

How to Capture a Nation:

The Evolution and Implications of Ukrainian Corruption

by

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Abstract

This paper studies the processes by which corruption spread throughout Ukraine, and the economic implications of this corruption. First, I utilize qualitative research to demonstrate the relationship between networks of informal exchange and corruption. Second, I determine how societal attitudes and tendencies augment the spread of corruption's speed and scope. Third, I show how Ukraine's political system has accelerated, rather than hindered, the normalization and proliferation of corruption. Finally, I test for the effects corruption has had on key macroeconomic indicators such as economic output, inflation, and productive inputs. The key methodology behind the research is ordinary least squares (OLS) regression, bivariate plots, qualitative analysis, and basic statistical methods.

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Disclaimer

This thesis was researched and written concurrently for another course, also in partial fulfillment of my degree. As such, some portions may overlap with "BPE Senior Paper: Capturing a Nation," submitted 23 December 2019.

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“Have we democratized shopping?

Yes, it used to be that bosses entered the Eliseev department store through the main entrance and the workers crept in round the back. Now the workers go through the main entrance and the bosses creep in round the back.”

-Popular Ukrainian Adage

Introduction

In the beginning of 2019, Ukraine dethroned Moldova as Europe’s poorest country; it did so despite starting as the second most developed part of the Soviet Union – a nation that had consistently ranked as the second or third-largest economy in the world (Harrison, 2017(a)). According to the St. Louis FRED (Federal Reserve Economic Data, 2019), Ukraine’s 2019 GDP per capita is approximately 75% of its 1989 peak, implying that the nation has never fully recovered from its post-transition recession. That performance starkly contrasts with expectations, given Ukraine’s endowments including its wealth of natural resources, its geographic position connecting Europe and the Russian Federation, and some of the world’s most fertile lands, known as “black soil.” Against the backdrop of economic underperformance, Ukraine has also exhibited an astounding amount of corruption. Transparency International ranked the country as the 35th worst nation (out of 170 nations) in a measure of administrative control over public sector corruption between 1996-2013, and the most corrupt nation in Europe. As a clear indication of the authorities’ failure to address corruption, only four economic crime-related arrests were made in 2013, the same year the country embarked on a new anti-corruption reform program (Transparency International, 2014). Indeed, among those arrested, two were

attorneys representing the state in bankruptcy cases, and two worked in village councils. Hardly the hard-bitten criminals you would expect in such a highly corrupt nation.

Scholars from multiple disciplines have long argued about the implications of corruption on economic performance, social structure and trust, governmental legitimacy, and even psychology and mental illness (e.g., depression) (Schleifer and Vishny, 1993, Mauro, 1998, Granovetter, 1996, Denisova-Schmidt, 2019, Huntington 1968, and Coase, 1988). The presence of both poor economic performance and high corruption in Ukraine may imply a causal link between the two; however, few, if any researchers have explored this topic and attempted to quantify its effects. Their reluctance probably comes from the lack of adequate and accurate data available on Eastern Europe before the late 1990s. Similarly, there is an ongoing multi-disciplinary debate regarding the origins of corruption. As far back as ancient Greece, Herodotus noted how a powerful family once bribed the Oracle of Delphi to convince the Spartans to help them conquer Athens. Regarding this episode, Aristotle noted that even the Gods could be bribed. Tracking the evolution of corruption is an even more pressing task than quantifying it, as it could reveal the key players and thereby the sources of Ukraine's problems with the phenomenon.

In this paper, I investigate whether corruption has indeed been a cause of Ukrainian economic underperformance, and the mechanisms that may have aided its spread throughout the country. I utilize a framework that combines research from the fields of economics, criminal psychology, and sociology. My period of analysis focuses on 1991-2013, as the data for this time period is the most accurate and is not mixed with any serious exogenous changes such as the Crimean War which began in 2014. I am also avoiding Soviet data that has very different

methods for calculation and collection and may be incomparable to modern methodologies.

However, I bring in data from more recent years, specifically in Part 1, due to a lack of available studies for earlier years.

I propose that Ukraine's poor economic performance (1991-2013) is partly a function of the country's endemic and pervasive corruption. This corruption is highly dependent on three main factors: historical legacies, societal attitudes towards corruption, and political structure at the time of transition. I will explore each in turn, in Part 1. Moreover, there is a feedback loop from each of these three factors to corruption, which has created a distinct underperforming equilibrium in the Ukrainian economy. In Part 2 of this paper, I apply ordinary least squares (OLS) regressions and simple statistical methods to quantify the negative effects of Ukrainian corruption and investigate the mechanisms by which this phenomenon has had the most impact on the economy.

My findings show that while living under the Soviet system, Ukrainians became accustomed to many informal institutions and norms that made bribery and corruption ubiquitous in daily life. Particularly, systems of informal exchange and vertical hierarchal relations played a significant role in linking economic decisionmakers throughout the command economy. Additionally, these relationships led to citizens committing illegal and/or unfair acts, but not recognizing them as such. Once the Soviet Union collapsed, a new class of citizens known as oligarchs plugged into existing societal networks and leveraged informal exchange to wield considerable power in their respective regions. These oligarchs linked their networks directly into the political system due to poor enforcement of constraints on politicians, as well as an unclear split of powers between the legislative and executive branches. As a consequence,

Ukraine's government strayed into the territory of state capture, when powerful individuals or groups seize control of national decision-making and use corrupt means to circumvent justice.

According to my results, corruption has had both negative direct and indirect effects on Ukraine's economic performance, in the period of my investigation, 1991 to 2013. Every 1% increase in corruption is found to have an associated 0.866% decrease in total economic output for that year. Corruption is also found to have a robust indirect effect on economic performance through inflation. When controlling for inflation, corruption's marginal effect on economic performance is insignificant. Further research may show a common underlying process affecting both Ukraine's inflation and corruption. In addition, I estimate a Cobb-Douglas production function. This estimation suggests that corruption still has negative effects on Ukraine's economy when controlling for other productive inputs such as labor and capital stock. These findings are in contrast with studies observing that corruption has ambiguous effects when assessing cross-country panel data. However, a critical limitation in my analysis is the paucity of observations, reducing the statistical validity of my models. Future researchers are encouraged to utilize more frequently collected data, rather than annualized measures, or to expand the findings using factor analysis.

Brief History of Ukraine

Ukraine's experience with nationhood is relatively short-lived. The country's national identity and definition of statehood emerged only in the 18th century, and in disparate communities between the Russian and Hapsburg Empires (Makuch, 2019). A fully independent Ukraine emerged in the chaos of the First World War, serving as a home to multiple warring states between 1918-1920. Ukraine was then integrated into the Soviet Union, where it served a

secondary role only to the founding Russian Soviet Federative Republic (RSFR). During this time, the Ukrainian Soviet Socialist Republic developed a major mining and manufacturing hub in its Eastern region and continued its long-time production of agricultural products in the West. Ukraine's Communist experience was fraught with strife as between 1932-33 the country faced Holodomor, one of the world's worst famines, as well as the Chernobyl nuclear catastrophe in 1986. Ukraine would not see independence again until 1991, when the leaders of Ukraine, Russia, and Belarus signed the Belovezha Accords which formally recognized the Commonwealth of Independent States (CIS) and its member states as the successor to the now-defunct USSR.

Theories on Corruption

Corruption is a social phenomenon that has been inextricably linked with political power and refers to the "misuse of public office for private gain." Elaborating further, Klitgaard would refer to corruption as the "divergence between the principal's or the public's interests and those of the agent or civil servant" (Klitgaard, 1989). Corruption can be separated into a spectrum of grand corruption to petty graft. In the former, corruption occurs at the highest levels of government and can work its way down to lower-level bureaucrats. Grand corruption requires the highest level of political involvement and affects activities such as government procurement, allocation of credit lines, and industrial subsidies. Petty corruption can be an equally pervasive problem and concerns the interaction of the private sector and non-elected bureaucrats. Such corruption can be seen in activities such as bribery, manipulation of regulations, inspections and

licensing, arbitrary taxation, underpayment of taxes, and the deliberate misallocation of government benefits or resources (Schleifer and Vishny, 1993).

Scholars from multiple disciplines have long debated the consequences of corruption. On the one hand, corruption has a high societal cost. According to Shleifer and Vishny, it leads to the formation of the grabbing-hand model where the government is an unorganized interventionist thwarting markets and eating away at political/governmental legitimacy (Shleifer and Vishny, 1992). Further literature by Mauro (1995) and Wei (2000), adds that corruption negatively affects economic outcomes through an impact on physical capital. Corruption also adds uncertainty to returns on investment as property rights and ownership remain in flux (Cieslik and Goczek, 2017). Therefore, widespread corruption should create a dead-weight loss as each economic unit invested is subject to possible expropriation, as well as diminished initial incentives to invest. Other literature such as Mauro (1997) and Mauro (1998), cite corruption's impact on human capital as well as efficient government investment allocation. On the other hand, some cases of organized corruption can coexist and even strengthen functioning, if autocratic, forms of government. Darden notes that in cases where incentives are weak, the systematic tracking, monitoring and granting of informal payments creates patronage networks that will follow leaders' directives (Darden, 2008). Augmenting this viewpoint, academics such as Huntington (1968) and Coase (1988) spoke of the concept of 'grease money,' and believed that the phenomenon was a correcting response to a market failure.

Sociologists have also questioned the negative effects of corruption. Stark, for example, notes that the informal economy and corruption represent an explicit rationalization of regulatory bureaucratization, which is particularly frequent in developing economies. In fact, he notes that

in overly bureaucratized or command economies, corruption and informal markets serve as the basis for transactive market relations and property rights (Stark, 1989). Furthermore, Granovetter (2004) describes corruption as a social construct. His work demonstrates that the Western conception of corruption hinges on a moral violation, but other groups have very different social principles and norms that govern interactions. Granovetter argues for instituting terminological consistency and rigor around the term “corruption” based on the background behind the action. Exchanges can then fall outside of society’s definition of corruption if they are constrained by norms of appropriateness and excessiveness. Whether something is defined as corruption is highly dependent on the social classes of those involved. If a higher-status individual exchanges with a lower-status one, then the result is frequently recognized as corruption and implies a one-time market-like exchange. Exchanges among equals, in contrast, carry expectations of a continuing relationship and thus have no specified timeframe or nature for reciprocity. What is often criticized as illegal depends on the reference group, and becomes, as in the words of German lawyer Joannes Ferrarius, “sozusagen wäscht eine Hand die andere“ (As it were one hand washeth another).

PART 1:

Historical Legacies

Soviet Period

Ukraine's recent experience with corruption, after 1991, shows evidence of a continuation of many of the region's historical legacies. Historically, Ukraine's corruption was most closely described by systems of patronage, which are an advanced form of the grand corruption previously mentioned. As defined by Granovetter (2006), patronage networks are hierarchical relationships where clients offer goods, services or support to a patron in return for protection and promotion of the client's interests or other benefits. The patron is always the higher-status individual in the exchange (either by legal status, wealth, or connections), and their unequal positions ensures that the client is never able to fully repay his patron, and must balance the account by providing loyalty and submission (Lomnitz, 1988). Over time, patrons can build up cliques of individuals in public administration who remain loyal even if the patron falls out of power. Although not the only outcome, patronage often facilitates corruption and crime, which are dependent on secrecy and trust (Lomnitz, 1988). The reciprocity between the client and patron make the relationship very stable, so payments or corrupt acts become more frequent and enhance the integrity of the entire network.

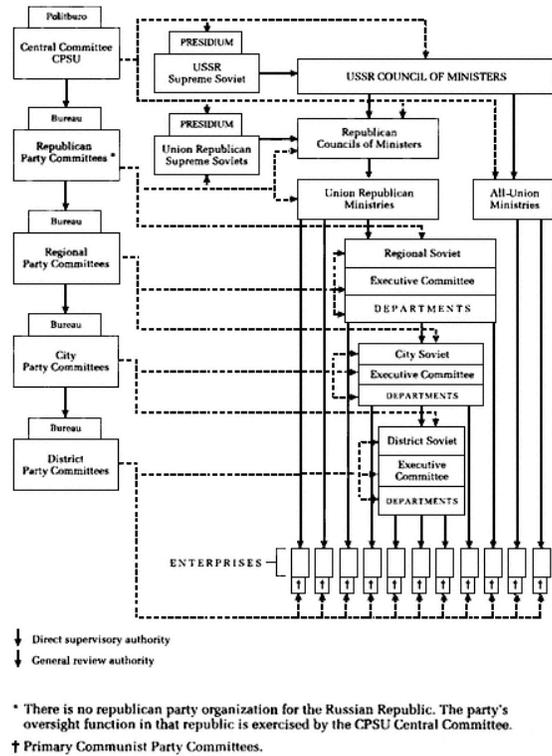
Patronage networks can be tracked as far back as Tsarist Russia's feudal societal organization. According to Pipes, the Russian nobles exercised a particular form of absolute

monarchy where there was no distinction between sovereignty and ownership, because peasants were tied to ancestral lands directly granted by the emperor (Pipes, 1976). Personal power-broking and favoritism led to the formation of blocs of landed nobles built on patronage networks, that established political stability and cohesion. Even as late as the early 1900s, aspiring directors of limited liability companies were required to receive charters and permissions from the Court, at times even directly from the head of all patronage networks, the tsar. Therefore, bribes and gifts were expected in daily life as the flow of goods and services would depend on connections to savvy and well-connected individuals. Through monarchical authority and underlying fiefdoms, corruption was institutionalized and normalized (Hosking, 2000). The result was a system that favored informal rules over clear laws.

The transition from Tsarist to Communist rule served to intensify many of these traditional elements of societal organization. Particularly under Stalin's leadership, many of the old tenets of patronage were systematized in the "nomenklatura" structure. Party rules dictated that there would be, "a regular and all-embracing system of record-keeping [*uchet*] for the selection of managers and responsible officials in soviet, economic, co-operative and professional organizations" (Korzhihina and Fignater, 1993). Consequently, decision-making for authorities in civil, manufacturing and governmental positions was made by leadership in the rung above the appointee, leading all the way up to the General Secretary of the Soviet Union. Through *uchet*, the General Secretary supplanted the tsar as the head of all patronage networks. All rent-seeking behavior flowed from the center of the USSR, Moscow (See Figure 1 for an organizational chart). Vertical decision-making interfered with the working of the centrally planned economy as well as with, the assessment of one's job, the allocation of invaluable

residence permits [*propiski*], the standing of educational establishments, supply chains, and even the distribution of food. Rather, political maneuvering and standing were by far more important.

Figure 1: Political and Civil Organizational Chart of Soviet Union



Source: (Ruble, 1990)

Politically connected individuals interested in maintaining their status within the central planning system cleverly utilized grand corruption. Leaders created entire networks of corrupt relations penetrating all levels of the bureaucracy or entered previously existing networks. Even Leonid Kravchuk, last Chairman of the Ukrainian Supreme Soviet, and then first President of Ukraine, admitted that “the position of Chairman of the Supreme Soviet was acquired by trading.

There was a trade, there was no voting, ballots were on sale.... ‘You give to me; I give to you.’” (Kravchuk, 1999) Throughout the Soviet Union, the overruling slogan became “Trust in Cadres,” and political organizations depended on rent-seeking behavior to maintain themselves. As Simis (1982: 85) notes, “the district elite is linked to the ruling apparatus by a chain of corruption and a portion of the never-ending tributes and bribes flows in a constant stream from the district centers to the regional centers.”

Corruption was also prevalent throughout the daily lives of normal Ukrainian people, although they would not describe it as such. Most Ukrainians were not able to plug directly into the *nomenklatura* system, but they engaged in informal exchanges of favors, with the expectation that there would be something provided in return. This informal exchange became known as *blat*, which in Yiddish meant “close, familiar, belonging to one’s own circle.” The term referred to routine, mainly non-monetary, practices of reciprocity, often associated with mutual help or understanding, or cooperation of “us” versus “them” (Ledeneva, 1997).

Favors and gift-giving fall within a unique type of economic behavior. According to both Humphrey (2012) and Henig and Makovicky (2016) favors are actions which carry economic consequences but are not explicitly part of a traditional cost-benefit analysis. Favors and gift-giving are both sociable and instrumental and highlight the ambivalence of each “favor” provided. In each particular case, distinguishing friendship from using friends (*blat*) can be done through frequency or context (i.e., people who frequently draw on these exchanges are now brokers rather than friends). In the Soviet vernacular:

the term embraced... (2) horizontal, or reciprocal deals of the ‘I scratch your back, you scratch mine’ type; (3) go-between practices (asking on behalf of someone rather than for oneself) and self-serving brokerage; (4) exchange of favors and access to resources associated with family, friendship and other binding relationships; (5) patterns of sociability such as mutual help, mutual understanding and exchange of information (Ledeneva 1998: 114-115).

Three elements of the Soviet economy made *blat* particularly prevalent. First, was the environment of constant shortages and rationing created by the planned economy. There needed to be a way to supersede official party rules to meet consumer demands. For example, to receive a phone line, a citizen would have to put in a formal request which could take up to 20 years to fulfill. It was much easier to make friends with state employees at the local telephone exchange, often through your own personal resources or connections (Hosking, 2000). The economic system of the Soviet Union was simply not geared towards the production of consumer products, and category A (producer) products were favored for category B (consumer) products in the official 5-year plans. With both shortages and mainly low-quality products available (only 1-4% of consumer products earned a State Quality Mark), circumventing official channels became the only way for Soviet citizens to meet their growing demands. (Simes 1975: 42).

Second, was the ambiguous distinction between public and private property. State propaganda extolled the virtue of “guarding the public property!”, but “one has what one guards,” and there began a slow trickle-down of public property into private hands. From 6 AM - 2 PM the factories worked for the State, but from 2 PM - 6 PM workers would switch production lines to make output outside the official plan or open the floor for other businesses. This phenomenon gave rise to the concept of hybrid property, which creates a “socialist mixed economy” according to Gabor (1986). Hybrid ownership became viable and widely accepted opening the path for future asset stripping as state assets were privatized spontaneously.

Third, an “us and them” mentality at all levels, led to the “misrecognition game,” as defined by Ledeneva, where a *blat* transaction was considered as friendship by participants, but was thought of as corruption by outsiders. Ambivalence towards this behavior allowed participants to maintain an altruistic and savvy self-image and led to systematic corruption without fear of admonishment. Widespread usage of *blat* effectively changed the nature of morality in exchanges within the Soviet Union. If a citizen lacked the means to even survive at a basic level by official methods he was “freed ipso facto from normal norms, he is freed from them by these moral concepts themselves. It is immoral to expect a man to be moral if he lacks the minimum living conditions that permit society to demand morality from him” (Zinoviev 1985: 48, 63). However, since *blat* participants are linked to one another and know of the transactions that take place within their network, they also function as enforcers of the codes of conduct. In many ways, *blat* was a communal system, so members were expected to uphold some virtues of fairness and were not allowed to specify the time or nature of repayment. If members of the network became bad actors, the others could socially ostracize them and constrain their access.

Even factory managers had to utilize *blat* to fulfill the state-mandated plan, as certain tools, materials, and spare parts were impossible to get through official supply chains. To avoid indebtedness between equals and the formation of extended relationships, managers would use *tolkachi* to bribe other officials or managers. *Tolkachi* were unofficial traders who were masters of *blat* relations and used their extensive networks to secure goods or services for enterprises through *blat*, barter, and bribery. Beyond manipulating supply chains, *tolkachi* would also use their extensive links to government officials and the commissariat to manipulate the targets of five-year plans. The same *tolkach* was often hired by multiple firms at one time and served as the

connection between the black or parallel markets and official state production. They were vital components of the Soviet economic system, which can be construed as a linked system of *tolkachi*, a network of networks. Furthermore, managers allowed employees to turn to the *tolkach's blat* networks, as lacking the right to fire employees left them neither carrots nor sticks through the formal economy. However, exclusion from social networks was seen as an incredibly potent deterrent against noncompliance with both state-mandated and extra-legal “marginal” production.

The result of Soviet control was a paradoxical relationship between the State and its subjects. In the case of high-level bureaucrats, many would actively flaunt Soviet values of meritocracy and equality, through the formation of complex networks of cadres. These prior Communist officials were the most politically-connected individuals in society, and would prove instrumental in spreading corruption at the time of transition. Meanwhile, Soviet *blat* effectively became the reverse side of this over-controlling center, facilitating the ability of the people and the regime to survive under formally pronounced but ultimately unenforceable rules. The system of *blat* was an indispensable set of practices that enabled the Soviet system to function, made it tolerable, yet also subverted it. Initially, the participants of the *nomenklatura* and *blat* systems had limited contact between one another, but changes in Ukraine’s political and economic structure brought these two networks together.

Post-Soviet Period: Rise of the Oligarchs

Change, of the social world is not simply the passage of one order to another but rather rearrangements in the patterns of how multiple orders were interwoven. When the Soviet Union collapsed in 1991, many of the formal systems previously described fell apart. Under the Soviet system, economic crimes were severely punished, and many would-be embezzlers were kept firmly in-line by officials above them. Such deterrents forced corruption into a manageable equilibrium, and while pervasive still served a secondary role to the State. Once these patronage networks lost their connection to Moscow, republic-level officials found themselves cut off from both their resources and supply chains (Vance and Paik, 2006).

Concurrently, the newly formed Ukrainian State was too weak to supplant the role Moscow previously held at the head of the *nomenklatura* patronage chains. Now burdened with a large amount of expenses, mounting debt, and little foreign currency reserves, Ukraine's transitional government (between 1991-1993) had few financial resources to deploy in government initiatives. In fact, in Ukraine's first year of independence, it had a deficit of 14.1% which climbed to a record 30.2% the following year (Johnson and Ustenko, 1993). What followed was a loss of control from the country's center (Kyiv) over the various regional bodies. Indeed, enforcement efforts became so inefficient that between 1990 and 1998, the country reported a 40% decline in the number of reported crimes that were later registered, and even 50% of police officers surveyed reported their own performance as "low" (Solomon, Jr. and Foglesong, 2001). Furthermore, this transitional government lacked any clear goals to reestablish control or enact forward economic and political reforms, favoring a focus on nationalistic and country-building endeavors (Havrylyshyn, 2013).

The existence of “secondary” markets and networks, which cut across the entire Soviet economy, prevented institutional failure in the face of the collapse of formal structures of the socialist regime. Indeed, the two merely became far more interconnected and the routines and practices, organizational forms and social ties, became assets and the underlying capital for credible commitments and coordinated actions. Instead of the disorientation described by Bunce and Csanadi (1992) as expected in transition, the result was new organizational forms and the activation of pre-existing networks of affiliation. I investigate the structure of these new networks that emerged and characterize them as the unit of observation for the spread of corruption.

Crucial to the transformation of property relations was the Ukrainians’ unique path of political reorganization. Unlike several other Post-Communist nations, Ukraine did not pursue a path of lustration. Lustration, as defined by Dvorakova and Milardovic, was the removal of Communist authorities from previously held posts of power (Dvorakova and Milardovic, 2007). In a phenomenon known as reproduction circulation, these entrenched Communist bureaucrats and elites traded their Communist badges and papers for nationalist Ukrainian ones, without any democratic voting process, implying that the nodes of the parallel economy were maintained in near perfect condition.

The result was the preservation of politically linked individuals in regional positions of power, albeit without their former patronage network leader. In fact, the Ukrainian government practiced a system of economic decentralization and entrusted local officials to make decisions on privatizations and distribution of state resources. The members of the Soviet *nomenklatura* emerged without constraints or oversights as the central government was unable to perform an

enforcement function, and the former *nomenklatura* were beholden to no voters. These individuals used their newfound power to rapidly build out their social networks and/or plug into the informal networks centered around regional industries and companies. To ensure binding agreements between the existing labor force and these bureaucrats, approximately 90% of small-scale enterprises were leased for 10-15 years to employees, whose contracts were on incredibly favorable terms (Ewiêcicki and Wellisz, 1993). Additionally, *torgs* (the large enterprises organized as branch and regional monopolies) were untouched by privatization efforts and continued to be managed by associates of the former *nomenklatura*. Control and ownership rights were thereby split, with the State and citizens holding the majority of ownership rights and the bureaucrats fielding the control rights. Due to this disconnect, “spontaneous privatization” was often carried out through the outright theft of state assets, and company equity was paid out in the form of generous “dividends” to politically connected individuals. Indeed, among the new firms founded in 1997, approximately 40% of firms reported using state assets as the initial capital for their foundation (Campos and Francesco, 2006).

Various organized crime groups also aligned themselves with these few individuals who possessed both political and economic power. The goals of these groups were to gain access to the privatization process, ensure economic privileges that increased margins, avoid taxation and criminal prosecution, and to launder and fence illegally obtained funds and goods. The bureaucrats, now allied to organized crime groups, brutally competed with one another to consolidate control, and over time dominant groups prevailed over weaker ones. According to *Figure 2*, we can see how the triumphant networks would lead to the creation of four main regional clans, each centered around a monopoly over the region’s industries or natural endowments.

Intense competition between groups led to the ideal conditions for rampant organized economic crime including smuggling, exporting of unlicensed goods, tax evasion, counterfeiting, price manipulation, the establishing of fictitious enterprises for money-laundering purposes, murder-for-hire, and so on. These conditions led to the growth of the alternative economy, which Medina and Schneider (2018) estimate at 50% of GDP, centered around trade and intermediary trade activity. For reference, the global average size of the parallel economy as a proportion of GDP is approximately 24%.

Figure 2: The Regional Clans

| <i>Regional Clan</i> | <i>Industry of Focus</i> |
|----------------------------------|--|
| <i>Donetsk Faction</i> | Metallurgy, coal-mining (25% of USSR's former output), and machine-building |
| <i>Dnipropetrovsk Faction</i> | Heavy industry, chemical production, and advanced industry (space rockets, turbines, etc.) |
| <i>Western Ukrainian Faction</i> | Natural gas, oil pipelines, and agriculture |
| <i>Kyiv Faction</i> | Financial services, insurance products, and central government (Note: Launder money for other clans) |

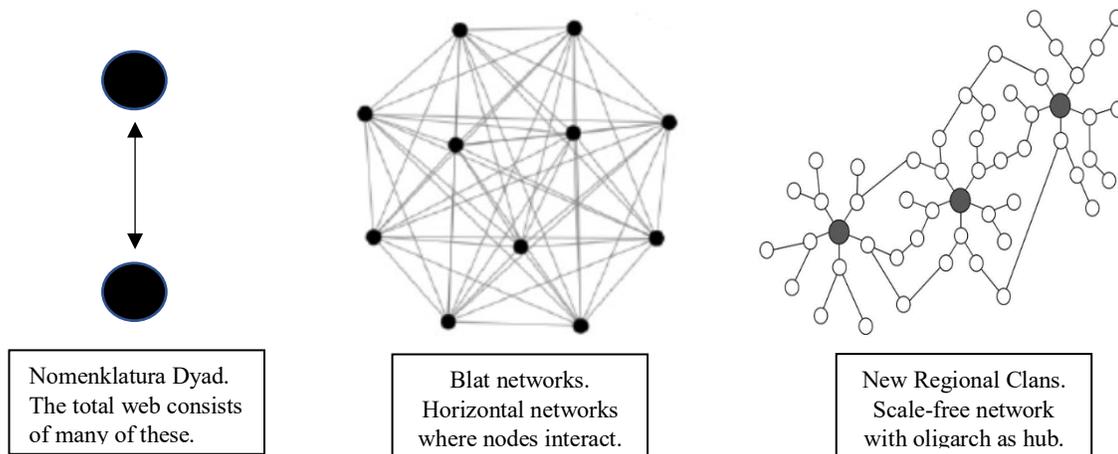
Source: Minakov, 2018

These patronage networks were very different from the disconnected *blat* and *nomenklatura* forms, and their existence gave rise to the new economic, social, and political

class, known as the oligarchs. Strategies of Ukrainian oligarchs could be analyzed through interaction with mainstream parties and by establishing a “channel for influence”, linking the “funder” (businessperson) with the “target” (policy maker). This “channel for influence” enabled the transformation of financial capital into political capital, capable of influencing the policy-making process. Therefore, networks were structured around a poligarch, who was most frequently the former Communist bureaucrat who could contribute his political connections. Behind him, or on equal standing, would be an oligarch, who was the financial heart of the patronage network. The oligarch’s goal was to commercialize *blat* and the poligarch’s informal connections to create rent-seeking opportunities for the group. Below these two classes would be a larger group of corruption brokers who were the go-betweens when identifying opportunities for corruption among client companies and enterprises. These individuals were frequently *tolkachi* who became experts in the *blat* system during the Soviet period. At the end of the network was the ordinary *corruptor* (corrupt person in Russian/Ukrainian), who could be anyone who provides a bribe or favor to the network.

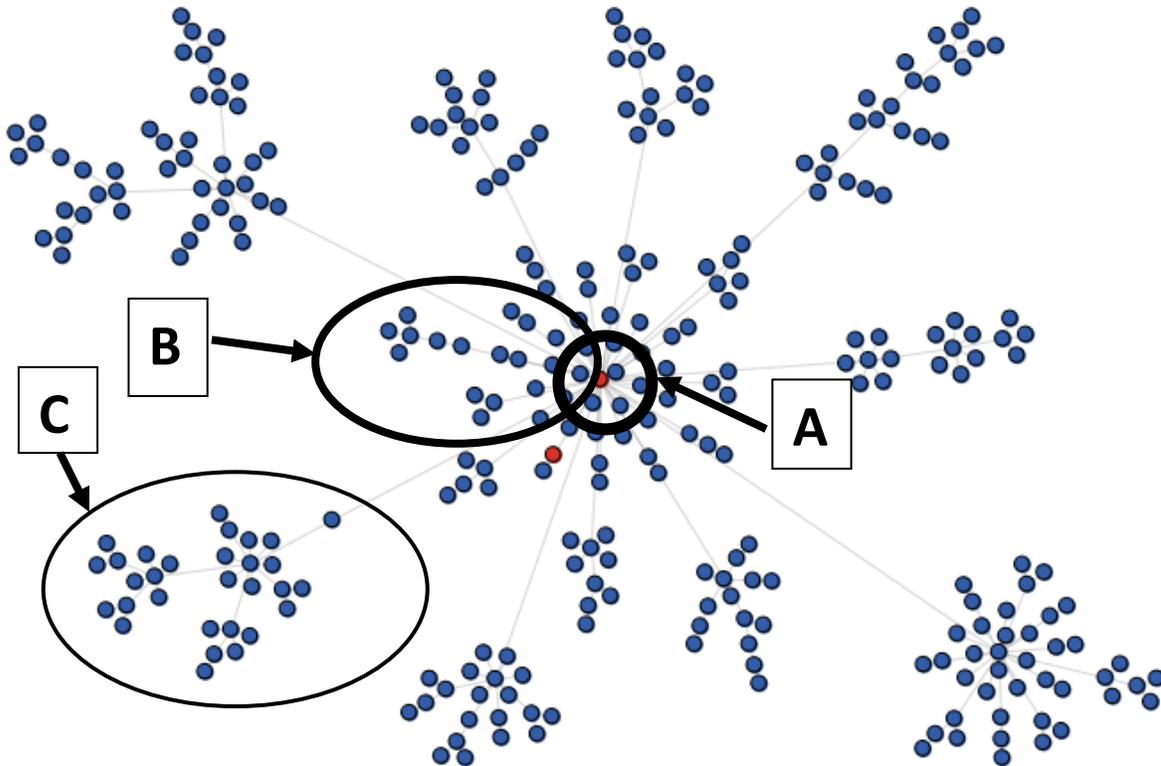
The *nomenklatura* system could be best described by vertical hierarchies or a chain of dyads, while *blat* was a horizontal hierarchy where interactions are decentralized across many economic actors. The new regional clan format revolutionized the structure by introducing scale-free networks. In a scale-free network, poligarchs and oligarchs serve as the hub of new organizations around which “associates” would crowd. Additionally, information exchange between parties would be limited, minimizing the risk of the hub being revealed. However, what allowed these structures and therefore corruption to proliferate was their open-ended structure, allowing people of all classes to contribute to the success of the network. (See Figure 3 for new structures) (See Figure 4 for an in-depth assessment of new scale-free networks).

Figure 3: New structures of networks



Source: Panel 2: Huang, Sun, Lin, 2005; Panel 3: Seo, Kim, Lee, Youn, 2013

Figure 4: Regional Clan Hierarchy in Focus



A: Heavily centralized hubs containing poligarch and oligarch

B: Corruption-broker who functioned as “operators” or covered up crimes

C: Ordinary Ukrainians who made up the periphery of the network. Provided services or protection.

Source: Hale, 2014

Societal Attitudes Towards Corruption

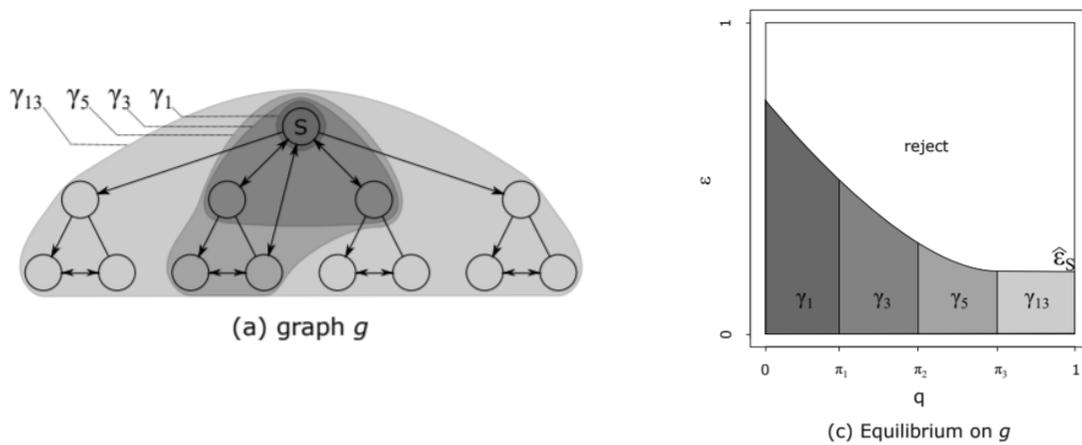
Modelling the Spread of Corruption

In transitional economies, market failures are often solved by informal practices: low levels of trust in failing state bodies shift the burden onto interpersonal trust. Although necessity and shortage were the causes for the emergence of informal practices, the reasons for their reproduction were vested interests and proactive manipulation. One of the essential and unique points of the new networks was the requirement for constant recruitment of new members in order to win the initial struggles between the different groups. Successful recruitment was facilitated by the citizens' attitudes towards corruption, which were distorted after years of its normalization during the Soviet period.

Corruption is often proverbially referred to as a disease or an epidemic, but the work of Feralli (2017) suggests that the spread of criminal networks, due to its scale-free structure, is really much like that of a virus. *Figure 5*, from Feralli (2017) shows the spread of corruption through a network. Panel 1 demonstrates how the initiator (**s**) reaches out to other nodes (individuals) in his network to recruit them as collaborators. Each subsequent node has a probability of rejecting advances of individual **s**; this probability is determined by each individual's risk preferences. Risk can be modelled by the repercussions for committing a corrupt act and the likelihood of its being revealed, which is then weighed against the individual's residual claims from the graft. As the size of the crime increases, more people get brought into the network, and so the nodes below **s** can reach out to additional members for support. Panel 2 models the likelihood of rejection, through epsilon (payout for graft) and q (the number of participants, or capacity). The model assumes that more capacity implies a higher

probability of rejection (the white space) because payout must be dispersed between more members. The result will be an equilibrium where no further members are added to the group because their probability of rejecting is too great. Another important consideration in this model is the number of social links available to each participant, allowing each one to leverage existing ties for trustworthy support.

Figure 5: The Reproduction Cycle of Corruption



Source: Feralli, 2017

Based on Feralli’s theories of corruption, I designate three main factors that influence its spread: repercussions of corruption, probability of acceptance, and frequency of interaction (which builds player trust). Each of these factors can be derived from certain societal trends and attitudes of the average Ukrainian.

It is important to note the limits of information exchange within a scale-free network. Since the hub serves as the organizer and originator of corruption (the seed), nodes below the center know progressively less about the scope and scale of the corrupt activity. It is necessarily

more difficult for subordinate nodes in the network to reveal the identity and/or plans of the originator due to constrained information diffusion. Therefore, the structure of the network regulates the risk of being revealed.

Under historical conditions that were conducive to both bribery and informal exchange, these behaviors became expected and the citizenry became apathetic and, in some cases, even supportive of them. Looking at the percentage of respondents who believe no corruption takes place, seen in *Figure 6*, using data from 2001, one can see the degree to which corruption was widespread in Ukraine (Transparency International, 2001). Against a peer-set of their post-Communist neighbors, Ukrainians were the most likely to assume that corruption takes place. These findings are consistent with the previous characterization of Ukrainian daily life and the prevalence of corrupt activities. Poland, a country that shared many economic and social similarities with Ukraine, reported 7 times more respondents claiming no corruption was taking place. Additionally, on a scale of one to five, five representing widespread corruption and one representing corruption never takes place, over 70% of Polish respondents believed corruption took place at a level of three or less. In contrast, only 15% of Ukrainian respondents ranked corruption as three or less. Although Ukrainians recognize that it would be in society's benefit for them to stop participating in corruption, they continue to do so because they believe others are actively taking advantage of the limited resources available for expropriation, and they may fear missing out on the opportunity.

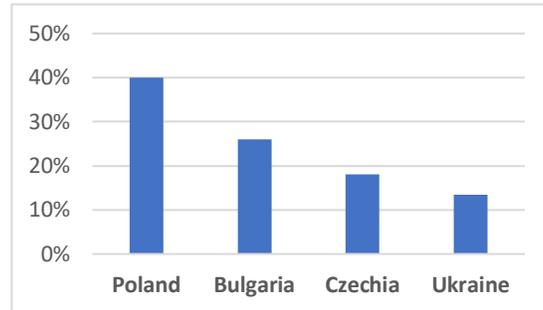
Figure 6: Percentage of Respondents Who Believe No Corruption Takes Place

| <u><i>Country</i></u> | <u><i>% of Respondents</i></u> |
|-----------------------|--------------------------------|
| <i>Ukraine</i> | 2% |
| <i>Czechia</i> | 5% |
| <i>Bulgaria</i> | 9% |
| <i>Poland</i> | 14% |

Source: Transparency International Global Corruption Barometer 2001

Looking now at the percentage of respondents who believe ordinary people can make a difference in the fight against corruption, as shown in *Figure 7*, one can also see that by 2001, only 13.5% of respondents in Ukraine believed they could make any difference in the fight against corruption (Transparency International, 2001). By believing their actions have little consequences, many Ukrainians could rationalize engaging in corrupt activities raising their probability of acceptance. Citizens then play into the mentality of the following: if they will not do it, someone else will. Apathetic attitudes also limit negative self-images as the citizen's actions are believed to be insignificant when compared to the total amount of corruption. Such an apathetic attitude decreases the social repercussions from being found corrupt.

Figure 7: Percentage of Respondents Who Believe Ordinary People Can Make a Difference in the Fight Against Corruption

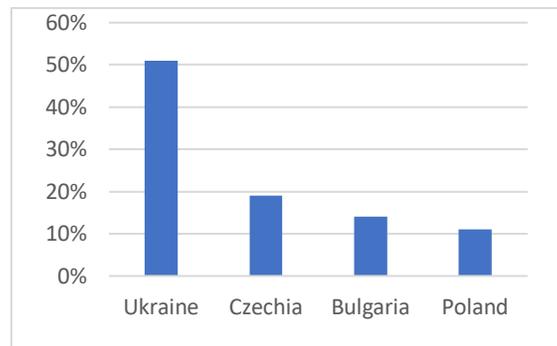


Source: Transparency International Global Corruption Barometer 2001

Far more concerning than this apathy, is the mentality of supporting bribery and patronage that formed after years of exposure to the phenomenon in daily life. In *Figure 8*, we see that 51% of survey respondents in Ukraine supported a bribe as an acceptable part of doing business (European Commission, 2011). This percentage was far higher than in the three other countries considered in this survey by the European Commission. Additionally, Bjørnskov demonstrated that one of the greatest repercussions from being revealed as corrupt was the societal pressure from being classified as a rule-breaker (Bjørnskov, 2004). In Ukraine, with such a large population that supported corruption, being exposed became less relevant, and members of criminal networks could engage in shady behavior with impunity. Of note, is that Ukrainians surveyed argued that corruption and bribery were always or sometimes justified based on efficiency and reciprocity between them and the acceptor. Such arguments point to the dual instrumental and social nature of bribery or gift-giving and harken back to *blat*, where participants are receiving both material and social benefits from exchanges. When bribery and

sociability are combined, citizens associate the action with altruism, and therefore decrease the likelihood of rejection.

Figure 8: Percentage of Respondents Who Believe a Bribe is Acceptable



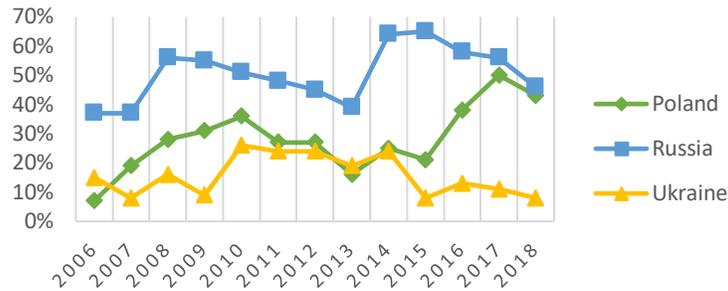
Source: European Commission Special Eurobarometer 397 Corruption, 2011

Furthermore, Ukrainians surveyed are some of the world's most likely citizens to report that they offered an illegal bribe. In 2003, 24% of Ukrainian households surveyed by Transparency International reported paying a bribe (Transparency International, 2003). According to the same survey, the number of households that *willingly* offered informal payments in the form of gifts or services to receive a good or service (similar to *blat*) was 52%, over twice the percentage reporting they paid a bribe. This disconnect points to the *misrecognition game* alluded to in my earlier discussion on *blat*, since respondents to the latter question were still providing a form of bribe but did not classify it as such. It seems that Ukrainian society did not develop an understanding of where corruption begins and ends. The only activities that conformed to the social definition of corruption were grand corruption and bribery between *nomenklatura* individuals.

The oligarchic networks, however, were more reliant on services than open bribes (Avioutskaa, 2010). Services allowed these networks to grow beyond explicit business connections to become informal governance systems, much like a mafia or organized crime syndicate. The respondents to the second question also felt justified in *willingly* offering up payment and did not understand the illegality or effects of their actions. Simple introductions were also not classified as illegal, and lower-ranking nodes connected the criminal who “recruited” them to future collaborators. Such expansion increased both the size of networks for their superiors, but also the frequency of interactions between nodes, leading to “trust between thieves.” By expanding networks and increasing their density, the oligarch/initiator could locate more rent-seeking opportunities, as well as increase the capacity and complexity of planned crimes.

Looking at levels of confidence in national government, as shown in *Figure 10*, one can also see the particularly low trust that Ukrainians ascribe to their national government. In fact, according to Gallup Analytics, Ukraine ranks the lowest among its peer-set of Post-Soviet Eurasian countries in nearly every year the poll was administered. Recalling *blat* mentality once more, an “us vs. them” approach was essential to the phenomenon’s spread, and despite the change in regime, the government is still seen in a hostile light. Therefore, when confronted with a bribe, many Ukrainians maintain a Robin Hood-esque self-image that increases their probability of accepting the bribe. Similarly, when reports of corruption are disseminated, based on the target and size of the crime, many Ukrainians characterize the perpetrator as smart, savvy, and against the political machine, diminishing the repercussions. For example, Ihor Kolomoisky is bizarrely a staple parody on the popular comedy show *Vecherniy Kvartal*, even after defrauding PrivatBank, a state bank, for 6 billion dollars (Mills, 2016).

Figure 10: Confidence in National Government



Source: Gallup, 2019

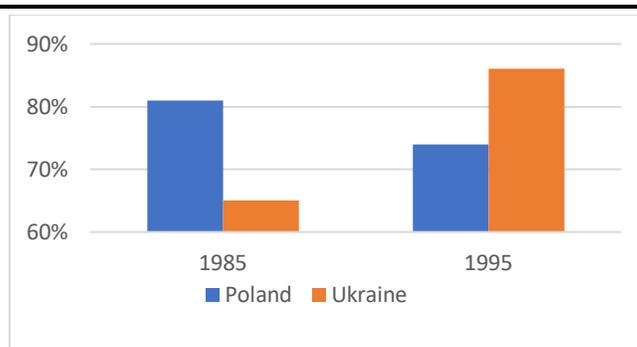
Trust in Transition

Attitudes towards corruption have allowed for more corruption to take place, but I assert that they have also decreased the total stock of societal trust. Scholars have long been split on whether societal trust is the independent variable that affects corruption and other political behavior (Fukuyama, 1995; Klesner, 2007), or whether corruption determines the quantity of trust within a given nation. However, according to Morris and Klesner, we find that corruption and trust (interpersonal and political) are linked in a mutually reinforcing relationship (Morris and Klesner, 2010). Lower societal trust has been one of the main ways in which leaders of these patronage networks were able to increase their reach and influence.

As a proxy for trust, Putnam in his paper on social dynamics in Northern and Southern Italy, used civic engagement metrics from a variety of groups such as football clubs and political organizations. To apply his research design, I considered data sets provided by Peter Glinski for Poland (Glinski, 2011) and O'Loughin and Bell for Ukraine (O'Loughin and Bell, 1999). Differences in civic engagement rates between Poland and Ukraine for 1985 and 1995 are

displayed in *Figure 11*. In 1985, 65% of Ukrainians did not ascribe to any civic engagement group; this figure rose to 86% by 1995. Despite a weaker showing in 1985, Poland has the opposite trend over time. This drop in civic engagement in Ukraine could be attributed to the increasing incidence of corruption over this time period.

Figure 11: Percentage of Respondents Not Involved in any Civic Organizations



Source: O'Loughin and Bell, 1999 (Ukraine) & Glinski, 2011 (Poland)

Three types of trust, each dependent on the stock of social capital, are distinguished by Raiser (1999). These are ascribed trust (kinship-based and lowest-level), process-based trust (from extended exposure), and extended trust (a key element of modern society, where you have limited information on the partner). In a post-Soviet society readily accepting corruption, the result was low levels of extended trust and a dependence on process-based trust and ascribed trust.

Process-based trust is linked to increased regionalization, suggesting interactions began to revolve around geographic location and proximity (Raiser, 1999). In 1999, only 17% of Ukrainian respondents were able to ascribe any faith in the central government (Zlenko, 2011). As Ukrainians turned away from the central government towards regional bodies, many of these local organizations were captured by members of corrupt patronage networks. Regional clans

were so integrated into society that by 1991, most male teenagers around Kyiv wanted to become racketeers and aspiring members of the clan (Maksimov, 2000). In fact, first-hand accounts of clan members display the degree to which these organizations used a patrimonial logic and psychology that facilitated recruitment and leaned on kinship-based trust. Members referred to patrons with words like “papa” (father) and “sam” (he/himself) to signify respect and admiration towards patrons and clan masters (Minakov, 2018).

A low level of social capital has also changed many of the incentives towards behaving in a corrupt manner. First, acting legally became more costly. For example, in Putnam’s paper on Northern and Southern Italy, he found that stronger trust between individuals would decrease transaction costs in the contracting and decision-making process (Putnam, 1993). Contracts were found to be more robust, and legal action could be taken to ensure they were not abrogated with little warning. But, under the context of a weak civil society, contracts increasingly required enforcers and middlemen to step in to resolve disputes. These patronage networks were a useful substitute in situations where the government was too weak or unable to aid in business disputes and enforce contracts. Second, actors saw increasing returns from acting illegally. With each successive corrupt transaction, it seems there was a greater incentive and appetite for this type of behavior. Corruption and patronage networks became more powerful as those at the top of the hierarchy continued to invest in the network, with higher pay-outs to those who joined them. Although the number of instances of bribery or theft decreased, the magnitude of each infraction increased throughout the early 1990s, implying more complex crimes with greater numbers of participants (EBRD, 2006).

Political Structure and Capture

While these patronage networks continued to expand and grow, change was afoot within the Ukrainian central government. In 1994, Leonid Kuchma was elected as the new president of the country. By 1996, Ukraine adopted its first Constitution after a series of multiple political crises and stalemates between President Kuchma and the parliament (Choudhury, Seldius, and Kryrychenko, 2018). Kuchma's situation was so extreme that he attempted to humiliate the Parliament by proposing that he take the new Constitution to the people through a referendum (The Ukrainian Weekly, 1996). The result of this political stalemate was a deeply flawed political structure that allowed leaders in the patronage networks to formalize their power on the national arena and become linked with both the formal and informal systems of power. Recognizing an opportunity for subversion, the clans transformed the Ukrainian political scene into a battleground, with approximately 50% of criminal proceeds going towards government officials by 1999 (Schmitter and Guilhot, 2000).

Ukraine's 1996 Constitution formally implemented a *presidential-parliamentary system* in which both the legislature and the executive can dismiss the prime minister (Ukraine Constitution, art. 106, cl.9). At the outset, the presidential-parliamentary system immediately led to conflict between the legislative body and the President. Competition between the two bodies led to further political stalemate, especially with the "nuclear option," which afforded the executive the possibility of formally ejecting the parliament. President Kuchma, despite being a former parliamentarian, while presiding as the country's President at the adoption of this Constitution, displayed some of the worst traits of the split-executive system. Indeed, Kuchma

went through no fewer than seven prime ministers, regardless of their individual performances, as he attempted to offset blame for poor policy performance (Zhdanov, 2002).

An unstable power-sharing agreement further complicated the struggle between Parliament and the Executive. Although Article 6 of the Constitution delineated separation of state power, in practice, this was far from evident. Like most divided-executive systems, there is a significant overlap in governmental authority, particularly when referring to foreign and security policy. In the case of Ukraine, all of Article 106 covers the President's powers to manage national security and foreign affairs, and the vital power to appoint "Presidential Ministers" (Ukraine Constitution, art. 106). The Parliament is expected to comply and implement the policies put forward by the president, making him the de-facto leader of both foreign and domestic policy through both executive orders as well as the appointment of ministers. Such a challenge to Parliamentary authority exacerbated conflict between the two decision-making centers and muddled their focus and authority. Each side desired access to the setting of political institutions, which was seen as the greatest prize (Zielonka 1994). As Mainwaring notes, in the absence of an integrating entity, policy disputes quickly escalate into disputes of distribution of power (Mainwaring, 1993).

There were two results of the bitter conflict between the two branches that directly benefited the interests of these patronage networks. The first was a sluggish stream of reforms, and the second was a split of power between two decision-making centers.

The concept of a "partial reform equilibrium" was introduced by Hellman (1998) in his work on the politics of post-Communist transition. He defined it as occurring in a partially reformed economy where there exist massive rent-seeking opportunities for the elites. Upon

reaching a certain level of reform, these individuals will block any further efforts in order to consolidate power. In Ukraine, where the Communist Party still dominated the Parliament, the Party resisted attempts by the more market-oriented President to introduce a variety of reforms regarding price liberalization, free-trade, and ministry oversight committees. This sub-optimal equilibrium benefitted patronage networks because it allowed them to continue playing by the rules with which they had become so familiar. Thus, since much of the power of the networks was dependent on utilizing political connections and resources, stability of the associated policies was extremely useful to them.

By the mid-1990s, leaders of illicit patronage networks had already accumulated vast amounts of financial as well as political resources through the capture of lower-level bureaucrats and the mobilization of voters. One of the best examples came from the Party of the Regions, which represented the Donetsk clan, and fielded over 100% voter participation rates in certain districts (okrugs) in Eastern Ukraine (Kuzio, 2015). Since his policies' successes were tied to the fortunes of these clans, Kuchma adopted a new approach and quickly became an intermediary between the competing clans.

The base of Kuchma's support was now dependent on a coalition of parts of multiple regional groups: the Donetsk Clan, the Dnipropetrovsk Clan (where he was from), and the smaller clans of Crimea and Odesa (Minakov, 2018). In exchange for their support, Kuchma legitimized their corporate raiding by issuing executive orders privatizing companies and providing the clans with information and favorable terms (Valerko 1997). In exchange for his support, Kuchma and his staff were rewarded handsomely, with one stolen tape providing evidence that his family received 25% of the profits from a privatization deal that he brokered for

Rinat Akhmetov (now the richest man in Ukraine) (Melnychenko, 2001). In another reported conversation, the head of the tax administration told Kuchma how he was going to cover up the multimillion-dollar tax fraud for a friendly oligarch from the Dnipropetrovsk clan. (Ibid.)

Kuchma was now a member of multiple patronage networks and was responsible for resolving between them. As an alternative to a functioning Court system, Kuchma invented his own version of the Central Committee of the USSR. Like the *nomenklatura system* of the past, this “Presidential Administration” (PA) was stacked with appointees that came from the various regional clans. The PA was tasked with ensuring order by making strategic decisions for formal and informal institutions, maintaining a balance of power between clans, collecting rents, and providing cover for shady deals (Hale, 2014). Such organizations allowed for multiple clans and networks to establish at least weak ties between one another. Formal settings such as the PA meetings increased the clans’ frequency of interactions and allowed them to collude as trust increased. Much like oligopolists, colluding clans were able to extract more rents from both the government and state-owned enterprises, and could formalize their positions vis-à-vis one another.

While Kuchma was seeking support from the patronage networks, the oligarchic leaders were also able to capitalize on the unstable position of the parliament. Much like their interactions with the executive branch, the oligarchs extorted the legislative branch for their support. In information on the entrepreneurial activities of parliamentarians made public in April 2000, it was revealed that over 3,105 companies were connected to the People’s Deputies of Ukraine. These enterprises imported 25.3% of all Ukraine’s imports and exported nearly 11% of all products that year (Desiatnikova, 2000). Such strong ties to business, which at the time were

inextricably linked to the clans, made it incredibly easy for the oligarchs to request assistance in small-scale privatizations, handled most often by subordinates of the parliamentarians. Even high-ranking parliamentarians joined in the process. For example, former Prime Minister of Ukraine, Pavlo Lazarenko, laundered sums of money as large as \$100 million through his various political connections (FBI, 2009).

The clans used their ties between both the legislative and the executive branches to create a pseudo-bidding war for their services. The power rested with the clans as both branches heavily depended on outside influence to win in the initial division of political authority. By this process, financial capital became as valuable as political capital.

Part 2

Quantifying the Implications of Corruption

The goal of this section of my paper is to estimate the direct and indirect effects corruption has had on economic performance. I define direct effects of corruption (e.g., bribery) as the loss incurred in economic output. I define indirect effects of corruption as opportunity costs or lost potential economic activity. Several researchers, including Mo (2001) and Pellegrini and Gerlagh (2004), emphasize indirect effects of corruption on investment, human capital, political stability, employment, foreign direct investment (FDI), and trade policy.

The existing literature on Ukraine often cites corruption as a major factor retarding its economic growth and general growth trajectory. Seemingly the source of all woes, corruption has been used by researchers and reporters to explain a variety of phenomenon, such as high crime rates, high incidences of alcoholism, as well as a lack of progress in European integration proceedings. However, few researchers and reporters have attempted to quantify the impact that corruption has had on the development of the economy. I investigate the implications of corruption using a variety of macroeconomic and corruption indicators (see Table 1) and ordinary least squares regression (OLS) using a time-series dataset. The period 1991-2013 was selected because this is the period for which accurate and reasonable data is available. After 2014, the data are skewed by the war in Donbass and the consequences of Crimean annexation.

Theoretical Framework and Data

To measure economic performance, I use the annual percent change in GDP and standardize observations to 2010 US dollars. This variable is the most widely utilized measure of economic performance. To capture time-lagged effects of independent variables, I also use annual percent change in GDP in the next time period (year). Furthermore, I use the percent changes in dependent variables to ensure that the relationship between independent variables and dependent variables will remain stable over time.

To estimate corruption, I use the Corruption Perceptions Index (CPI), published by Transparency International, the premier non-governmental organization (NGO) focused on political accountability. The CPI is a composite index, derived from 13 surveys conducted by

independent institutions specializing in governance and business climate analysis. The index is the most widely cited measure of corruption in empirical literature. The CPI serves as a study of corruption by ranking countries by the degree to which corruption is perceived to exist among public officials and politicians. Fitzsimons (2007) explains how, according to his *tollbooth* model of corruption, bureaucrats base their decisions on the opportunities present in regulation and will maximize personal gain by creating unnecessary administrative processes for which officials can extract charges. Therefore, estimating public sector corruption should produce the supply of corruption, as bureaucrats (both at a high and low level) are selling their services to buyers interested in obtaining public goods (whether they are entitled to them or not). There are multiple other options for measuring corruption, such as the Control of Corruption Index by the World Bank and the Political Risk Services Group's International Risk Guide. However, the Control of Corruption Index has fewer observations available and would limit statistical tests. The International Risk Guide is also problematic as it only measures the political risk to the existing government posed by corruption.

Higher numbers in the CPI indicate less corruption. Since it seems more natural that higher numbers indicate more corruption, I transform the variable by subtracting the index from 1: $(1 - \text{CPI})$. A difficulty that arises with this index is the changing methodology between time periods. Transparency International does not always use the same sources of data, which could account for some of the variability in my corruption variable. To account for this, I use the natural logarithm of this index in order to measure the changes between years, which according to Transparency International, should be comparable.

Labor, capital stock, and total factor productivity (TFP) are defined in most economics literature as the key inputs for economic output. Accordingly, changes in these inputs should result in changes in economic growth. Since I am interested in measuring the indirect effects of corruption, I consider the three variables as dependent variables when estimating several regressions against my corruption indicator variable.

Corruption can be expected to influence capital stock by lowering the incentives to invest, as well as by misallocating investments. I define my capital variable as the annual percent change in capital stock measured in 2010 US dollars. This data is compiled from Federal Reserve Economic Data (FRED): which sources information from the University of Groningen database.

The relationship between labor supply and corruption is far more ambiguous, especially in the case of Ukraine. Soviet enterprises often practiced overemployment as the penal code specifically punished vagrancy and idleness (RSFSR Criminal Code, Article 209). State-owned enterprises played the role of the social safety net, and as the Soviet Union collapsed social expenditures were cut dramatically and unemployment rose in tandem (Mikesell and Mullins, 2001). However, surveys conducted by the EBRD demonstrated that many state-connected firms (which were most susceptible to corruption) were expected to maintain employment and social cohesion in jurisdictions (EBRD, 1999). I define my labor variable as the percent change in the number of people employed. The data are collected from the International Labor Organization's Statistical Database (ILOSTAT), which is the United Nations agency advocating for international labor standards and reporting. However, these estimations may prove problematic as extricating corruption's impact under the backdrop of organizational restructuring may prove unfeasible.

Corruption and TFP have an unclear relationship. On the one hand, according to Hoa (2019), corruption should negatively impact TFP through underfunding of educational facilities by government agents. On the other hand, schools with privileged access to resources and definite government connections can increase their quality by increasing the competition for acceptance. Kouramoudou (2017) also notes the negative impact of corruption on TFP, focusing specifically on the increase in tax burden present in more corrupt countries. Although there is a theoretical basis for this relationship, Ukraine experienced the introduction of several confounding variables such as the import of Western technology and business practices. TFP data are retrieved from the FRED dataset that is sourced from the University of Groningen and University of California, Davis.

I also consider inflation in my estimates as both a dependent and independent variable. Ukraine suffered from high inflation throughout the early and mid-1990s, much like its Post-Communist neighbors. Starting in 1993, the country fell into open hyperinflation. According to Cagan (1956) and others, hyperinflation has a strongly negative effect on GDP, since it severely damps private and public savings and creates distortions leading to the hoarding of real assets, and monetary outflow. In addition, it makes investment relatively less attractive. Although the two measures may seem unrelated, corruption and inflation could be linked through the independence (or lack thereof) of Ukraine's Central Bank. Throughout most of the early 1990s, the NBU (National Bank of Ukraine) was beholden to the Parliament, which I predict would allow corruption to play a role in determining money supply, in turn leading to inflation.

A major limitation of my data is the small number of observations I have for Ukraine. To deal with this issue, I break up this portion of the paper into two main sections: bivariate regressions and plots, and a multi-variate regression estimating a production function.

Table 1:

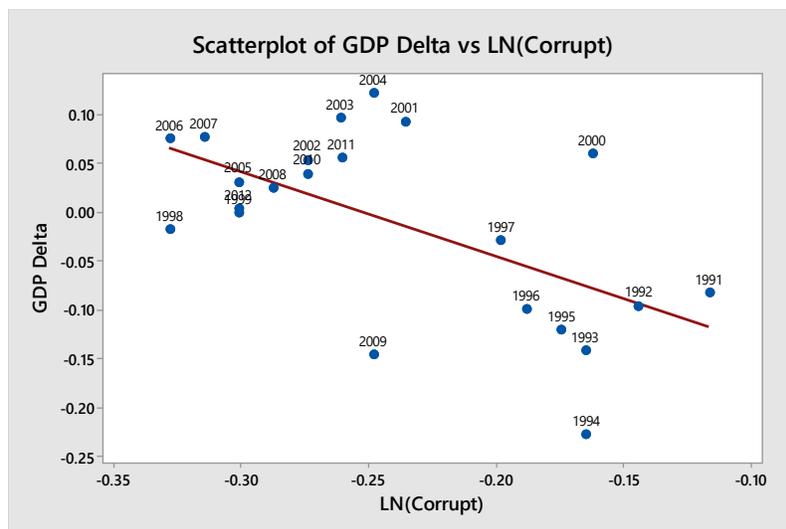
Data Sources and Summary Statistics for Ukraine

| Source | Definition | Variable | Obs. | Mean | Std. Dev | Min | Max |
|--|---|-------------|------|---------|----------|---------|--------|
| World Bank | % Change in GDP (2010 \$'s). | GDP Delta | 23 | -0.0133 | 0.0896 | -0.2293 | 0.1211 |
| FRED (Federal Reserve Economic Data) | TFP: Total Factor Productivity % Annual Change | TFP | 18 | 0.0161 | 0.042 | -0.057 | 0.074 |
| | % Change in Capital Stock (2010 \$'s): Annual Measure. | Capital | 23 | -0.0083 | 0.0108 | -0.0194 | 0.0250 |
| | % Change in Capital Stock (2010, \$'s) lagged by 1 year: Annual measure. | Lag Capital | 22 | -0.0098 | 0.0085 | -0.0194 | 0.0159 |
| Transparency International | Natural Logarithm of the Corrupt Perceptions Index: The measure aggregates a variety of sources' rankings of public sector corruption in the nation and creates a standardized composite index. Higher numbers represent more corruption present. | LN(Corrupt) | 23 | -0.267 | 0.1357 | -0.847 | -0.117 |
| UKRStat & IMF | Consumer Price Inflation: The annualized change in consumer prices. | Inflation | 22 | 621.81 | 2103.9 | -0.2389 | 10256 |
| | Natural Logarithm of Consumer Price Inflation. | LN(Inflate) | 21 | 3.3967 | 2.3374 | -0.5644 | 9.2356 |
| ILOStat | The annual percent change in employed population. | Labor | 22 | -0.0160 | 0.04157 | -0.1326 | 0.0303 |

Hypothesis Tests

Hypothesis 1: Economic performance in Ukraine (measured through percent change in GDP) has been directly hampered by incidences of corruption.

To measure the impact of corruption on percent change in GDP, I estimate function R1 (refer to appendix), and find that there is a statistically significant relationship between the two with a coefficient of -0.866. The relationship implies that for each 1% increase in the corruption indicator (which has a standard deviation of 5%) there is an associated slowdown of 0.866% from that year's growth. With an R^2 of 34.93% the model seems to be a relatively good fit and demonstrates that there are some direct and negative effects on economic performance due to corruption.



Scatterplot of R1

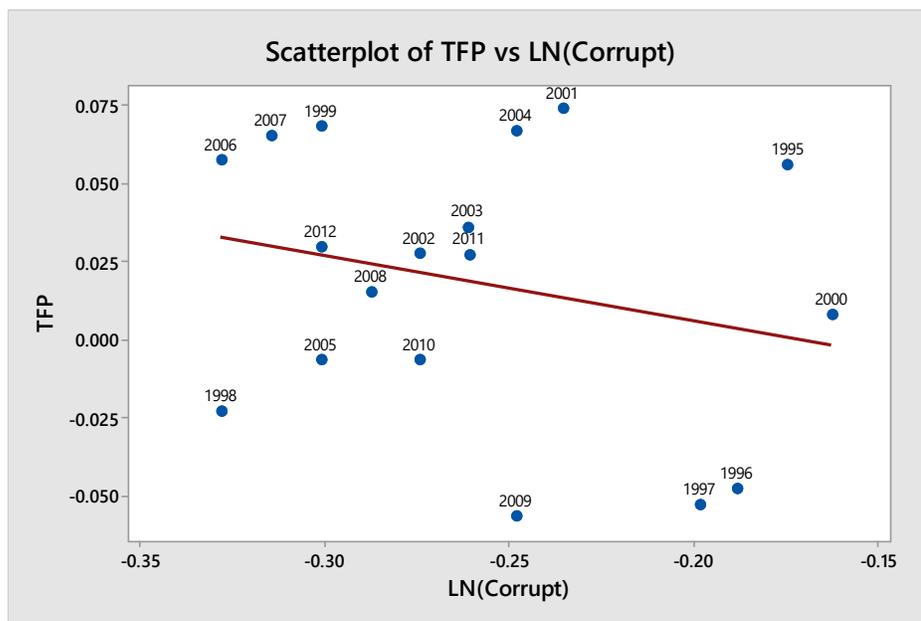
However, from the scatterplot, I believe that this relationship may be more nuanced than it originally appears. There seem to be two distinct groups of data points present between corruption and growth. Rather than a single linear relationship, the graph shows the potential for two different regimes, where past a certain x value, the regression line's slope changes

dramatically. From the scatterplot, it appears that the change occurs around -0.20 in LN(Corrupt). Any levels of corruption before -0.2 seem to show a slightly positive effect on growth, while higher levels become sharply negative. An improvement to the estimation would involve a piece-wise regression, but unfortunately, I lack sufficient datapoints to attempt such an analysis. The presence of two distinct linear relationships based on the value of x show that previous research by Huntington and Coase can apply concurrently with more recent research by Shleifer and Vishny. The model that best fits might be a threshold model as defined by Bose, Cappaso, and Murshid (2008). Their model uses observations from 125 countries to suggest that corruption adversely affects the provision of public goods only when a threshold is crossed. Before the threshold is reached, firms and government agencies are still able to meet contractual obligations without incurring a loss and may turn towards illegal channels to organize production more efficiently. Alternatively, such a model may hinge on assumptions around organization of corrupt actors. Once expropriation becomes consistent and predictable, firms can plan around this inconvenience as a cost of operation. When corruption is disorderly and split across many actors, firms are incapable of creating a plan around bribery, and are forced to turn towards multiple agencies and bureaucrats for protection, each carrying an associated cost.

Another consideration is whether corruption influences economic performance if firms are assumed to make investment decisions at the beginning of the year and deviating from them would be costly. To test this theory, R2 uses GDP Delta of the following year as the dependent variable. The result shows a weaker relationship, but still indicates a negative coefficient between the two.

Hypothesis 2: Corruption carries indirect effects which have negatively impacted Ukraine’s potential economic performance.

To measure the impact of corruption on the annual percent change in TFP (total factor productivity), I estimate function R3. According to Kouramoudou (2017), corruption negatively impacts TFP, when controlling for the tax rate and various other determinants across 100 countries. However, according to R3, there is no significant relationship between the two. An explanation might be that during the late 1990s and early 2000s, Ukraine experienced unprecedented improvements in technology. Generally, Ukraine imported Western technology to modernize much of its old Soviet equipment, so distinguishing the sources of TFP growth is difficult in this time period.

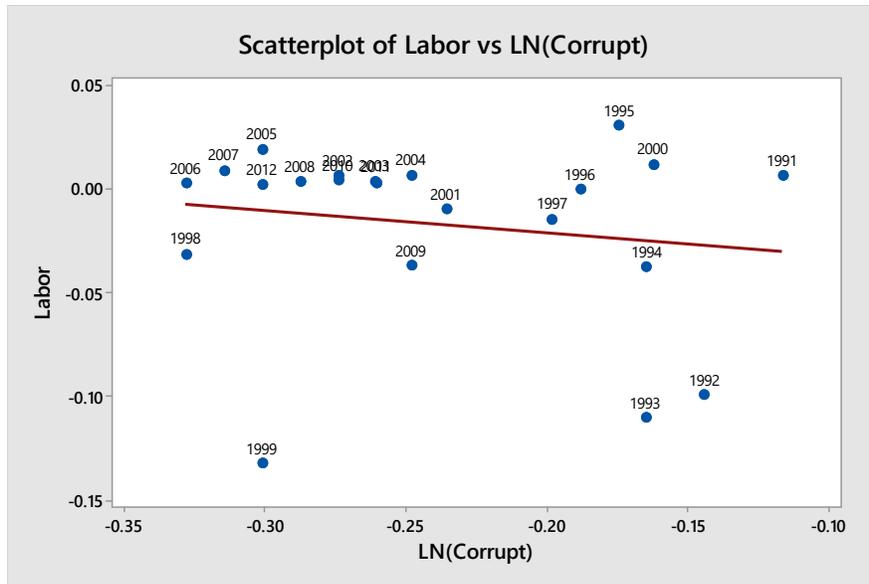


Scatterplot of R3

I also estimate the relationship between labor and corruption, through function R4, but do not find a statistically significant result. Next, I consider the impact of corruption on labor supply. I define labor supply as the number of Ukrainians currently employed and attempt to

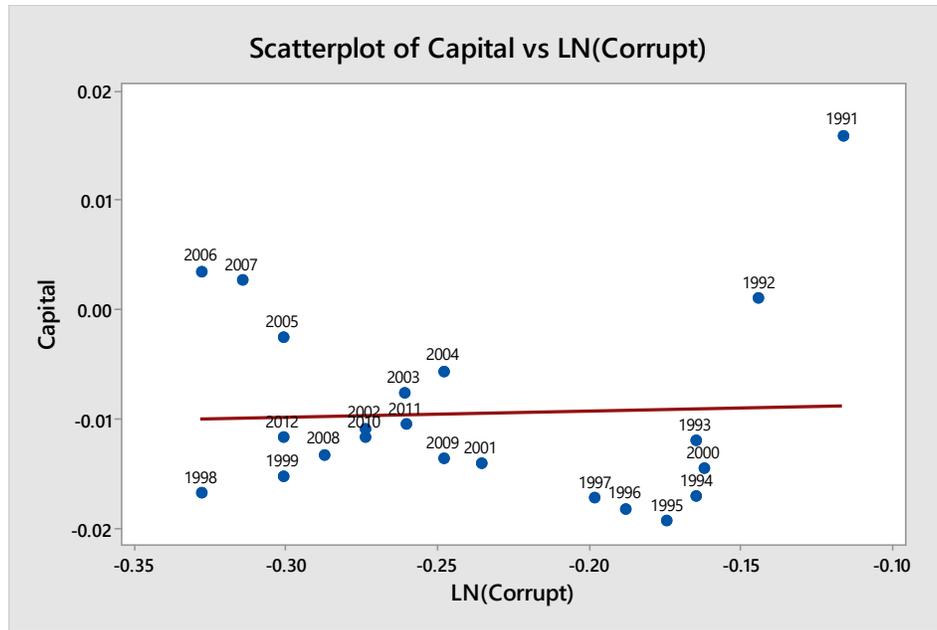
account for unofficial unemployment that was prevalent in the 1990s. To avoid paying the employee payroll tax, many companies underreported staff. But with adjustments, I find a decreasing number of Ukrainians employed (decreasing faster than population reduction). These findings are consistent with many of the results found in other post-Soviet economies, where reorganization of firms led to the redundancy of employees. The Soviet system enshrined working as a fundamental right, but following privatization, employers gradually changed their practices and began to exercise control over hiring.

Again, I believe external factors played a bigger role in determining changes in the Ukrainian labor system. The most variability in labor supply was during the 1990s, when other factors such as imminent bankruptcy forced firms to abandon their previous roles as instruments of the social safety net. Additionally, in a study of Ukrainian firms by Estrin and Rosevear (1999), they found that ownership structures (for example, insider-controlled or government-owned) played an important role in determining personnel decisions. In future research, I propose investigating the correlation between corruption and employment in the shadow economy. Firms in the second economy are unregulated, unlisted, and loosely reported, which makes collecting information on them difficult, but the results may indicate if corruption lowers incentives for pursuing legal employment.



Scatterplot of R4

Next, I consider the effects of corruption on percent changes in capital stock. R5 summarizes these results and again I find an inconclusive relationship. However, evident from the scatterplot, nearly every observation had negative capital accumulation or decreases in total capital stock. According to Lambsdorff (2001), who studied data for 54 countries, decreases in integrity, defined via the Corruption Perceptions Index, led to increases in capital outflow. His results indicate the presence of capital flight, as wealthy beneficiaries from weak states attempt to distribute their money to haven countries. Another explanation for the persistent decline in Ukraine's capital accumulation is the legacy of Soviet overinvestment in capital-heavy industries. Ukraine experienced a massive contraction in its heavy industry segment of the economy, and a progressive shift towards the services sector, which was the case in every other post-Communist economy. Shifts towards less capital-intensive industries would necessarily entail decreases in capital stock accumulation as depreciation exceeds investment.



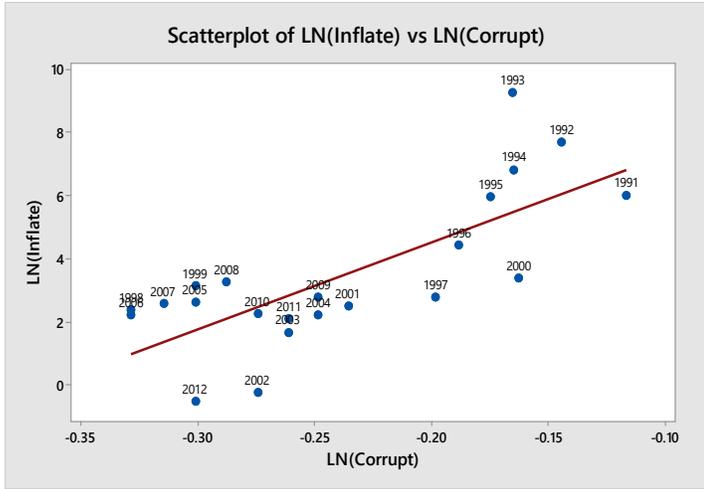
Scatterplot of R5

Finally, I consider inflation as a unique indirect effect of corruption specific to Ukraine. The relationship between corruption and inflation lies in Ukraine's rapidly expanding money supply during the 1990s. In 1993, the country was suddenly thrust into control over its monetary and fiscal policy as the ruble currency zone rapidly disintegrated. In the case of Ukraine, both fiscal and monetary policy were determined by the parliament, as the NBU (National Bank of Ukraine) was initially subordinate to the *Verkhovna Rada*.

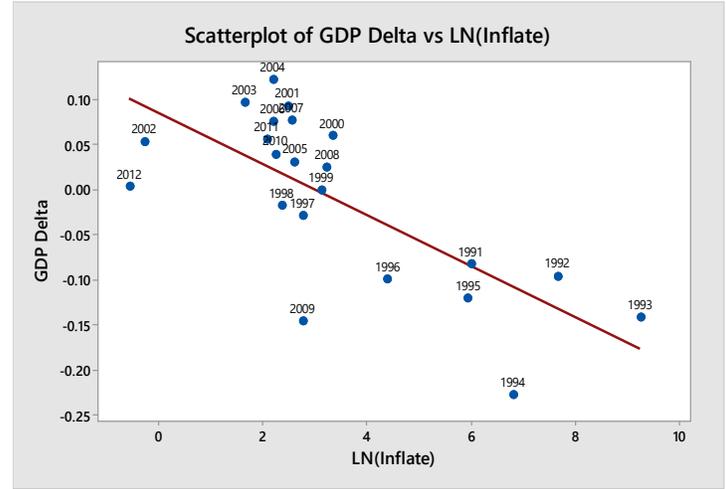
Until 1994, parliamentarians had direct control over enterprises through the remaining vestiges of the Soviet command economy. As Stark (1996) notes, once parliamentarians were put in charge of the privatization process, ironically, they became agents of renationalization as they consolidated ownership around insiders. In fact, according to Hare, Estrin, and Rosevear (1998), who studied average corporate ownership in Ukraine, over 54% of shares were owned by insiders. Assuming the state and insiders cooperated, over 80% of shares were held by the two groups, leading to both ownership over residual income and overwhelming control rights.

Throughout this period, parliamentarians intensely lobbied for the flow of subsidies to their jurisdictions. The result was that approximately 30% of GDP went towards industrial and agricultural subsidies (credit from the NBU as well as direct payments) in 1992 and 1993 (IMF, 1993a). With soft budget constraints and deficit spending covered by the NBU, enterprises became the de-facto monetary authority. According to Rostowski (1993), these enterprises (and the government authorities tied to them) effectively practiced seigniorage and could expropriate cash allocated to them for investment and productive purposes. Meanwhile, most parliamentarians lobbied for strict price stabilization on many commodities and public goods, which allowed them to use their monopolistic positions in their jurisdictions to capitalize on arbitrage opportunities (buying at official rates and selling at black market rates). Furthermore, bureaucrats and politically connected individuals were given access to stable hard currencies (such as the dollar) and moved the proceeds from their businesses out of the country.

R6 validates this hypothesis as the regression estimates a 1% increase in corruption resulting in a 27% increase in inflation for that year. Despite the results implying a correlation between corruption and inflation, the question remains whether there is a corresponding effect on economic performance. R7 regresses percent change in GDP (GDP Delta) on inflation, finding a significant relationship between the two, with a coefficient of -0.02841 on the inflation variable. Subsequently, each percent increase in inflation leads to a corresponding decrease of approximately 0.03% in the GDP growth rate.



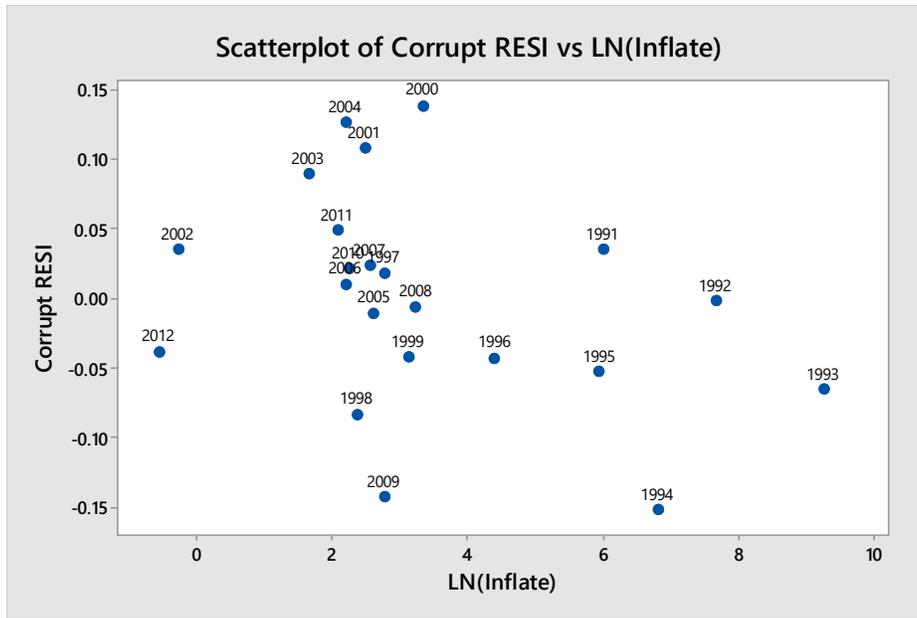
Scatterplot of R6



Scatterplot of R7

Although most examples of negative indirect effects have shown no statistically significant relationships, corruption has had a particularly strong impact on inflation, because it changed the way firms operate throughout much of the late 1990s and early 2000s.

A further way to validate the link between corruption and inflation is plotting the residuals from corruption tested against GDP, alongside my inflation variable. The result indicates a statistically insignificant relationship, implying that once corruption is accounted for in change in GDP, there is no longer any clear correlation with inflation. Such results often point towards an underlying mechanism between inflation and corruption increasing the levels of both simultaneously.



Residual Scatter Plot (R not shown)

A potential explanation for the underlying contributor is money velocity and the method by which money supply expanded during the early 1990s. As previously mentioned, Ukraine was a member of the Russian ruble zone, a single-currency zone which used Soviet and Russian rubles to trade and conduct business. Since Ukrainians could not control money supply, the amount of Soviet rubles in Ukraine was fixed to the amount in the country in 1991 and any further cash infusions had to come from the Russian Federation. Also, members of the ruble zone were in a prisoner’s dilemma in which they knew were better off by restricting issuance of credits, but each knew the other would emit vast subsidies, so none had a reason to hold back (Aslund, 2016). Like the other ruble zone members, Ukraine was essentially hurting itself, as companies were given incentives to create deficits so the central bank could extract a larger share from the common ruble zone GDP. In fact, evidence suggests that many state-owned companies were reducing their tax liabilities and receiving loans at negative real interest rates. By increasing M3, or “near, near money supply” with these credits, the NBU produced dramatic increases in consumer price index, without noticeable changes to M1 (cash and checking deposits). Even

when Ukraine started to issue local coupons, known as Karbovanets, M1 was ultimately fixed to the number of Soviet and Russian rubles already found in the country. So, the velocity of money in respect to M1 skyrocketed by as much as 20 times, while M2 velocity increased 10 times (Ministry of Economy, 1994c). Consumer prices were initially indexed, but extreme shortages and lines as long as 100 people drove most buyers to the unregulated peasant markets and resellers (Johnson and Ustenko, 1993). Ukrainian real wages exhibited an inverse relationship to money velocity, so as the value increased, real wages fell by approximately 80% between 1991-1994.

Indeed, by 1993, the average Ukrainian real wage had fallen so much it was only capable of purchasing 60% of an essential basket of goods needed for survival (Johnson and Ustenko, 1993). Out of necessity for hard currency (which was strictly regulated) or even Karbovanets to buy essentials, it became easier for those with access to currency to subvert or “purchase” people’s corrupt services. Therefore, the demand for liquid currency could be linked to both increases in inflation and corruption.

Hypothesis 3: When estimating a production function, corruption will play a significant role in determining change in economic output.

To investigate whether there is a significant relationship between corruption and economic performance (defined as output) I attempt to add in the traditional components of the Cobb-Douglas function. First, I compare the percent change in employed persons and percent change in capital stock as the independent variables against changes in output as the dependent variable. I find in R8 that the percent change in employed people is somewhat significant, but the overall model is not a great fit.

Finally, I attempt to estimate all three variables LN(Corrupt), Capital, and Labor against the change in GDP which I summarize in R9. The result shows a model with a higher R^2 of 49.25%, and a significant negative relationship between LN(Corrupt) and GDP change while controlling for labor supply and capital stock.

OLS Models Used in Analysis

| | R1 (GDP Delta) | R2 (GDP Delta Lag) | R3 (TFP) | R4 (Labor) | R5 (Capital) | R6 (Inflation) | R7 (GDP Delta) |
|-----------------|----------------|--------------------|----------------|----------------|-----------------|----------------|----------------|
| LN(Corrupt) | -0.866*** | -0.8005*** | -0.209 | -0.105 | 0.0056 | 27.40*** | |
| Labor | | | | | | | |
| Capital | | | | | | | |
| LN(Inflate) | | | | | | | -0.028*** |
| Constant | -0.2194 | -0.2009 | -0.0361 | -0.0421 | -0.00818 | 9.97 | 0.0849 |
| R-Sq | 34.93% | 31.06% | 6.24% | 2.49% | 0.17% | 55.28% | 51.07% |
| N | 23 | 23 | 19 | 23 | 22 | 23 | 23 |

P-Value: *** P < 0.01; ** P < 0.05; * P < 0.10

| | R8 (GDP Delta) | R9 (GDP Delta) |
|-----------------|----------------|----------------|
| LN(Corrupt) | | -0.809*** |
| Labor | 0.858* | 0.659* |
| Capital | 1.84 | 2.20 |
| LN(Inflate) | | |
| Constant | 0.0204 | -0.1736 |
| R-Sq | 19.64% | 49.25% |
| N | 23 | 23 |

P-Value: *** P < 0.01; ** P < 0.05; * P < 0.10

Conclusion

Since the first days of transition, numerous Western analysts expected Ukraine to quickly transform into a wealthy free market democracy and energetically close the gap between itself and Western Europe. Subsequently, Ukraine has fallen consistently short of these ambitious targets, and is often referred to as the “Sick Man of Europe.” Using multiple statistical methods, I demonstrate that corruption may have played a role in Ukraine’s underachievement both through direct and indirect effects. Furthermore, by estimating a production function, I suggest that this effect is present even when controlling for changes in key determinants of economic performance. Additionally, by drawing a potential connection between inflation and corruption, the effects of economic crimes can be expanded beyond the direct effects presented by bribery and extortion. Further research can examine the firm-level effects of corruption and informal exchange, and how these factors alter management decisions. Moreover, improvements to the research design might be centered around using more datapoints (collected more frequently than annual measures) or using additional methods more forgiving of fewer observations.

In this paper, I also investigate the factors which exacerbated the spread of corruption throughout Ukraine. Starting with the historical legacies, I observed the informal practices which were carried over from the Soviet period, and the societal attitudes that followed. According to my research, Ukrainians struggle with differentiating between bribery and informal exchange, making them more likely to accept a bribe. Furthermore, social repercussions for being revealed as corrupt are relatively low, diminishing the effects of one of the most important deterrents against this type of behavior. Over the decades, regional clansmen have used these flaws in the Ukrainian system to evolve from petty criminals centered around ex-Soviet bureaucrats into

oligarchs. Since then, these oligarchs have become respected members of society, having formalized and stabilized their positions through connections in government bodies and the accumulation of massive financial capital. Further research could focus on the structure of these oligarchic networks and could track the flow of funds and illegally obtained resources. Another focus of future research could be the unique behaviors of Ukrainians and analyzing the psychology behind bribery. Perhaps, findings in such areas can lead to enhanced enforcement tactics and more effective deterrents.

Breaking Ukraine's cycle of corruption has proven to be incredibly difficult, even after such fundamental changes as the Orange Revolution and Euromaidan. By building advanced networks with continually shifting alliances, the oligarchs have always stayed one step ahead of the public and have used their ties to the political system to their benefit. Meanwhile, the normal Ukrainian pays a bribe with his left hand, while signing the corruption complaint with his right. Under such conditions, only fundamental changes in the mentality of Ukrainians can result in a lessening of corruption. The question remains, will Ukrainians one day change for the better?

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