukraine in February 2022, almost 70% of Russia's financial sector has been put under sanctions (Malingre, 2024). In September 2023, The Russian Elites, Proxies, and Oligarchs (REPO) Task Force estimated that the amount of Russian sovereign assets that are immobilized and held in REPO jurisdictions (the EU, USA, UK, Canada, Japan, and Australia) was around $280 billion, the majority of which was held in the European Union (U.S. Department of the Treasury 2023). A more recent estimate puts the amount of frozen assets of the Central Bank of Russia to the region of $360 billion (Nekrasov, 2024).

2.4.4. Costs imposed on state budgets

Sectoral sanctions commonly translate into budget deficit for the targeted states. To begin with, since state income is closely linked to the size of economic production (GDP), state revenues often shrink as a side effect of decreased export, consumption and production following the implementation of sanctions. The link is even clearer for states whose incomes are highly dependent on the export of natural resources. In these cases, the targeted state may lose a significant share of its income as a direct consequence of reduced exports. Put differently, sanctions tend to be the most effective in terms of costs imposed for target countries when it is possible to block the export of

a single or a few natural resources that are vital for the targeted country. However, such effect may also be mitigated through sanction circumventions through exports to third countries not involved in the sanctions.

The sanctions against Iraq that was introduced in 1990 did not only have huge negative effects on export, import and GDP, it also led to a vast budget deficit for the Iraqi state. An overview by Al-Roubaie and Elali (1995: 62) revealed that the Iraqi state's debt more than doubled in a single year from 34.4 percent of GDP in 1989 to 76.6 of GDP in 1990 when the sanctions where introduced. A core reason for this was that Iraq failed to find alternative buyers for their oil export given that the entire UN was behind the sanctions.

It is less straightforward to estimate the effect that sanctions have had on the fiscal budget of Iran given that Iran has been targeted by different sanctions of varying magnitudes since the Iranian Revolution 1979. However, statistics show that the budget deficit of the Iranian state increase from minus 1.5 percent in 2019 to over 4 percent in 2019 after the Trump administration reinstalled the US sanctions in 2018. The Iranian budget deficit has remained at levels around 4-6 percent during the period 2019-2023 (Trading Economics, 2024).

The sanctions that were imposed on Russia after the countries invasion of Ukraine had a more moderate fiscal effect. Following the sanctions, Russia's budget revenues from the sale of oil and gas decreased by approximately 38 percent in 2023 (i.e. by USD 73.2 billion) (Blomberg 2024). As a result, Russia recorded a budget deficit of 1.9 percent of GDP in 2023 (Ibid.). A likely explanation for Russia's limited budget deficit compared to the Iraqi case is the substantial financial reserves that Russia has accumulated over the past twenty year. This accumulation was made possible by a consistently positive trade balance, averaging about 9% of GDP annually from 2000 to 2021 (Nekrasov, 2024).

2.4.5. Other economic costs and impacts of sanctions

Recent research has examined other economic effects of sanctions, particularly focusing on employment, the informal economy, and environmental impacts.

Kelishomi and Nisticò (2022) document that due to the 2012 international sanctions on Iran, the employment growth rate in the manufacturing sector declined by 16.4 percentage points over 2012–2014, and this effect was mostly driven by industries characterized by high imported inputs intensity.

The effect of sanctions on the informal economy appears to be strong. While Early and Peksen (2019) found consistent evidence that economic sanctions enlarge the size of shadow economies in target countries in a panel of 145 countries between 1971 and 2005, Farzanegan and Hayo (2019) found a similar effect for the Iranian economy in 2012-2013. Furthermore, Kelishomi and Nisticò (2024) found that following the 2012 sanctions against Iran, workers in industries with high exposure to trade sanctions were more likely to experience informal employment compared to workers in industries with lower trade exposure.

Hatipoglu et al. (2023) found that sanctions pivot targeted states to use more carbon-intensive resources (predominantly coal) both for their energy supply and, specifically, their electricity generation.

2.4.6. Estimating the cost and impacts of sanctions circumvention

Economic costs incurred by target countries are not complete without accounting for the costs of sanctions circumvention, which refers to various techniques to avoid or bypass restrictions, for instance by "using complex financial schemes, falsifying the nature or origin of the goods traded or relying on the jurisdictions of third countries. Listed persons and entities have also made efforts to conceal their assets" (European Commission, 2023: 1).

Accounting for the risk of sanctions circumvention is crucial as it undermines the effect of sanctions by lowering the economic costs on the targeted entity. Previous research reveals that the success rate of sanctions varies considerably across the sanctions cases (Peksen 2019: 635) because the sanctioned countries, companies and individuals always try to lower the imposed costs through circumvention techniques (Ahn and Ludema, 2020; Besedeš et al., 2017; Dizaji and van Bergeijk, 2013; Early, 2015; Kaempfer et al., 2004) such as the use of intermediates like shell companies and circumvention hubs (Abely, 2023; Allison et al., 2023; Besedeš et al., 2017; Kupatadze and Marat, 2023).

Besedeš et al (2017) estimated the cost of sanction evasion by comparing the behavior of German firms who traded with twenty sanctioned countries in the twelve months before restrictive measures were imposed and after over the period of 2005-2014. They found evidence indicative of sanction circumvention behavior. Specifically, German firms increased their activities by 6 to 12 percent in third countries after sanctions were imposed on countries where these firms were active before sanctions. Most of this increase fell on the firms that transacted with countries that constituted the five largest trading partners of the target country. Furthermore, this effect was driven by the firms that traded with a set of countries that were under the EU sanctions. In other words, sanctions imposed by the EU alone, and therefore only enforced by its member countries, seemed to be circumvented as financial flows from German firms to major trading partners of the EU sanctioned countries increase. No evidence of such diversion taking place in the case of sanctions imposed by the UN was found.

2.4.7. Summary of findings

To summarize, existing research suggests that sanctions do impose economic costs on the target, but their magnitude and the duration of the effect depend on multiple factors, such as the characteristics of sanctions, including the severity of sanctions and the composition of the coalition of the senders, and the degree of economic power disparity and dependence between targets and senders. Most empirical evidence is provided by case studies – certain sanctions episodes, which makes it challenging to generalize the findings beyond the studied context.

One of the more consistent findings of the literature on the economic costs of sanctions is that multilateral and more comprehensive sanctions have a higher negative effect than unilateral and selective sanctions (Besedeš et al., 2017; Drezner, 2000; Neuenkirch and Neumeier, 2015; Peksen

and Byunghwan, 2015). However, other characteristics of the senders, targets, and sanctions are not yet sufficiently understood, not least to do the data limitations (Özdamar and Shahin, 2021).

2.5. Evaluating the effectiveness of targeted sanctions

In recent years it has become more common with so-called targeted sanctions or smart sanctions which are designed to hurt elite supports of the targeted regime, while imposing minimal hardship on the mass public in the targeted country. Targeted sanctions against individuals and entities are focused on preventing the use of economic resources by sanctioned entities (Council Reg. (EU) No. 269/2014, art. 1). Most of the EU targeted sanctions are financial sanctions, aimed at prominent Russian businessmen, Russian banks and Russian state-owned institutions. Consequently, this subsection will foremost evaluate the cost that EU's current sanction regimes has imposed on Russian oligarchs, firms, banks and state-owned institutions.

In addition to the sanctions imposed on Russia after the annexation of Crimea in 2014, since February 2022 the EU has imposed a series of sanctions on Russia with regard to Russia's invasion of Ukraine and human rights violations, in particular, after the death of the oppositional leaders Alexander Navalny. Table 1 summarizes the most important targeted sanctions imposed by the European Union (see European Council, 2024). Sanctions against individuals include a ban on entry into the EU, asset freezing and blocking financial transactions with designated individuals. People on the sanction lists cannot enter or transit EU territory by land, sea or air. The asset freezes apply to all European bank accounts of entities covered by the sanction's lists. Any funds or other assets they have accumulated may not be made available to individuals associated with Putin's regime, either directly or indirectly. From December 2023, there is also a ban on owning cryptocurrencies and owning shares in entities operating on the virtual currency market and other custody services. Sanctioned individuals cannot also keep control over such entities or hold managerial positions in them.

Currently over 1,700 people and 400 entities are under targeted sanctions by the European Union, including Vladimir Putin, Putin's closest associates and a large number of Russian oligarchs (European Commission, 2024). These sanctions have been successful in terms of imposing costs on their targets. In total, €24.9 billion of private assets had been frozen by the European Union in June 2024, many belonging to Russian oligarchs (Ibid.) In total, almost EUR 50 billion belonging to oligarchs have been frozen since the start of the war in Ukraine by EU states and allies such as UK, US and Canada (see Table 2). Table 3 further highlights a sample of oligarchs who have experienced significant losses, detailing the circumstances surrounding these losses. The losses concern both the freezing of assets and lost values for firms that became prevented from pursuing business within the jurisdiction of the European Union and allied countries. For instance, Roman Abramovic had up to $10 billion assets frozen by the UK, including $2.5 billion valued Chelsea FC and $3.4 billion of shares in the steel manufacturing and mining company Evraz.

While, it is clear that the targeted sanctions have imposed short term costs on oligarchs and other individuals with links to Russia, the long-term effect are less clear. As of June 2024, all oligarchs in Table 3 were still in Forbes World's Billionaires List (Forbes, 2024). Moreover, after an initial financial loss in 2022, all individuals experienced an increase in wealth in 2023 and 2024, despite the

sanctions. A few sanctioned Oligarchs such as Leonid Mikhelson, Vladimir Lisin and Gennady Timchenko even had a higher net worth in 2024 compared to before the sanctions were imposed. This reveals a bleak record regarding the long-term effects of targeted sanctions.

it is also difficult to answer to what degree that targeted sanctions have translated into increased costs and reduced war capacity for the Russian state. One limitation of targeted sanctions is the risk that they, despite this explicit intention, are unsuccessful in concentrating damage on the individuals or firms that are of the most strategic importance to the Russian state. For instance, Ahn and Ludema (2020) have conducted an evaluation of the effectiveness of the targeted economic sanctions against Russian companies imposed in 2014 and to what extent these sanctions were circumvented. Employing detailed firm and individual data, they estimate the impact on firm performance from targeted sanctions deployed by the USA and EU against Russia beginning in 2014. They found that targeted sanctions in general had a strong negative effect on the performance of the targeted firms. On average the authors found that the targeted firms lost roughly one quarter of their operating revenue, over one half of their asset value, and about one-third of their employees. However, the authors also found that the Russian government managed to "shield" certain firms that it deemed as strategically important from the negative effect of sanctions, hence diffusing the cost to the economy as a whole. In total the authors estimated that 45% of all costs that were intended for specific targeted firms by the sanctioning countries instead were absorbed by the Russian state. The authors concluded that the Russian government's ability to shield certain strategic firms put limitations on what can be achieved tactically by targeted sanctions.

In addition, Gaur et al. (2023) presented a mixed picture of the effectiveness of targeted economic sanctions against Russian firms (data from 2019-2021). Although there were some short-run negative economic costs to sanctioned firms, sanctions had no negative consequence for either the turnover or employment in Russian firms. Moreover, the performance of Russian firms improved over time, suggesting that firms developed successful strategies to deal with sanctions.

Previous research also finds ambiguous results regarding to what degree targeted sanctions achieve their policy outcome. As summarized by Peksen (2019: p. 639), "there is still no strong evidence that targeted sanctions are more successful than conventional sectoral (conventional) sanctions". For instance, Biersteker, Eckert, and Tourinho (2016) reviewed 23 cases of UN targeted sanctions and demonstrated that the primary goal only was attained in 22% of the cases. In comparison, an overview by Hufbauer et al. 2007 showed that conventional sanctions achieve their aim in 34 % of the cases.

Table 4: Restrictions included in the targeted sanctions against Russia and Russian oligarchs

Type of effects	Individuals and entities to which they apply
Exclusion from the EU	President of Russia Vladimir Putin, Minister of Foreign Affairs of Russia Sergei Lavrov, former President of Ukraine Viktor Yanukovych, Roman Abramovich, members of the Russian State Duma (lower house of parliament), members of the national Security Council, members of the Federation Council, ministers, governors, high-level officials and staff military, prominent entrepreneurs and oligarchs.
Restriction on road transport carriers	Russian and Belarusian road transport operators cannot enter the EU, even if they only transport goods in transit.
Export restrictions from the EU	European entities cannot sell certain products to Russia (due to export restrictions), and Russian entities cannot sell certain products to the EU (due to import restrictions). The list of banned products has been drawn up in such a way as to maximize the negative impact of sanctions on the Russian economy, while at the same time limiting undesirable effects on EU companies and citizens. Taking into account the population of Russia, products intended primarily for consumption as well as medical, pharmaceutical and agri-food products are excluded from export and import restrictions. From December 2023, the export ban was extended to include dual-use goods, technologically advanced products used in military systems, aviation goods and weapons as well as cutting-edge technologies (e.g. quantum computers, advanced semiconductors, electronic components and software), goods and technologies needed for oil refining, equipment and technologies used in the energy industry, goods and technologies used in the aviation and space industry (e.g. aircraft, aircraft engines, spare parts and equipment for airplanes and helicopters, jet fuel), maritime navigation equipment and radio communication technologies, drones and software for drones or encryption devices, luxury goods (e.g. cars, watches, jewelry). Exporters must include provisions on the ban on re-export to Russia in the contract. According to the European Commission, since February 2022, the EU has banned the export of goods worth EUR 43.9 billion to Russia. This means that the sanctions currently cover 49% of exports.
Exclusion from European economic circulation	Russian banks and financial institutions, military and defense companies, aerospace, shipbuilding and mechanical engineering companies, armed forces, political parties, telecommunications

	companies and media responsible for propaganda and disinformation.
Import restrictions to the EU	EU countries cannot import oil from Russia (this has resulted in a 90% drop in current EU oil imports from Russia) and petroleum products (with limited exceptions), coal and other solid fossil fuels, steel, iron and steel products, gold and diamonds, including jewelry, cement, asphalt, wood, paper, synthetic rubber, seafood and alcohol (e.g. caviar, vodka), cigarettes and cosmetics. The diamond ban applies to: diamonds originating in or exported from or transiting through Russia. From January 1, 2024, the direct ban covers non-industrial natural and synthetic diamonds and diamond jewelry. From March 1, 2024, a ban on indirect imports of Russian diamonds that are processed (i.e. cut or polished) in third countries is gradually introduced, including jewelry containing diamonds originating in Russia. According to the European Commission, as of February 2022, the EU has banned the import of goods worth EUR 91.2 billion from Russia to the EU. This means that the sanctions currently apply to 58% of imports.
Ban on providing services in Russia	EU countries are also prohibited from providing accounting, auditing and accounting services, tax, business and management consultancy and public relations services, IT and legal consultancy and architectural and engineering services, advertising services and market and public opinion research, as well as product testing and technical inspection services.
Ending the application of the most favored nation clause to Russia within the WTO and additionally increasing import duties and suspension of work related to Belarus' accession to the WTO.	Enterprises from Russia and Belarus
Restriction on access to EU airports and transit through EU airspace	Aircraft registered in Russia or elsewhere but leased or rented by a Russian citizen or entity cannot land at any EU airport or fly over EU countries. The ban also applies to private aircraft, such as business jets.

Closure of seaports	The EU closed its ports to the entire Russian merchant fleet of over 2,800 ships.
Restrictions on banking transactions	Exclusion of Russian and Belarusian banks from the SWIFT system. The exclusion of banks from the SWIFT system means that 10 Russian banks and 4 Belarusian banks cannot make or receive payments using this system. SWIFT is a messaging system that greatly facilitates the exchange of information between banks and other financial institutions. Over 11,000 entities around the world are connected using it.

Table 5: Frozen private assets of sanctioned Russian individuals and entities by countries

Country	Description of the event	The value of frozen assets	Comment
UK	In March 2022 the UK imposed a full asset freeze and travel ban on seven of Russia's wealthiest and most influential oligarchs: Roman Abramovich, Oleg Deripaska, Igor Sechin, Andrey Kostin, Alexei Miller, Nikolai Tokarev and Dmitri Lebedev (Prime Minister's Office, 2022).	Up to $19 billion	Between February 24, 2022 and March 10, 2022, the UK sanctioned more than 200 of Russia's most significant and high-value individuals, entities and subsidiaries (Prime Minister's Office, 2022).
UK	In April 2022 the UK imposed a full asset freeze on longstanding business associates of Roman Abramovich: Yevgeny Tenenbaum and David Davidovich (Kaplan, 2022)	Up to $13 billion (the largest asset freeze action in UK history)	Between February 24, 2022 and April 14, 2022, the UK sanctioned 106 oligarchs, family members and associates (Foreign Office, 2022).
UK	Island of Jersey freezes assets associated with Roman Abramovich	Up to $7 billion	Source: Kaplan, 2022
Belgium	Freezing of assets belonging to sanctioned Russian individuals and private entities. Belgium has the largest amount of frozen Russian	$61.5 billion	Source: Institute of Legislative Ideas, nd.

	private assets among the European countries.		
Switzerland	Freezing of assets belonging to sanctioned Russian individuals and private entities	$6.4 billion	Source: institute of Legislative Ideas, nd.
Luxembourg	Freezing of assets belonging to sanctioned Russian individuals and private entities	$5.5 billion	Source: institute of Legislative Ideas, nd.
Germany	Freezing of assets belonging to sanctioned Russian individuals and private entities	$4 billion	Source: institute of Legislative Ideas, nd
Poland	Freezing of assets belonging to sanctioned Russian individuals and private entities	$2.75 billion	Source: institute of Legislative Ideas, nd.
Italy	Freezing of assets belonging to sanctioned Russian individuals and private entities	$2.5 billion	Source: institute of Legislative Ideas, nd.
Ireland	Freezing of assets belonging to sanctioned Russian individuals and private entities	$1.78 billion	Source: institute of Legislative Ideas, nd.
Austria	Freezing of assets belonging to sanctioned Russian individuals and private entities	$1.7 billion	Source: institute of Legislative Ideas, nd.
Cyprus	Freezing of assets belonging to sanctioned Russian individuals and private entities	$1.6 billion	Source: institute of Legislative Ideas, nd.
France	Freezing of assets belonging to sanctioned Russian individuals and private entities	$1.2 billion	Source: institute of Legislative Ideas, nd.
Hungary	Freezing of assets belonging to sanctioned Russian individuals and private entities	$0.925 billion	Source: institute of Legislative Ideas, nd.
USA	Freezing of assets belonging to sanctioned Russian individuals and entities	$1 billion	Source: Institute of Legislative Ideas, nd.

Canada	Freezing of assets belonging to sanctioned Russian individuals and entities	Frozen: $0.08 billion Blocked: $289 million	Sources: Institute of Legislative Ideas, nd; Robertson (2023)

Table 6: The biggest losses of Russian oligarchs caused by sanctions

Oligarch data	Description	Value of frozen assets
Roman Abramovich	UK imposed full asset freeze included $2.5 billion valued Chelsea FC and $3.4 billion of shares in Evraz (OCCRP, nd)	Up to $10 billion
Oleg Deripaska	UK imposed full asset freeze included $1.5 billion of 45% of En+ International; 1 billion in Strabag GmbH, $0.65 billion commercial real estate Villa Walkirie on Sardinia; $0.4 billion three Villas on Sardinia among other assets (OCCRP, nd).	Up to $3 billion
Alexei Mordashov	Alexey Mordashov is the majority shareholder (77%) in steel company Severstal, one of the world's largest vertically integrated steel and mining companies in the world (Forbes, 2024). Prior to sanctions he also owned a third of Europe's biggest tour operator TUI and is its largest single shareholder and has "a financial interest" in Rossiya Bank – "the "personal bank" of senior Russian officials who have benefited from the annexation of Crimea" (Patrtidge, 2022). Hit by sanctions in 2022, Mordashov transferred ownership of TUI and mining outfit Nordgold, but retained his stake Severstal. Only in 2022 alone, according to Mordashov, he lost more than $400 million in 2022 due to Western sanctions (Forbes 2024).	$8 billion
Leonid Mikhelson, Vladimir Lisin and Gennady Timchenko	Mikhelson is the CEO and the largest shareholder of Novatek – the second largest natural gas company in Russia. Lisin is the owner of a controlling stake in Novolipetsk Steel (NLMK), the fourth steel producer in Russia. Timchenko' has stakes in in gas company Novatek (23%), petrochemical producer Sibur Holding (15%) and gas company Petromir (60%). in the coal mining company	$9 billion

	Kolmar, but also has significant shares in construction and real estate companies, gas transport company, railway transport company, aviation company Avia Group, beverage producer Aquanika, insurance companies and 9% in Rossiya Bank.	
Vladimir Potanin	Potanin is the largest shareholder (34%) of Norilsk Nickel, the world's largest producer of nickel and the eleventh largest producer of copper.	$8 billion

2.6. Estimating the costs and impacts of economic sanctions for the sender

Economic sanctions impose costs on all countries involved, be it the target or the sender (Felbermayr et al., 2023; Smeet, 2018). The key to successful sanctions is to maximize the economic cost to the target while minimizing the costs for the sender countries. Excessive costs for the sender are unsustainable, as they undermine the economic basis for the sanctions and risk diminishing political and public support for these policies.

The costs of sanctions for the senders are dependent on several factors such as geographical proximity, the size of the sanctioned economy, the extent of trade between the sender(s) and the target countries and the type of products that previously was traded prior to sanctions. For instance, the previous sanction regime against Iraq (1990-2002) only incurred negligible costs for the senders (Canes, 2000; Shehabaldin and Laughlin, 1999). At this time, Iraq was a small economy that mainly relied on oil exports to Western countries. While the sanctions imposed vast costs on the Iraqi economy, the Western sender economies could substitute oil from Iraq by increasing imports from other countries such as Saudi Arabia. Canes (2000) estimated that oil prices may have increased by 2-3 percent as a consequence of the sanctions. However, this increase is too small to significantly impact the developing countries that were leading the sanctions. Thus, the sanction against Iraq constitutes an 'ideal' case where the costs for the senders of the sanctions were minimal.

In contrast, the EU's ongoing sanctions targeting Russia, which started in 2014 and gradually have been intensified since, constitute a challenging case in terms of costs that are imposed on the senders. Before the first sanctions in 2014, Russia was closely tied to the European economy, ranking as the third-largest trading partner for the European Union, accounting for 8.4% of the Union's total trade in early 2014 (Moret et al., 2016). The initial sanctions in 2014 coincided with a decreased EU exports to Russia by 40 percent between 2013-2015 (from EUR 119 billion to EUR 74 billion) (Giumelli, 2017). In addition, the European Commission has estimated that the damage to Europe's economy from the initial sanctions at EUR 40 billion or -0.3% of the EU's GDP in 2014 and EUR 50 billion -0.4% of EU GDP in 2015 (Moret et al., 2016). There was also a 70% reduction in Russia's imports of agricultural goods from all the G7plus countries by 2019 (Flach et al., 2024: 282).

Additional costs have been added for the European Union's member states as a consequence of the new sanctions that were implemented after Russia's invasion of Ukraine in 2022. To begin with, the import restrictions have contributed to higher inflation rates in EU member states, not least in 2022 when the average inflation peaked over 10 percent in the Euro area (Tidey, 2022). Furthermore, due to sanctions, the primary policy objective of the European Central Bank – price stability – has been pushed backwards, and geopolitical considerations have been moved center-stage at the price of higher than normal inflation (Quaglia and Verdun, 2023).

Trade restrictions from sanctions also decreased access to raw materials such as coal, gas and fertilizer ingredients in agricultural products, contributing to high energy and food prices. Countries such as Estonia, Lithuania and Bulgaria, which depend on natural gas for their energy

supply, were especially affected suffering over 20 percent overall inflation in 2022 (Tidey, 2022) and over 100 percent inflation in gas prices (Eurostat, 2022).

In addition, Western companies have suffered losses after they have withdrawn from the Russian market and, in some cases, the Belarusian market as well (see Race and Hooker, 2022 for an overview). High-profile brands such as Apple, Chanel, Toyota, BMW, Disney, Netflix, Dell, Boeing, Mastercard, Visa, Apple Pay, and Samsung Pay have suspended their operations. Retailers like Ikea, H&M, Mango, Zara, LEGO, Adidas, and Nike have closed their stores. European banks, including Raiffeisen, Société Générale, and UniCredit, which operated in Russia, were also affected by the sanctions. Restaurants like McDonald's, KFC, and Pizza Hut have shut down their outlets, and Coca-Cola Co and PEPsiCo have halted the sale of fizzy drinks.

Recent research has also highlighted the impacts of financial sanctions targeting Russia on global markets Sio-Chong U et al. (2024) analysed high-frequency trading data at five-minute intervals for twelve indices that represent the global stock market, foreign exchange market, commodity market, and energy market in 2021-2023. They found that the imposition of restrictions on certain Russian banks' access to the Society for Worldwide Interbank Financial Telecommunications (SWIFT) resulted in "substantial and profound volatility spillovers" on all above listed markets, but this volatility shocks were mitigated after Russia's response to the restrictions.

Despite that a variety of costs have been imposed on the European countries since the start of the sanctions against Russia in 2014, a recent study by Hausman et al. (2024) suggests that the total cost for Russia has been substantially larger. However, while the costs of the sanctions against Russia may sound limited in comparison to the total GDP of the EU countries, it is important to acknowledge that the aggregated numbers obscure that some countries had a much higher dependency on Russia as a trading partner prior to the sanctions. As highlighted by Giumelli (2017), the initial sanctions have had a significant distributive impact which has imposed disproportionally high costs on certain countries. In 2013, the Baltic states were the most reliant on the Russian market, with export shares going to Russia ranging between 40% and 50%. They were followed by Slovakia, Finland and Poland for which trade with Russia constituted more than 20% of their total non-EU export in 2013. Understandably, these four were among the EU countries that were affected the most by the sanctions, all losing 7-13 percent of their total exports outside the EU between 2013 and 2015. The export drop was also unevenly distributed between sectors. The largest decrease was found in Machinery and Transport Equipment for EUR 25 billion, Food and Live Animals and Miscellaneous Manufactured Articles for EUR 5 billion each.

2.7. Conclusions and suggested ways forward

Economic sanctions are an important policy tool for the European Union and its allies. However, the evidence regarding the effectiveness of sanctions both in terms of achieving policy outcomes and in imposing significant costs on the target economy is mixed at best. Against this background, this section has reviewed the extant literature regarding the economic costs that sanctions inflict on the target as well as the sender. The review shows that changes in GDP, GDP per capita, GDP growth and exports are among the most commonly used measures to estimate the cost of sanctions.

In terms of costs for the target country, most examples of sectoral sanctions have at least led to an initial decline in GDP, GDP per capita and exports. However, the outcome differs greatly between cases and depends on a number of contextual factors. For instance, while the sanction regimes against Iraq (1990-2003) and Iran in the 2010s resulted in drops in GDP of 23 and 17 percent, the cost in terms of GDP has been more modest in the cases of Russia and South Africa. One key explanation for this difference is that Russia and South Africa have been more successful in finding strategies to circumvent the sanctions compared with Iraq and Iran. Both Russia and South Africa managed to find new trading partners and exploit the use of third countries and black markets as a strategy to circumvent the sanctions (Allison et al., 2023; Kupatadze and Marat, 2023; Levy, 1999; Waldmeir, 1997). This suggests that the detection and prevention of circumvention schemes are vital for the success of sanctions.

Targeted sanctions, which have the explicit aim of imposing costs on the elites rather than the general population in the targeted countries, have been more popular in recent years. Such sanctions have not least been implemented as a part of the most recent sanction packages from the European Union against Iran and Russia. Our overview reveals mixed evidence regarding the effects of targeted sanctions. To this date, there is no clear evidence supporting that targeted sanctions are more effective in achieving their policy objective, nor in imposing costs for the target country, in comparison to sectoral sanctions. This can be highlighted by a closer look at the case of Russia. While our overview shows that numerous oligarchs experienced initial financial losses when sanctioned in 2022, recent data indicate that many of the Oligarchs have since managed to not only recover their wealth but even to increase it, despite the sanctions. In addition, research also suggests that targeted sanctions against firms of strategic importance in Russia have been shielded from the negative effects of sanctions through aid from the Russian state. The intervention from the Russian state has diffused the costs of targeted sanctions to the economy as a whole, hence hindering the precision that is the sole purpose of targeted sanctions. Taken together, it seems that targeted sanctions have similar limitations as sectoral sanctions and fail to increase the precision of sanctions, at least so far.

Given the modest track record of sanctions in imposing long-term costs on targets, it is essential to develop new methods to enhance the implementation of successful sanction policies. The future success of economic sanctions especially depends on new measures to enable better coordination among sanction senders and prevent circumvention. Recent studies have shown that the cost-imposing effect of the sanctions against Iran and Russia could have been increased substantially with better coordination and greater mobilization of countries (Chowdhry et al., 2024; Hausmann et al., 2024). Against this background, emphasizing second-order sanctions targeting intermediate countries, firms, and individuals that assist target economies, as seen in the most recent US sanctions against Russia (Stratford, 2024), might be a viable policy alternative to achieve broader compliance among third countries.

Improving methods to trace, prevent, and detect sanction circumvention is also crucial. As described in Delivery 2.2, sanctioned entities often evade asset freezes and export restrictions using intermediaries, shell companies, and complex corporate structures, which obscure true ownership and undermine sanctions' effectiveness. To counter this, we recommend a long-term strategy deploying data-driven approaches using red-flag indicators and AI to identify likely cases

of sanction circumvention. These indicators have the potential to enable large-scale detection of circumvention with low transaction costs. However, this development is constrained by inadequate data infrastructure and a lack of coordination among member states and international institutions. The EU should therefore support the simultaneous use of various data sources to identify red flags and enhance cross-border cooperation among sanctioning countries and banks to fully utilize existing data resources.

Finally, it is also important to keep in mind that sanctions also impose costs for the senders. These costs vary depending on the size of the target economy, the products that were traded prior to the sanctions and the degree of economic integration between senders and the target. While the sanctions on Iraq (1990-2003) had an insignificant cost for the European countries given the small size of the Iraqi economy, the current sanctions on Russia (2022-ongoing) have been associated with significant costs due to Russia's moderate size and previous role as an important trade partner for several European countries. Research also shows that the cost of sanctions has been unevenly distributed between the EU member countries. This uneven impact highlights the potential need for coordinated policy responses and support mechanisms within the EU to mitigate these costs and ensure a unified approach to implementing and sustaining sanctions.

3. Costs and impacts of border corruption

This chapter examines the costs and impacts that result from the mechanisms of border corruption and related crimes that occur at border posts. We can reasonably expect that different types of crime will have different costs and impacts; at the same time, we can also expect that these costs and impacts will vary in intensity and pervasiveness depending on the modus operandi and the actors involved.

It is possible to distinguish two main types of costs and impacts resulting from border corruption. A first distinction can be made between direct / primary costs and indirect / secondary impacts. The first group includes direct costs resulting from the implementation of corrupt strategies at border posts; for example, direct costs can quantify the amount of taxes that are not available to the tax authorities due to the corrupt strategies implemented by private actors and public officials operating at border posts. The second type of costs and impacts summarises the effects of the criminal activities that are positively completed thanks to border corruption. For example, we consider as an indirect and secondary impact on societies the burden of drug consumption, the importation of which within a country's borders can be made possible by bribes.

A second distinction can be made between quantifiable and non-quantifiable costs and impacts; in this framework, these costs and impacts can be more or less quantified using quantitative measurement and estimation techniques. In the best case, we have all the information to calculate these costs accurately; here, comparing two situations - one with and one without border corruption - can help us to identify the costs of border corruption. We can take inspiration from what has been done in other areas, such as corruption in public procurement (Basdevant et al., 2022; Basdevant & Fazekas, 2023). In this sense, the study of the costs and effects of corruption in public procurement is, at least at first sight, direct to operationalise. This is based on highlighting the difference between the value of a public contract characterised by corruption and the value of a public contract without corruption; according to the literature, the former should have a higher value than the latter, excluding the effect of corruption. By subtracting the value of the public contract without corruption from the value of the public contract with corruption, we obtain a proxy for the cost of corruption.

In theory, we should be able to apply this methodological approach to border corruption; instead of talking about the price of a public contract, we will consider the 'cost' of a border procedure, assessing its impact in terms of resources lost to the state and the bureaucratic sphere. In fact, corruption can help to neutralise checks and surveillance; border procedures with corruption will record fewer infringements and collect less in taxes or fees. If we compare situations with and without corruption, we should be able to quantify this difference and interpret it as a proxy for the direct costs of border corruption.

At first glance, operationalising this method for border corruption seems much more difficult than for corruption in public procurement. Border procedures seem to be subject to more discretion and concentration of decision-making power than public procurement; face-to-face interactions are difficult to eliminate, while the distance between peripheral spaces (as many BCPs are) and central administrative spaces makes it more difficult to control border officials (Chêne, 2013, 2018; Hors, 2001; Jancsics, 2019a). In this context, it can be extremely complicated

to identify and define what should be considered a sufficient amount of taxes and fees for border procedures without corruption. In addition, many other technical issues can make the implementation of a rigorous methodology quite difficult.

This means that we can try to quantify the costs and effects of a broader behaviour (e.g. drug use, illegal weapons use, trade in counterfeit goods) - which is made possible by border corruption, but is in itself different from border corruption - on societies and political systems as a whole. In this conceptualisation, border corruption facilitates the trafficking of illicit goods (such as drugs or weapons), and the use of these illicit goods in society results in higher costs in terms of health care (more resources for treatment and rehabilitation), security (more resources for patrolling the streets) or economic growth (lower productivity, increase in the number of working days lost due to injuries, accidents, deaths or illness). We can say that here we can not only quantify but also assess the impact of these indirect and secondary costs. We can draw inspiration from what has been done in other areas, such as the application of sound and robust econometric techniques, methods and solutions to quantify these costs and impacts; for example, it should be possible to estimate the additional costs to the health service of drug use (Gryczynski et al., 2016; Stuart et al., 2009) or on states and communities because of firearms usage (UNODC, 2019).

On the other hand, it is also possible that we do not have enough information to quantify or even estimate the costs and impacts, both direct and indirect, of border corruption. The US Customs and Border Protection agency, for example, stresses the difficulty of quantifying the total amount of drugs, the number of undocumented non-citizens, documents, money, weapons that have entered a country illegally, and, in turn, the cost and impact of these goods (U.S. Customs and Border Protection, 2023). If it is not possible to quantify both direct and indirect costs with the approaches suggested above, we should consider relying on qualitative assessment of the impacts and costs of border corruption; this means using qualitative techniques - such as interviews, surveys, questionnaires and focus group discussions - to analyse these costs and impacts. In this case, we should try to obtain and collect qualitative data and information with the aim of creating a narrative and explaining these costs and impacts, as well as presenting the most relevant cases and lessons learned thanks to the qualitative analysis (Saxe et al., 1997; Thomas et al., 2020).

3.1. Border corruption and its related offences

David Jancsics defined border corruption as the illegal exchange of resources between border officials (the bribe takers) and private actors (the bribe givers) (Jancsics, 2019, 2020). He also developed a conceptual model to distinguish different typologies of border corruption. On the one hand, he identified two types of public-private relationships, namely collusion and coercion. On the other hand, he identified three types of private actors, namely individuals, formal organisations and informal organisations. The category of "individuals" includes pedestrians, drivers and passengers crossing borders on foot or in private vehicles for land borders, or passenger ships and sailing boats for sea borders. The category of "formal organisations" includes export and import companies, transporters, brokers, clearing agents, freight forwarders and other economic operators involved in the movement of goods between countries. They cross borders using commercial vehicles (such as trucks) for land borders and commercial vessels (such as container ships) for sea borders. Finally, the category of "informal organisations"

includes smugglers and traffickers who are often organised in criminal organisations (Costa, 2022; Europol, 2023; Jancsics, 2020; Roks et al., 2021; Sergi, 2020). In implementing their criminal strategies, informal organisations often exploit the border-crossing activities of individuals and formal organisations. In fact, criminal groups may hide the illegal goods on the body of private individuals or in their vehicles (Costa, 2022; Costa et al., 2021; Titeca, 2018, 2019), as well as within commercial cargo vehicles (such as trucks) or vessels (such as container ship).

The combination of these two dimensions leads to six typologies of border corruption, which were the basis for the elaboration of the modus operandi of border corruption (D2.1) and the different indicators that can be elaborated for the early detection of the risks of border corruption (D2.2). At the same time, this was the starting point for elaborating on the costs and impacts of border corruption. Indeed, if we delve deeper into this conceptual framework, we can see that the private actors and public officials operating at border posts rely on corruption to achieve different goals; these differences in the functionality of border corruption are related to the fact that border corruption facilitates different crimes. These, in turn, are characterised by specific costs and effects; in simple terms, this means that different offences have different costs and effects.

This section unpacks the critical offences and their primary and secondary costs and impacts. The analysis focuses on three main typologies of crimes related to corruption at the border. These are rent-seeking and extractive behaviour, trade offences and financial crimes. The remainder of this section will help to explore their main characteristics, as well as their differences, similarities and areas of overlap; as a next step, we will elaborate on the direct and indirect costs and impacts associated with each of these different types of offence.

3.1.1. Rent-seeking and extractive behaviours

The first type of offence that we examine is related to the rent-seeking and extractive behaviour that is typical of the coercive environment of border posts (Jancsics, 2019a, 2020). Rent-seeking schemes are organised by public officials to extract additional fees from the border crossing activities of various private actors, particularly the categories of "individuals" and "formal organisations". This type of crime is possible because of the power asymmetries that characterise the relationship between these categories of private actors and the public officials working at border posts. In particular, the public-private relationship is unbalanced in favour of the public officials, who can impose the extractive mechanisms without fear of retaliation or violent reaction (as may be the case with criminal groups subject to extractive mechanisms). These extractive mechanisms appear to be rooted in endogenous incentives on the part of border officials - such as inadequate salaries, peer pressure and greed dynamics - which can underpin predatory behaviour towards private actors.

Insider networks link participants to these extractive schemes and allow them to share illicit profits with colleagues and superiors (Chêne, 2013, 2018; Jancsics, 2019a, 2020; Sergi, 2020). Across the public sphere, they can involve street-level officials, clerks, high-level managers, local and national politicians, and even private citizens (Addo, 2022; Addo & Avgerou, 2021; Jancsics, 2021).

These schemes are based on the repetition of illicit behaviour over an indefinite time horizon; they persist over time and allow the accumulation of social norms and informal institutions among officials. These schemes also help to socialise new recruits into the mechanisms of corruption at border posts (Jancsics, 2019b). The manipulation of the appointments and promotions is essential for creating and maintaining these extractive schemes (Fjeldstad, et al., 2020). Mentoring and tutoring activities help to train new recruits in the basic rules of coercive corruption. This enables the intergenerational transfer of critical knowledge on how to manage, implement, enforce and control rent-seeking dynamics.

The findings show that these rent-seeking and extractive schemes are usually based on the extraction of a small fee - in the form of cash - from a large number of private actors; moreover, these extractive practices are repeated many times along a turn or shift by the compromised public officials. In this way, what starts out as a small bribe quickly becomes a significant amount of dirty money.

3.1.2. Trading offences

The term 'trafficking' refers to crimes that involve the movement of legal and illegal goods from one side of a border to the other; within this framework, we have identified two main types of trafficking crimes, namely smuggling and trafficking. As such, they are typical of collusive settings at border checkpoints, where public officials and private actors find an illicit agreement aimed at facilitating the achievement of illicit objectives and ensuring a mutual benefit for both private and public actors.

As we will show below, these two types of criminal behaviour are distinct, although they have overlaps and points of contact; for example, trafficking strategies may use smuggling mechanisms to allow illicit goods to reach a specific point on the other side of the border.

3.1.2.1. Smuggling activities

Smuggling is the act of importing or exporting in violation of customs laws and without paying the legally required duties. In most cases, smuggling activities appear to be rooted in the informality that characterises local communities and social networks (Costa et al., 2021; Kassa et al., 2021). Smuggling rings often exploit the links created by diaspora mechanisms, which can extend family and kinship links from one side of the border to the other (Bergin, 2023; Jancsics, 2019, 2021). At the same time, these activities are organised, routinised and repeated over a long period of time. For example, FALCON Use Case 3 on border corruption describes a scenario where groups of individuals organised into smuggling rings are involved in the repeated smuggling of cigarettes from one side of the Lithuanian border to the other.

Smuggling activities rely, normally, on collusive schemes connecting public officials and private actors (Jancsics, 2019). This collusion is cemented by bribery mechanisms and aims to facilitate the finalisation of smuggling mechanisms. No less, if the relative power of the smugglers is lower than that of the officials, coercive mechanisms are possible, where border officials force the smugglers to pay a fee for their illegal transit.

Smuggling differs from illicit trafficking in that it is based on the cross-border movement of licit and illicit goods; that is, smuggling activities do not involve the production or sale of goods, but rather the movement of those goods from point A to point B across borders. In the case of smuggling of illicit goods, the smugglers provide services and logistics to the traffickers; they take care of the transport of illicit or stolen goods across borders, while providing their know-how, skills and networks. In this sense, migrant smuggling differs from human trafficking. First, migrant smuggling involves only the transport of people from one side of a border to the other. Secondly, it lacks the coercive dimension, i.e. people are not forced to participate in border flows.

Smuggling activities do not only involve the movement of illegal goods. Legal goods such as tobacco, alcohol, food, clothing, electronic equipment and pharmaceuticals are also subject to smuggling activities. For example, there is evidence of individuals attempting to cross borders with quantities of cigarettes, food or alcohol that exceed legal thresholds (ATS, 2024; Red. Online, 2023). This can be used to avoid declaring goods and paying taxes and duties, or to circumvent temporary bans and restrictions on cross-border trade in certain goods.

The importation of legal goods, such as foodstuffs or live animals, that do not comply with health standards or phytosanitary controls can be considered smuggling. The same applies to the transport of legal goods via parallel or informal routes and the import/export of unauthorised or counterfeit products.

The transport of unauthorised or counterfeit goods for smuggling can be carried out in various ways, including hiding them in legal goods. For example, Bulgarian Border Police officers at the Kapitan Andreevo checkpoint discovered a lorry entering the country from Turkey carrying more than 50 000 packages of counterfeit shampoo, imitating a well-known brand, hidden among legally traded shampoos; the estimated loss to tax revenues from these counterfeit goods would have been around 350 000 Bulgarian Lev (around 175 000 euro). Similarly, an investigation led by the European Public Prosecutor's Office (EPPO) in Valletta, Malta, in cooperation with the Maltese Police, the Maltese Customs Enforcement Section and the Maltese Asset Recovery Bureau, uncovered a case of customs fraud and corruption. The investigation led to the arrest of eight suspects, including five border officials.[17] This fraudulent scheme was aimed at evading the payment of customs duties on textile and clothing products imported from China. The payment of bribes to public officials was necessary to operate the fraudulent scheme by allowing traders to under-declare the value and weight of the imported goods; EPPO states that the damage to the EU budget will run into millions of euros.

3.1.2.2. Trafficking activities

A second type of trafficking covers activities aimed at the production, transport, distribution and sale of illegal goods, such as drugs, weapons, hazardous and non-hazardous waste, wildlife products and human beings. For example, significant quantities of waste from the EU's periphery enter the EU territory and the Schengen area illegally every day;[18] Anecdotal and empirical

[17]For more details, see at https://www.eppo.europa.eu/en/media/news/malta-eight-arrested-investigation-customs-fraud-and-corruption-public-officials; Accessed on 26/06/2024.
[18] For more data on this, see at https://ozone.unep.org/es/countries/additional-reported-information/illegal-trade; Accessed on 26/06/2024.

evidence indicates that cocaine is delivered to strategic ports in Europe, such as Gioia Tauro in Italy, Marseille in France, Antwerp in Belgium, Hamburg in Germany, Piraeus in Greece, and so on (Europol, 2023; Roks et al., 2021; Sergi, 2020). This can be achieved through the cooperation of economic operators as well as individuals and their private vehicles. For example, the Bulgarian Border Police stopped a North Macedonian car leaving Bulgaria; a thorough search revealed 18 packages of amphetamine weighing 21 kilos.

These illegal activities are often characterised by the involvement of national and transnational forms of organised crime. Flows of dirty money allow these criminal groups to finance their operations and to purchase additional services from public officials and other private actors. In the former case, these services include escort and protection services, storage of illicit goods and exchange of confidential information (U.S. Customs and Border Protection, 2023). In the latter case, these additional services include the transport of illicit goods by smugglers, the provision of intermediation by brokers or clearing agents, and the acquisition of professional skills by enablers such as law firms, accountants and financial experts (Costa, 2022; Costa et al., 2021).

By its very nature, trafficking has both an internal (within national borders) and an external (across national borders) dimension. Goods are treated as commodities (Kassa et al., 2021). In the case of human trafficking, this means that the coercive dimension is critical; physical and psychological violence, abduction, extortion, and sexual and labour exploitation are all inherent to trafficking activities.

Trafficking activities can take place through both collusive systems linking traffickers and officials, and coercive systems where officials are forced by traffickers to join their criminal networks (Jancsics, 2019, 2020, 2021). Investigations have revealed, for example, that key border officials can be bribed to facilitate the completion of illicit trafficking and the exfiltration of large quantities of cocaine hidden on containers coming from South America and in transit at the port. At the port of Gioia Tauro, an unloyal customs official was able to alter the results of an X-ray scan, making it more difficult to identify anomalies in coffee packages. The weight of cocaine smuggled that day was 300 kilos, with a street value of nine million euros; 'ndrangheta groups were behind the delivery. The bribe paid to the Agenzia delle Dogane officer amounted to 3% of the value of the illegal consignment, or around 270,000 euros (Anastasi, 2022).

Plata or *plomo* strategies and the threat to use violence are critical for convincing public officials to become part of these criminal networks (Sergi, 2020, Europol, 2023). In the cases of coercive mechanisms, it is also possible to find evidence of border space capture facilitating the finalisation of illegal trafficking.

Trafficking activities generate huge amount of money and high profits and, in turn, high incentives for corruption and illicit exchange (Jancsics, 2021; UNODC, 2013). Bribes can be paid in cash and financial resources as well as in goods and services. From both the literature and interviews with FALCON partners, there is evidence of bribes being paid to public officials in the form of drugs, weapons or other goods. For example, a US Customs and Border Protection agency reports that

> "Many [*public officials*] took steps to conceal the compensation. They requested material goods rather than cash payments to avoid having to deal with financial institutions (U.S. Customs and Border Protection, 2023)."

However, it is not uncommon for officials to keep large amounts of bribe money at home. An interview at the port of Rotterdam revealed that one official had stashed away around 9 million euros in cash at home, making it difficult to understand how he planned to launder and reuse this dirty money.

As we know, organised crime is crucial to the organisation of illicit trafficking activities. At the same time, criminal groups often rely on individuals or businesses to transport the illicit goods across borders; in this case, these individuals or businesses may or may not be aware that they are transporting illegal products. It is common for criminal groups to conceal illicit goods on people crossing borders on foot, on motorcycles, or in private or commercial vehicles; at the same time, they may conceal these goods in private vehicles and in commercial passenger vehicles (buses) or freight vehicles (trucks), hidden among legally transported goods (Costa, 2022).

3.1.3. Financial crimes

The label 'financial crimes' refers to those illegal behaviours that affect the flow of money and the payment of taxes. Typical of collusive settings, these crimes are relevant to the formal organisations and business operators identified in the Jancsics' conceptual model (Jancsics, 2019). No less, these financial crimes often involve organised crime rings operating at a national or transnational level. The literature review and interviews with selected FALCON partners helped us to identify two main types of financial crimes, namely tax avoidance and evasion strategies and economic and white-collar fraud.

3.1.3.1. Tax avoidance and evasion strategies

Tax avoidance and tax evasion strategies focus on the non-payment of tax by individuals and companies. Both strategies have similar objectives, i.e. to reduce taxable income and taxes due. The main difference lies in the way in which these objectives are achieved. On the one hand, tax avoidance is based on legal - or rather, not entirely illegal - modalities to reduce the taxes owed by these private actors by reducing their taxable income. This is achieved by navigating the national and international financial environment with solutions that appear legal or not blatantly illegal. One way of doing this is to exploit the relationships between parent companies and their subsidiaries or affiliates to re-balance loans, sub-contracts and financial flows between these entities; another strategy is to organise financial flows through tax havens or offshore financial centres, where the identity of those behind the financial vehicles is shielded through the use of protected corporate structures.

On the other hand, tax evasion is based on illegal schemes to facilitate the non-payment or underpayment of taxes by not declaring income or by failing to pay taxes. In this sense, evasion mechanisms can include the corruption of public officials, as well as the omission of tax declarations, the manipulation of delivery documents and the implementation of economic fraud. For example, rings of customs agents, intermediaries (e.g. freight forwarders) and traders may

attempt to import goods by falsifying documentation and under-declaring the value of the goods in order to pay lower customs duties and taxes, with a corresponding loss of revenue.

The objectives of tax avoidance and evasion can be achieved through different tactics. One way is to play on the key players and operators involved in the logistics, supply and transport of these goods. This can be done by creating confusion through subcontracting mechanisms involving buyers, suppliers and beneficiaries; for example, an operator registered in one country may organise a delivery using a commercial vehicle and container owned by companies registered in different countries. Through their corrupt actions, customs officials can create the conditions for these traders to evade customs duties by declaring lower values at customs than the actual values. They can do this by carrying out formal or non-existent checks on imported goods, by checking documents only and without actually inspecting the goods.

Traders, transporters and intermediaries can directly manage tax evasion strategies by not registering their companies or not applying for authorisation to operate in a particular economic sector. This means that they do not have a valid address or corporate structure for tax purposes, they do not declare taxes, or they operate informally in a sector where they should not. None of this has any consequences other than minimising, if not eliminating, the taxes owed by these operators.

There are many situations in which these strategies, based on the manipulation of the corporate structures of economic operators and private individuals, are used for criminal purposes. This is the case, for example, of *carousel fraud*, which aims to evade intra-Community VAT by importing a specific product, such as cars, through ghost or shell companies. These companies do not carry out any real business activity, they are just empty boxes that issue false invoices and certify the transfer of goods without complying with the law, paying VAT and fulfilling tax obligations.[19]

Business operators (such as traders or transporters) may attempt to avoid or evade payment of tax by manipulating the goods declarations and certifications required when dealing with customs and border procedures. These manipulation strategies may include under-declaring or over-declaring the quantity of goods transported and mis-certifying their true nature and quality. For example, the process of mis-certification can be carried out by declaring a good to be raw instead of processed, or by declaring a good to be of a lower quality than it actually is. This can be done, for example, by declaring the transport of raw tobacco (which is not subject to import excise duties) when processed tobacco is being transported (Quotidiano di Puglia, 2024). Similar dynamics can be applied to many other categories of primary commodities, including minerals, wood products and food.

Business operators may also attempt to conceal the true origin of a particular product or declare that mandatory controls (such as veterinary and phytosanitary controls on food or livestock) have been carried out when they have not. This can be achieved by falsifying or forging critical documents such as customs declarations, certificates of inspection, delivery notes and air

[19] For an example, see at https://www.adm.gov.it/portale/documents/20182/544271/cre-s-20080317-1239.pdf/7c4eda5f-8fa2-40a8-aeec-3036236260c2?t=1456156048601. Accessed on 26/06/2024.

waybills. Another method may be to declare a good as belonging to one product category when in fact it belongs to another, on which less tax is payable. This can be done, for example, by goods substitution, i.e. falsifying the declaration of an entire shipment by providing customs authorities with a Harmonised Commodity Code (World Customs Organization, 2024) that identify another good, on which less taxes are due.

Our research in various countries and regions has helped us to gather evidence of such mechanisms. On the one hand, the analysis of trade flows in copper, gold and other precious minerals between Zambia, Zimbabwe and the Democratic Republic of Congo (DRC) has shown that concealing the origin of these precious minerals is critical to the operation of illicit schemes and tax evasion. On the other hand, the analysis of the mechanisms of border corruption at the Kapitan Andreevo BCP in Bulgaria has provided us with critical insights into how the imposition of mandatory veterinary and phytosanitary controls can become a channel for imposing the interests of business operators and private actors through mechanisms of state capture, undue influence and rent-seeking.

Finally, these tax avoidance and evasion strategies can also be implemented through complex economic and financial frauds, which help the business operators involved in these cross-border activities to hide large amounts of profits from the tax authorities. What we have described above shows that tax avoidance and evasion strategies are relevant points of contact with smuggling activities and economic fraud. In fact, when smuggling activities are based on the transport of legal goods across borders, they have the side effect of reducing, minimising or eliminating the taxable income of those involved in these activities. For example, the importation of legal goods through parallel or informal channels or without a valid formal licence, as well as the import/export of counterfeit goods, all have the effect of reducing the taxable income to zero. At the same time, many of these operators may also not be formally registered; they can operate without any corporate infrastructure (e.g. headquarters, telephone number and e-mail address, ID number, etc.) and trade licence. This can affect the ability of states and tax authorities to collect taxes from the actors involved in these smuggling mechanisms.

3.1.3.2. Economic and white-collar frauds

A second group of financial crimes - different but related to tax avoidance and evasion strategies - are economic and white-collar crimes committed in border areas. Based on the involvement of economic operators and professionals, these frauds are usually based on complicated and multi-layered schemes. The links with professional enablers and the use of fronting mechanisms and offshore entities are crucial for the successful implementation of these frauds. Their aim is usually to evade the payment of taxes, such as Value Added Tax (VAT) (Europol, 2021).

The 2017 Serious and Organised Crime Threat Assessment, published by Europol, has identified various crimes that fall under the category of economic and white-collar crime. For example, Europol listed investment fraud, insurance fraud, EU subsidy fraud and credit and mortgage fraud (Europol, 2017). When it comes to border operations, this type of economic fraud is concretised in the trading and border crossing activities of economic operators.

One of these fraudulent schemes involves over- or under-declaring the quantity, value and weight of goods transported across borders; clearly, if a trader declares less quantity or value (under-declaration), he will pay less of what you should pay. Conversely, if a trader over-declares the goods transported, this will inflate the tax declaration and allow him to obtain undue tax relief or advantages. In this sense, the objective that traders are trying to achieve will determine which of these options is chosen. This is the situation described in a case at the port of Genoa, where the investigation revealed that VAT had not been paid on foreign goods arriving at the port. The consignment was destined for two Bulgarian companies but turned out to be "empty boxes". The goods were then released into the territory of the country and other EU countries other than those previously declared, using forged documents, thus avoiding the payment of VAT altogether. Another system used to evade customs duties consisted of altering the commercial documents of goods declared at a lower value than their actual value in order to reduce the amount of customs duties and VAT payable on importation (Polizia di Stato, 2023).

Another type of fraud is based on false certification of the origin or nature (shape, organoleptic content, purity) of the goods being transported. Similarly, the information on the checks carried out, such as veterinary or phytosanitary checks on foodstuffs or live animals, can be manipulated, for example by falsely stating that compulsory checks have been carried out when they have not. These tactics can help these operators to evade labelling standards and quality controls, as well as to obtain a reduction in the taxes due.

The strategies of false certification seem to be relevant when dealing with a mineral or other primary resource that can be extracted in different forms, which in turn have different values on the commodity markets; for example, declaring a semi-finished product as a raw material can subtract part of the added value and reduce the taxable income. Similarly, in the case of goods that require various stages of production, declaring that you are transporting a good with fewer production stages and a lower value added on the market can also minimise your taxable income and manipulate the accounting procedures. An extreme form of this dynamic of false declarations is based on mechanisms of product substitution, whereby a trader declares one type of product while in fact transporting another, which is characterised by a lower tax burden.

Another form of economic fraud aimed at reducing taxes (e.g. VAT) is based on playing with the corporate structures of the economic operators involved in the border crossing operations. We have already mentioned an example of this type of mechanism when we talked about carousel fraud, which aims to import and export vehicles within the EU without paying the taxes due. As emerging from anecdotal evidence (Niro, 2019; Perugia Today, 2021), it is possible to highlight some of the key characteristics of these fraudulent schemes. First, they relied on the creation of ghost or shell companies, which are used to produce invoices and certify sales and purchases that never actually took place. This means producing fake invoices, organising fictitious sales and purchase operations, and disguising commercial transactions that have actually taken place between two entities (Niro, 2019). Secondly, these ghost and shell companies are needed to falsify important trade and transport documents (such as certificates, authorisations and permits), which can then be used to falsely certify business operations and exchanges (Perugia Today, 2021). Finally, these schemes are completed by the creation of other ghost and shell companies

that help to operationalize the fraudulent schemes, while producing fictitious invoices and VAT credits.

All these mechanisms are designed to reduce taxable income and the amount of tax due. In addition, they can help business operators to implement schemes to circumvent restrictions and prohibitions on trade in these goods. For example, the mechanisms for circumventing economic and trade sanctions are critical. These economic frauds can be an essential element in such circumvention strategies, as their implementation can allow the systematic use of fronting mechanisms, offshore entities and money laundering strategies. In this sense, failing to declare or falsely certify the goods being transported can be part of a broader strategy to import or export goods subject to sanctions or other specific prohibitions and restrictions.

3.2. Costs and impacts of border corruption

As mentioned above, border corruption has both primary and secondary costs. For the former, we can consider the costs directly caused by corruption, such as the fees and taxes that were not collected by the tax authorities because border procedures were tainted by corruption. For the latter, we can consider the costs and wider impacts of the fact that border corruption has enabled or (as in the case of rent-seeking) caused the crimes examined in the previous sections. In this case, we can consider, for example, the costs to society and to the national health system of the consumption of drugs imported into the country as a result of border corruption.

Some of these costs can, at least in theory, be calculated using quantitative methods. For example, the use of econometric techniques can help to quantify the impact of a criminal phenomenon on society or the economy. At the same time, other impacts can only be assessed by using qualitative methods such as interviews, focus group discussions or surveys. The following sections offer some suggestions on how to proceed with the calculation of quantifiable costs, while highlighting those situations that require a quantitative assessment.

3.2.1. Rent-seeking and extractive schemes

An examination of the rent-seeking and extraction schemes implemented at border posts shows that their main effect is to delay border operations while imposing additional costs on individuals and businesses. This is detrimental to the economic competitiveness and profitability of both national and foreign operators, such as traders, transporters and intermediaries. For national companies, it will have a negative impact on their ability to remain in the international marketplace, which will affect the national economy through a loss of taxes and employment levels, which may be more or less constant depending on the degree of penetration of rent-seeking and extraction systems. For foreign companies, this can make it more expensive to export goods to a particular country, raising their price in the domestic market and, through a cascade effect, the price of other services and goods. If this mechanism is very widespread, it can even lead to an inflationary dynamic without economic growth, i.e. stagflation. At this high level of abstraction, it will be quite complicated to carry out a robust exercise to quantify and calculate precisely these costs; in this case, relying on a qualitative assessment may be a good solution to explore these potential effects.

The primary and direct cost of these rent-seeking and extractive schemes can be considered to be the time lost in clearing vehicles and goods and in completing border and customs procedures. Theoretically, this loss can be quantified by calculating the difference in the length of clearance and customs procedures in cases with and without rent-seeking and extractive schemes. Once the time lost due to these strategies has been quantified, it is possible to convert the units of time lost into a monetary value. In practice, this can be a very difficult exercise, given the many challenges - from calculating what is a normal length of clearance procedures to distinguishing normal from abnormal situations - that characterise it. Of course, the fact that this method may be theoretically feasible does not make its operationalisation any easier or less problematic.

The primary costs of delaying border and customs procedures have various secondary and indirect effects. A critical impact is the fact that these rent-seeking schemes, together with the slower completion of border procedures, also make the border checkpoints, where the delaying strategies are pervasive, less attractive to individuals and businesses. Chêne (2013, 2018) shows how border corruption can have a negative impact on transport costs, trade mechanisms and revenue collection. Such mechanisms lead to a reduction in the flow of private and commercial vehicles using border posts where extractive mechanisms are particularly intense; Sequeira & Djankov (2013) define this as a "diversionary effect". Operators can travel much further to avoid the border checkpoints notorious for these extractive practices. Some studies estimate that these operators can almost double their transport costs to avoid coercive corruption and rent-seeking schemes in BCPs, travelling up to 300 km more to avoid them.

None of this will be without cost to BCPs and tax authorities; in terms of the 'revenue effect', shifting traffic flows from one BCP to another will result in the loss of taxes and fees collected by that BCP with high levels of coercive corruption and rent-seeking. If these traffic flows are diverted to a BCP in a neighbouring country, there will be a net loss of resources for both the BCP and the state tax authority. This has a knock-on effect on society as a whole, reducing the resources available. Despite the technical challenges that can make the operationalisation process difficult, it is possible to quantify this loss in taxes and fees; the tricky part, of course, is to obtain administrative and fiscal data that can help calculate the amount of taxes and fees lost due to this diversion of private and commercial traffic.

In turn, the diversion effect, i.e., the fact the traffic flows can go towards another border check posts, can impact the environment (Chêne, 2013, 2018); for example, Sequeira & Djankov (2013) underline that the "congestion effect" caused by the diversion of goods and commercial vehicles to avoid coercive bribery and rent-seeking schemes can have a significant environmental impact. Indeed, if the diversion dynamic is significant, it can lead to road congestion and increased emissions of carbon dioxide (CO_2) or particulate matter (PM_{10}). This, in turn, can have an impact on human health through an increase in transport-related illnesses, as well as on public finances through an increase in health expenditure. Although technically difficult, it is possible to calculate and quantify these costs. This can be done, for example, by calculating how much additional CO_2 is emitted due to these diversion and congestion effects (Sequeira & Djankov, 2013), and then converting this quantity in a monetary value. In doing that, it is possible to take inspiration from what has been done to calculate the social costs of carbon dioxide emissions (Nordhaus, 2017;

Pindyck, 2019; Rennert et al., 2022; Ricke et al., 2018; National Academies of Sciences, Engineering, and Medicine, 2017) or the health costs of traffic-related air pollution (Khreis, 2020; Levy et al., 2010; Piscitelli et al., 2019; Shamsi et al., 2021).

Finally, these rent-seeking and extractive systems carry a high reputational risk, which can be particularly significant for countries seeking to join the EU or Schengen area. In this situation, these countries should demonstrate how efficient they are in controlling their borders, while at the same time protecting them from the risks of corruption. In particular, the research carried out in Bulgaria on the Kapitan Andreevo BCP has shown the extent to which the issue of border corruption and its reputational impact has been critical in delaying that country's entry into the Schengen area. In a sense, every day of delay in the country's accession to this free trade area represents a cost, depending on the resources lost due to the failure to liberalise border controls.

This reputational risk can be combined with another effect, which we can call the diplomatic effect. For example, we know from Bulgaria that a recent corruption scandal involving the director of the customs authority emerged because the Austrian government and several other foreign services were alerted by denunciations from truck drivers and traders (Bulgaria News Agency, 2024). These effects may be insignificant, but they can have a major impact on a state's reputation and diplomatic relations. Because of their intrinsic nature, these effects can be better assessed using qualitative methods and techniques.

3.2.2. Trading crimes

As in the case of rent-seeking and extractive systems, there are both primary and secondary costs associated with trading crimes, which include smuggling and trafficking. We will try to focus here on the differences and similarities between the illegal trade in legal and illegal goods.

2.2.2.1 Legal goods

When considering the smuggling of legal goods, we can identify the costs associated with the loss of taxes, fees and fines due to corruption in the management of border and customs procedures. If border corruption allows legal goods smuggled by alternative routes or through declaration fraud to enter a country, this also means that these goods are not subject to the payment of taxes that these operators would owe to the tax authorities. Similarly, given that border corruption can contribute to the neutralisation of controls on persons, vehicles and goods, we can expect a reduction in the number of controls carried out and infringements detected. This may lead to a reduction in penalties and fines imposed by border and customs officials and collected by the tax authorities.

Despite the technical difficulties in obtaining the necessary data and implementing the quantification strategy, this type of cost can potentially be assessed using quantitative methods. In this case, it will be necessary to compare the amount of taxes and sanctions collected in situations of border corruption with the amount collected in situations without border corruption; the difference between these two values can be considered as the cost of border corruption.

At the same time, there are many secondary costs and effects resulting from the completion of both smuggling and trafficking activities. As Ndonga (2013) revealed:

> "corruption at border points can result in the entry of illegal and harmful products, expose domestic industries to unfair competition from dumped imports, and loss of revenue from misclassified or under-valued goods."

The importation into a country of products and goods - such as food, livestock, clothing, electronics, cosmetics and pharmaceuticals - that do not comply with quality controls and health standards, or that have not undergone the required veterinary or phytosanitary checks, can pose a risk to the health of citizens, as in the case of the spread of zoonotic diseases among humans (Khalid, 2024). These risks will have costs associated with them, such as the costs of high-level health care and emergency response, or the costs associated with the development of chronic diseases, pandemics or epidemics. The devastating impact of COVID-19 should provide us with a fresh example of how significant the costs and impacts of a similar scenario could be (Pereznieto & Oehler, 2021; Smit et al., 2023; Vardavas et al., 2023).

Last but not least, companies involved in this type of smuggling can suffer serious economic consequences that may affect their ability to remain in the market. In fact, they may be forced by the authorities to recall the contaminated or unsafe products, incurring the costs of retrieving, disposing of and destroying them; at the same time, the companies may suffer damage to their reputation and a loss of consumer confidence and market share (Khalid, 2024).

A more hidden impact is the unfair competition between traders caused by the fact that some of them rely on border corruption to facilitate their activities. If these malpractices go undetected, they can contribute significantly to the positive performance of companies involved in the cross-border delivery of goods. In this sense, these mechanisms may pose significant risks of adverse selection, i.e. those operators who rely on border corruption are more likely to remain in the market than those who do not use these strategies.

A different type of cost and impact arises from smuggling activities that violate prohibitions and restrictions on the import and export of certain categories of goods and products, or that promote trade in unauthorised and counterfeit goods. This may have a potential economic impact on national producers and traders operating legally in the same commodity sector. There is a risk of a reduction in demand for legal goods, which in extreme cases can also lead to the development of dumping mechanisms, i.e. national producers are forced to leave the market because of unfair competition from smugglers and dishonest traders (Ndonga, 2013).

As an example of these effects, we can look at the tobacco market in Lithuania. The State Tax Inspectorate revealed that between January and November 2023, there was a 7.4% decrease in legal sales due to cigarette smuggling activities (source, VSAT). In 2023, Nielsen, a well-known information, data and market measurement company, conducted a survey on the discarded empty packets, which showed that non-locally produced cigarettes amount to 23% of the total; this reveals that despite the efforts of law enforcement authorities, the scale of smuggling has not decreased.

2.2.2.2 Illegal goods

The trade in illicit goods has many negative effects on societies and political arenas, as it can generate significant costs in terms of health services, security and governance. In this sense, the costs and effects on society of the use of drugs such as cocaine, heroin or others are there for all to see. The recent episodes related to the distribution of a powerful substance, fentanyl, in some US cities are an important example of these risks and associated costs. Indeed, there are costs associated with the health services needed to treat and support those with similar forms of addiction, as well as the people around them (e.g. families). The potential increase in petty crime and the spread of a sense of insecurity may force decision-makers to invest more in police forces and law enforcement, increasing street patrols or high-level investigations into drug trafficking networks. All this means that the state will need more resources to finance these anti-crime activities, placing an additional financial burden on the shoulders of the states.

A subtler impact can follow the dynamics of urban degradation resulting from the spread of drugs; the affected districts may experience mechanisms of depopulation linked to the fact that many middle- or upper-class citizens may decide to abandon them due to the unsustainable deterioration of living conditions. This can affect the amount of taxes collected in these districts and areas, and thus the resources available to fund public services and goods, ultimately affecting the well-being of the entire community.

In the case of illegal human trafficking, the costs and impacts also include the first and second level assistance and care provided to individuals and families, including health care, housing assistance (in private or shared flats, large tents or container camps, former military barracks or schools, etc.), pocket and food money, language or vocational courses, active programmes to promote integration and access to the labour market. We can get an idea of these costs from a 2018 report by the Italian Court of Auditors, which calculated the costs of asylum policies and services and related interventions that Italy incurred in the period 2013-2016 for the initial reception of migrant flows reaching its southern and north-eastern borders (Corte dei Conti, 2018). In this sense, the total financial commitments related to initial reception costs, excluding the so-called "indirect" costs, amounted to 1.7 billion euros in 2016. Obviously, not all of these costs can be attributed to the impact of border corruption, while excluding the other determinants behind migratory flows; this suggests that a careful qualitative assessment of this area can be useful to contextualise better evidence and figures.

Another set of impacts is associated with the illegal trade in wildlife products (Kassa et al., 2021). In these situations, the destruction of biodiversity and the environment can severely affect the quality of life of local communities and future generations, in extreme cases forcing the migration of entire families or groups, with the costs and consequences of displacement and migration flows, and in some cases increasing the risk of civil or ethnic war. Last but not least, environmental degradation caused by human activities (such as deforestation) reduces the capacity of our ecosystems to absorb CO2 and creates more points of contact between wildlife and humans, increasing the risks of spreading zoonotic diseases (de Groot et al., 2012; Quammen, 2012). Clearly, we are talking about impacts that are broad and difficult to quantify. Despite attempts to assign a monetary value to biodiversity or environmental resources (Drupp et al., 2024; Ralls,

2024), we believe that relying on a qualitative assessment may be a better solution for assessing these costs and impacts.

Finally, the involvement of forms of national and transnational organised crime in trafficking activities poses the risk of the capture of border areas and governance risks associated with the infiltration of these organised criminal groups into border areas and authorities. The provision of ancillary services, such as parking, storage, testing laboratories, loading/unloading, can also be subject to risks of infiltration and the imposition of private interests. According to interviews and analysis of newspaper articles, the situation at Kapitan Andreevo BCP in Bulgaria - where a private company was contracted to carry out veterinary and phytosanitary controls and test samples taken - is a good example of this type of cost. According to a former finance minister, the financial damage to public finances could have amounted to more than 20 million euro per year (Bayer, 2022).

3.2.3. Financial offences

As our analysis shows, one of the most important effects of border corruption and related crimes is the loss of revenue for tax authorities and states due to tax avoidance and evasion strategies; as said by Ndonga (2013):

> "Corrupt practices such as misclassification, undervaluation of imports or even colluded tax evasion by operators and customs officials have a direct impact on the amount of revenue collected".

Michael (2012), analysing the literature on the topic, quantified a cost for customs agencies world wide of about $2 billion. Sequeira and Djankovic (2013, 2014) analysed the impact of corruption on firms' choice of port between Mozambique and South Africa; they revealed that collusive corruption can be associated with significant tariff revenue loss for the government, equivalent to a 5-percentage point reduction in the average nominal tariff rate. More recently, Abdullah and Gray (2022), while studying white-collar crimes and corruption at border crossings in the Kurdistan region of Iraq, estimated a loss of US $200 million per month in revenue due to border crossing corruption; they also underlined that just the smuggling of eggs and cigarettes amount to between US $20 and 25 million per month.

Chalendard et al. (2020, 2023) investigated how much more tax revenue would have been collected in the port of Tomassina in Madagascar without excessive and suspicious interactions between public officials and private actors; they calculated that the tax owed on declarations likely to be subject to collusive corruption would have been 26-27% higher without this kind of suspicious frequency of interactions; the total tax revenue collected in Tomassina would have been 3-4% higher without the schemes analysed in the paper.

It is possible to think that these costs can be quantified by comparing the amount of taxes paid and sanctions imposed in the presence and absence of border corruption. As noted above for other situations, the process of quantifying these costs can be challenging and time and resource consuming. In this sense, relying on more qualitative forms of assessment can be a low-hanging fruit solution for exploring these costs and impacts. This can also help researchers to conduct contextual analysis to better determine the extent of these revenue losses given the types of

crimes, fraudulent schemes and actors involved; in this sense, more sophisticated and pervasive criminal schemes will have a more detrimental effect in terms of revenue loss than other minor forms of criminal behaviour.

The economic and white-collar fraud that can accompany tax avoidance and evasion strategies has its own effects. For example, they can lead to economic imbalances and adverse selection of economic operators by making it easier for dishonest operators to remain in the market; they can also put pressure on national producers to engage in dumping, re-labelling and counterfeiting. Non-payment of taxes may include non-payment of social security contributions for workers and employees, with potential social risks arising from the lack of support for these workers.

On the side of health impact, we have seen above that the entrance in the market with unsafe or unhealthy products, missing mandatory inspections and certificates, can have relevant risks and consequent costs for consumers and collectively.

3.3. Examples and cases

In this section we present four situations that help us to contextualise and substantiate some of the costs and impacts presented above with concrete examples. These cases have been disclosed by FALCON partners and extracted from online media. Far from being an exhaustive analysis of the available sources, this exercise only serves to provide a quick overview of some interesting examples.

3.3.1. Case n.1 – Cigarettes and tobacco products

The first case concerns the activities of a smuggling ring, organised by a border police officer and his accomplices, involved in the illegal transport of cigarettes to the Romanian border. The Galați court sentenced the officer to 7 years and 10 months imprisonment for forming an organised criminal group, accepting bribes and complicity in qualified smuggling. In particular, this border official helped the members of the group to illegally import significant quantities of cigarettes from the Republic of Moldova into Romania via the Galați road border crossing. He facilitated the entry of these goods into the country and allowed them to evade customs control, for which he received a total of €7,000 and products worth €3,000 from the members of the criminal group in exchange for not performing his official duties. The judges also banned him from being a police officer for three years after serving his sentence. Along with him, 14 others were sentenced to between 1 year and 7 months and 5 years and 4 months in prison for forming an organised criminal group and qualified smuggling.

The judges ordered the confiscation of 9,000 euro from the border official as compensation for the bribes received, while the criminal group had to repay over 600,000 Lei (approximately 120,000 Euro) to the National Agency for Fiscal Administration (ANAF) for non-payment of taxes on the cigarettes smuggled into the country and sold on the black market. According to the Galați Prosecutor's Office, between June 2015 and March 2016, the smugglers illegally brought 162,588 packs of cigarettes into Romania from the Republic of Moldova via the Galați road border crossing point, evading customs control and without excise stamps or with stamps issued by the Republic of Moldova. The value of these cigarettes exceeded 1,650,000 Lei (approximately 330,000 Euro).

3.3.2. Case n.2 – Textile products

The second situation concerns a criminal case involving three border customs officers working at the Iași Border Customs Office (Romania) and various economic actors, who are jointly accused of committing corruption, customs violations and tax evasion between January 2022 and 2024. The investigations, conducted by police officers from the Directorate for Investigation of Economic Crimes, together with prosecutors from the National Anti-Corruption Directorate - Iași Territorial Service, have revealed an estimated loss of revenue of approximately 58 million Lei (about 11 million Euro).

Between January 2022 and the present, officials of the Border Customs Office in Iași (Internal Customs), in exchange for receiving sums of money, would have performed their duties in favour of a number of commercial companies importing textile products from Turkey. The prosecution alleges that clothing, sportswear, footwear and counterfeit perfumes were imported through these trading companies, with the goods transported by lorries registered in the names of these companies, as well as by articulated lorries registered in Turkey, Poland or Slovakia.

By their actions, the customs officials had created the conditions for the company managers to evade customs duties by declaring lower values at customs than the real ones, while at the same time the control of the imported goods was formal or non-existent. In this sense, the control was only carried out on documents, without an effective control of the goods. There were situations where commercial/customs import documents, such as invoices, were presented as false with regard to the nature of the imported goods (in order to hide the fact that the products were counterfeit) and the price declared to customs (in order to reduce the value of the duties payable by the importer). The imported goods were then sold in commercial centres or specialised shops in the counties of Iași, Suceava, Botoșani, Ilfov, Sibiu, Arad, Ialomița and Bucharest. According to the National Anti-Corruption Directorate (DNA), the "fee" allegedly charged for each truck entering customs was around USD 300. As mentioned above, the damage to the state budget from the non-payment of customs duties is estimated at 58 million Lei (about 11 million Euro).

3.3.3. Case n.3 – Tobacco products and waste

The Italian judiciary has investigated 69 people in Salerno - including 17 customs agents and 6 health officials - for smuggling, embezzlement, corruption, international waste trafficking and receiving stolen goods, unauthorised access to a computer system and disclosure of official secrets, falsification of public documents, all committed in the port area of Salerno (Caliciuri, 2019, 2020).

The prosecution's investigation began with a case of tobacco smuggling from the port of Salerno to Morocco. The investigation revealed that more than 5 tonnes of foreign processed tobacco had only apparently arrived in the customs areas for export; in fact, the corrupt customs officers had fictitiously registered this quantity at the exit of the customs office in Salerno, while in fact this tobacco had been illegally placed on the market, with an evasion of customs duties estimated at more than 1.2 million euros.

Corrupt agreements were also uncovered, aimed at the preparation of fictitious checks on the goods subject to inspection, both from an administrative and a health point of view, as the

payment of sums of money or other benefits to compliant officials who did not carry out their duties became apparent.

Investigations have revealed the existence of an international waste traffic organised by customs agents and people of African origin. This led to the seizure of more than 60 tonnes of waste, as well as more than 1,000 photovoltaic panels and around 1,000 electrical energy accumulators of clandestine origin in containers destined for the African continent.

3.3.4. Case n.4 – Alcohol products

A transnational smuggling ring, made up of eight people living in Italy, England and Romania, has been investigated for distributing alcoholic products and evading tax regulations. Four of the eight accomplices were Italian nationals, including a customs agent, a security guard and two freight forwarders based in Ancona. Industrial quantities of bottles, which on paper were shipped from Ancona to ports in Central Africa, never actually left European territory (Bove, 2017). The investigation was triggered by the discovery of 22 tonnes of vodka in a warehouse in Spoleto that was not supposed to be in Italy at the time. Later, the police discovered a further 56,000 kilos of pure alcohol. Investigators estimated the traffic at 1,200 tonnes of various products with a commercial value of six million euros, resulting in the evasion of four million euros in excise duties and VAT, as well as the evasion of direct taxes on the black market.

The arrested persons, who worked at Ancona airport, organised the scheme by ensuring that certain consignments were stamped with an extra-continental destination. By producing false customs documents, the alcohol appeared to come from a tax-exempt location in Europe and was exported from the port of Ancona to some African countries. In reality, the products were sold throughout the European Union, thus avoiding the payment of taxes.

According to the prosecution, the Ancona group managed to regularise the movement of goods from other European countries by issuing false documents. The four people were said to have worked together with a man based in Spoleto, who in turn was assisted by an intermediary based in Rome. This intermediary maintained contact with the real organisers and beneficiaries of the scheme, i.e. criminal groups based in England and Romania.

The first stage of the fraudulent scheme took place in London. According to the investigation, Indo-Pakistani financiers, through Italian and Romanian brokers, paid around 12,000 euros for each fake shipment abroad. Thanks to compliant freight forwarders and customs officials, the association was able to clean up the movement of goods by issuing false electronic administrative documents. The drinks, quantified in 1,200 tonnes of products marketed between January 2015 and June 2016, had a commercial value of around 6 million euros. 4 million in evasion of excise duties and VAT, to which must be added the evasion of direct taxes through black marketing. The money transfers were facilitated by three couriers, two Polish and one Italian, using briefcases left in hotel rooms in central Italy.

4. General Conclusion

This report presented three corruption domains - public procurement, border corruption, and sanctions evasion - with different approaches to estimating the costs and impacts of corruption in each area. It showed that corruption results in significant financial losses to governments, as well as other indirect costs. In the report, we demonstrated that there are measurable (where data allow) and practical costs to the public budget when corruption is present in each of these areas.

The chapter on public procurement (Chapter 1) highlights the extensive impact of corruption in public procurement, revealing that it leads to inflated contract prices, reduced quality of goods and services, and suboptimal resource allocation, as well as various indirect costs. Using data from Bulgaria and Croatia, the study quantifies these effects through the Corruption Risk Index (CRI), demonstrating that higher corruption risks are strongly associated with increased relative prices of public contracts. The presence of politically exposed persons (PEPs) exacerbates these costs further. The findings underscore the critical need for effective anti-corruption measures in public procurement to ensure fair competition, better quality, and efficient use of public resources.

The chapter on sanctions circumvention (Chapter 2) illustrates the multifaceted nature of sanctions and their varying degrees of effectiveness in achieving political goals. Through detailed case studies and empirical analysis, it becomes clear that while sanctions can impose significant economic costs on targeted entities, their success is often undermined by sophisticated circumvention techniques. The effectiveness of sanctions is not only measured by their economic impact but also by their ability to induce political compliance and behavioral change. However, the persistent challenge of sanction evasion and the limited capacity of sanctioning bodies to enforce measures consistently highlight the need for more robust and coordinated international strategies. As the geopolitical landscape continues to evolve, the dynamic interplay between sanction imposition, compliance, and circumvention underscores the complexity of using economic coercion as a tool for international diplomacy.

The chapter on border corruption (Chapter 3) comprehensively examines the variety of impacts of border corruption, highlighting both direct and indirect costs. Direct costs include the immediate financial losses to tax authorities due to corrupt activities at border posts, while indirect costs encompass broader societal impacts such as the increased burden on healthcare systems from drug trafficking facilitated by corruption. The analysis underscores the complexity of quantifying these costs, suggesting that a combination of quantitative and qualitative methods is necessary for a thorough assessment.

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