Determinants of Trust in Police: A Cross-National Analysis

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Abstract

Understanding what shapes public trust in the police is an important policy issue for both developed and developing countries. Exploiting an advantage of panel research design, I provide new evidence on this question. Using data from the European Social Survey, I show that in 38 (mainly European) nations confidence in police agencies is significantly associated with citizens' general attitudes toward state institutions (government, parliament, political parties, and the legal system). These findings hold for countries outside of Europe as well. Using data from the Life in Transition Survey, I find that procedural justice aspects (individuals' satisfaction with the quality of services, their experience of corruption during interaction with the road police) are important determinants of confidence in the police in 26 transition economies. The results are robust, even after controlling for individual characteristics.

Chapter 1

Introduction

The police play a key role in any country in securing law and order. Maintenance of law and order improves trust among citizens, reduces transaction costs, providing economic development and prosperity (North, 1990). Thus, it is important that people have confidence in the institution of police. If individuals' perceptions of the police is bad, the cooperation between citizens and police organisations deteriorates, the efficiency of police work may fall (Frank et al., 2005), and public safety suffers (Goldsmith, 2005), which might further erode trust in the police (Tyler, 2005).

Taking into account the importance of police trustworthiness for political and socio-economic aspects of a country's development, understanding the determinants of confidence in the police has become an interesting public policy issue for both academic researchers and policymakers. This research provides new evidence on this question with a particular focus on European and post-Soviet transition economies. Studying the determinants of confidence in the police[1] in these countries is timely, because reforming the institution of police and improving its trustworthiness have been one of the most important issues on the political agenda of transition economies during the last years, where confidence in police organisations and in state institutions as a whole has been traditionally lower than in developed states (EBRD, 2016; Staubli, 2017). Moreover, the recent 'Black Lives Matter' protests that originated in the United States after the death of George Floyd and spread to other continents and countries around the world (Shubber, 2020) have shown that trust in the police can be fragile even in developed democratic societies and easily becomes a matter of civil unrest.

The existing literature discusses two main theoretical frameworks that explain what shapes citizens' perceptions about the police. The theory of *procedural justice* suggests that individuals have a more favourable attitude toward the police when they are treated respectfully and fairly by police officers (Tyler, 1997, 2006). The *police performance* theory argues that people's trust in police organisations is determined by police work outcomes, such as crime rates (Bouckaert et al., 2002; Jang et al., 2010).

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[1] Although Cao (2015) suggests that the phrases 'confidence in the police' and 'trust in the police' are distinct in their connotation, this research, as many other related studies, uses these phrases interchangeably.

Empirical research that uses data from different countries has revealed a more explanatory power of the procedural justice model in accounting for variations in trust among people. Yet, existing studies identify other possible factors, such as public confidence in government and political institutions (what this study for simplicity shall call *'political trust'*), individual-level (satisfaction with life, financial satisfaction, education, age, gender, race) and country-level (the level of corruption, political regime) characteristics.

Although empirical research on confidence in the police have developed and expanded significantly for the last decades by estimating the theoretical frameworks with a number of methods, in different contexts, regions and countries (Van Craen & Skogan, 2015), the literature is still limited geographically and methodologically. More specifically, little is known about what affects trust in police agencies among the citizens of post-socialist Eastern European and post-Soviet transition economies, as previous studies are primarily focused on other nations, especially the United States. This research fills this gap by extending the debate to transition countries.

Methodologically, a few studies that cover European and transition countries rely on a cross-sectional design (e.g. Cao et al., 2012; Jang et al., 2010; Stack & Cao, 1998; Staubli, 2017), which does not account for country-constant and country-specific effects that vary over time. The current research, in addition to country fixed effects estimations, uses year fixed effects and the country-year interaction to control for the influence of such factors.

Furthermore, in the existing empirical research on the procedural justice theory there is a lack of experimental and quasi-experimental research designs. In most studies the conclusions are commonly based on correlational data, which cannot overcome the issue of causality. My final contribution to the literature is the application of the instrumental variable approach to identify the causal relationship between procedural justice factors and trust in the police, using data on Russian regions.

Thus, this study addresses the following three research questions:

Q1: Does political trust affect confidence in the police?

Q2: Are procedural justice factors (satisfaction with road police services and experienced corruption when interacting with the road police) important determinants of trust in transition countries?

Two hypotheses within this question are analysed:

H1: Respondents, who are satisfied with the quality and efficiency of road police services, have a higher level of trust in the police than the unsatisfied respondents.

H2: Respondents, who have had the experience of making unofficial payment to road police officers, have a lower level of trust in the police than the respondents with no such experience.

Q3: What is a causal relationship between procedural justice and trust in the police?

The rest of the paper proceeds as follows. Chapter 2 discusses related theory and empirical literature in detail. Yet, throughout the subsequent chapters I also refer to relevant empirical studies. Chapter 3 provides an overview of the methodology used in this study. In Chapter 4, I first estimate the influence of political trust on confidence in the police, using data from the European Social Survey (ESS). Applying simple OLS, fixed effects and logistic estimations, and controlling for a set of individual and country-level factors, I find that political trust (trust in the country' legal system, political parties, parliament, government) strongly predicts confidence in the police in 38 (mainly European) countries. Then, after checking the external validity of my findings I get similar findings for other transition countries. In Chapter 5, I empirically test the procedural justice theory for 26 transition countries, using data from the Life in Transition Survey (LiTS). I find that the operationalised variables of procedural justice – the quality of service and corruption experience during respondents' encounters with the road police – have a statistically and economically significant effect on trust in the police as a whole. However, political trust plays a bigger part than procedural justice in explaining people's confidence in the police. These findings are quite robust for different specifications, and after controlling for the socio-demographic characteristics of individuals. In the last sections of Chapter 5, I develop a quasi-experimental research design to identify and test a causal relationship between trust in the police and independent variables of my interest. Chapter 6 presents the conclusion.

Chapter 2

Related Literature

This research builds upon a large literature in public policy and administration, sociology, law and criminology that explains what shapes trust in the police. The most influential and to some degree overlapping theoretical frameworks that provide the foundation for understanding the determinants of confidence in police agencies are the *performance theory* and the concept of *procedural justice*.

2.1   Police Performance Model

In its broad conceptualisation performance theory states that people's bad or good attitudes towards government are conditioned by its bad or good outcomes, respectively (Brown & Coulter, 1983). As was summarised by Fleming & McLaughlin, "when citizens are satisfied with the output of relevant institutions, they will tend to trust and support them" (Fleming & McLaughlin, 2012, p. 262).

The performance model has two categories: macro- and micro-performance. Macro-performance hypothesis links individuals' confidence in state institutions to macro-level indicators (unemployment, inflation rates, GDP growth, crime rates, etc.), for which those institutions are arguably responsible. Micro-performance hypothesis relates public attitudes towards authorities to individual judgments about authorities' performance (administration, service delivery, etc.) (Bouckaert et al., 2002; Jang et al., 2010; Van Craen & Skogan, 2015). The core assertion of both parts is that the more people see their expectations about government's performance met, the higher trust they have in government institutions.

In respect of police work, the performance-based model assumes that people change their perceptions of police, when they feel insecure and are concerned about crime and disorder. Almost half a century ago, in his seminal work, Wilson emphasised that "the average citizen thinks of the police as an organisation primarily concerned with preventing crime and catching criminals. When crime increases or criminals go uncaught, the conventional public response is to demand more or better police officers. When the crime rate goes down or a particularly heinous crime is solved, the police often get – or at least try to take – the credit" (Wilson, 1975, p. 81, as cited in Van Craen & Skogan, 2015, p. 133). Even though since then the role of police institution has been reconsidered theoretically and practically and some researchers have claimed that crime is more influenced by socioeconomic factors than police work (Bayley, 1996; Blumstein &

Wallman, 2005; Gottfredson & Hirschi, 1990), people still relate high crime rates to poor police performance (Jang et al., 2010). Therefore, public expectations regarding the crime-prevention responsibility of police agencies are still viewed as an antecedent of trust in the police.

2.2 Procedural Justice Model

The procedural justice framework is rooted in the concept of social justice (Tyler, 1997), according to which public perceptions of political, administrative, and legal authorities are formed by the way the authorities treat citizens and make decisions. Developing on this idea, Tyler (2005) proposed that confidence in police agencies is largely influenced by individuals' assessment of the fairness of policemen's behaviour, in particular respectful and equal treatment. Goldsmith (2005) recounts such characteristics of unfair behaviour as rudeness, corruptibility, discrimination, excessive force, intimidation, violence, which can degrade the police. On the contrary, trustworthy policing is about respectfulness and responsiveness to people's requests, as demonstrated by police officers (Stoutland, 2001).

As it may be seen, the procedural justice concept overlaps with the micro-performance theory, which is focused on micro-indicators, such as, for example, how citizens judge police services. However, the manner the police treats individuals during an encounter is core in the procedural-justice-based model or more specifically, as Tyler (2006) emphasizes, whether citizens are treated with respect and dignity. In addition, empirical studies examining the performance-based model, are focused on macro-performance indicators, such as crime rates.

The procedural justice theory was influential not only in academic research, but also in the policymaking process of Anglo-Saxon countries, including the USA, the UK, and Australia, as their police agencies incorporated procedural matters into policing practice through population surveys, police recruits trainings, and staff evaluations (Murphy et al., 2014).

There is a wide list of empirical studies that attempted to test the model of procedural justice in different countries, but predominantly in the United States. They show that procedural justice indeed strongly affects people's confidence in the police. Tyler & Huo (2002) and Tyler (2006), using survey data respectively from California and Chicago, found that the quality, with which police officers treated respondents was a key predictor of public attitudes towards the police. Analysing the US census data at the town level, Gau et al. (2012) confirmed that citizens had a considerably higher level of trust in their police departments when they were treated fairly, with dignity and respect by the local police.

Tyler (2011) hypothesised that the factors that affect trust in the police in Europe are like those in the United States. Yet, he conceded that empirical studies in European countries are required to check the generalisability of his hypotheses. Kautt (2011) also warned that directly transferring US findings to comprehend public attitudes toward police organisations among Europeans could be risky. However, her study and other research that found evidence for procedural justice in Europe have been conducted mainly in the UK. Little is still known about whether these results hold in other European nations (Van Craen & Skogan, 2015)

Outside of the USA, one of the most methodologically strong studies was performed by Murphy et al. (2014), who conducted the first randomised control trial to evaluate how Australian traffic police behaviour adjusted by a procedural justice script affects drivers' perceptions. Using survey data on 2,762 drivers, the scholars showed that the respondents who went through the procedural-justice treatment had a higher level of confidence in the police compared to the drivers in the control group, even after accounting for individual characteristics. Similar experiments were performed by Lowrey et al. (2016) in Washington D.C. and N. Sahin et al. (2017) in Adana, Turkey, which also confirmed that procedural justice principles substantially improve drivers' perceptions about traffic police.

As for post-socialist economies in transition, where the public perceptions of the police are comparatively worse than in Western European countries (EBRD, 2016), some researchers hypothesise that it may be influenced precisely by a lack of procedural justice of old-style 'militia' (Peacock & Cordner, 2016). Yet, the procedural-justice hypothesis was not tested on the cross-national level in Eastern European countries until recently. Staubli (2017) in a comparative analysis between Western and Eastern Europe showed a close relationship between Europeans' trust in police officers and their opinions on satisfaction with the treatment received from the police. Notably, satisfaction had a higher effect on trust in the police in the Eastern part of Europe when compared to the Western part. Zhorayev (2020), using survey data for 29 transition countries, estimated the influence of the quality of the service respondents received from the road police on the respondents' trust in the police and found statistically and economically significant impacts.

Comparing the *police performance* and *procedural justice* factors, it should be pointed out that the existing literature indicates a higher importance of the latter. Tyler's (2005) multiple-datasets-based research showed that American's assessments of fair, careful and respectful treatment from the police play a greater role in public confidence in police agencies than do judgments of police performance (expressed in feelings of insecurity, crime and disorder). Other scholars

demonstrated similar findings for different countries, e.g. Jonathan-Zamir & Weisburd (2013) for Israel, Van Craen & Skogan (2015) for Belgium. Remarkably, as found by Jonathan-Zamir & Weisburd (2013), who used a natural experimental condition (terrorism threat) in their study, even in critical security crisis situations when the performance of police significantly increases in Israeli citizens' perceptions, the role of procedural justice remains stable and the most important element in people's values. My study also tests the theory of procedural justice, using data on transition countries (in Chapter 5).

2.3   Political Trust and Other Factors

Previous empirical studies on this topic suggest that an individual who is positive about the country's political agenda also has a more favourable attitude towards the police, and that citizens' perceptions of police is shaped by their confidence in other state institutions, such as government, parliament, political parties, armed forces, etc. (Alalehto & Larsson, 2016; Bridenball & Jesilow, 2008; Frank et al., 2005; Goldsmith, 2005).

Trust in government institutions is closely related to political preferences. Specifically, political conservatism has been mentioned as a positive factor for confidence in police organisations (Benson, 1981; Cao et al., 1998). When conducting a comparative analysis between the United States and Latin American economies, Cao & Zhao (2005) reported that conservative political ideology and confidence in the political system were significant determinants of trust in the police. At once, their findings demonstrate that confidence in the political system, expressed by the parliament, the civil service, political parties, the legal system, and the armed forces, is the most important predictor. Given the high explanatory power of confidence in political institutions in explaining trust in police agencies, I focus on this factor in my econometric analysis; hereinafter throughout my study, I refer to it as '*political trust*' (meaning trust in the political system, state institutions).

Other determinants of confidence in the police discussed in the literature can be grouped into individual socio-demographic and country-level factors as follows.

Socio-demographic factors

Research has revealed that a citizen's judgment about the police is positively related to her financial satisfaction, which is the case for industrialised countries – the United States, Canada, western European countries, Australia, and Japan (Stack & Cao, 1998), as well as to individuals' perception of happiness – for the United States and Japan (Cao et al., 1998). However, happiness

did not have a statistically significant effect on trust in the police in Latin America (Cao & Zhao, 2005).

Demographic variables (age, education, gender) have been indicated as important predictors of individuals' trust in the police. Previous studies reported that age was strongly and positively related to attitudes toward police organisations (Hurst & Frank, 2000; Reisig & Parks, 2000; Weitzer & Tuch, 2005). For example, Weitzer & Tuch (2005) assessed the impact of a few demographic variables on trust in the police, using data on American cities with over 100 thousand residents. They revealed a positive association between age and trust. The scholars suggest that young citizens are expected to be more aggressive with police officers, while the elderly usually view the police as their safeguards (Hurst & Frank, 2000). Estimations of the relationship between an individual's sex and their perceptions of the police showed mixed results. Hurst & Frank (2000) identified a more favourable attitude towards the police by males than females, others found either more positive views from females (Stack & Cao, 1998), or no significant correlation at all (Cao et al., 1998). The influence of education on trust has also been found to be mixed. If Stack & Cao (1998) and Brandl et al. (1994) found, respectively, a negative and positive relationship, Cao & Zhao (2005) reported no association between education and perceptions of the police. In general, inconsistent results with regards to education and gender may be due to different research designs and measurements used by the scholars.

Chermak et al. (2006) have claimed that respect of the police as an authority can be damaged due to the inappropriate behaviour of police officers, as we have witnessed in the George Floyd case (Shubber, 2020). In addition, studies that used data from the US have traditionally been strongly skewed to the investigation of differences in trust in the police across racial and ethnic groups (Weitzer & Tuch, 2005, 2006). However, these aspects were usually not the focus of study for researchers, who analysed other countries, outside the United States, since "the concept of race/ethnicity was largely considered an American creation" (Jang et al., 2010, p. 66).[2]

Country-level factors

Little research has identified that trust in police agencies can be determined by perceived or actual corruption (Kääriäinen, 2007; Weitzer & Tuch, 2005), economic inequality (Weitzer & Tuch, 1999), and the level of democracy (Cao & Zhao, 2005). More specifically, citizens of

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[2] An exemption would be studies that investigate perceptions of the police by large ethnic minority groups (e.g. Sahin & Akboga, 2019).

highly corrupt countries are more likely to distrust the police, as people acknowledge that fighting corruption is the responsibility of police organisations (Weitzer & Tuch, 2005).

In general, citizens of less democratic states, including post-socialist transition countries have less favourable attitudes toward their police agencies (EBRD, 2016) because the police in these countries has been used as a political instrument that helps to support the existing regime (Marat, 2016). Cao & Zhao (2005) confirmed this for autocratic Latin American nations, where the level of trust was lower than in the United States. A lack of trustworthiness is inherent to the police agencies of post-authoritarian states (Goldsmith, 2005). Not surprisingly, many post-socialist countries implemented reforms aimed at establishing effective, accountable and legitimate police. However, not all of them were successful in these reforms. The greatest progress among this group of countries has been achieved by Slovenia, Poland, Hungary, the former German Democratic Republic (Caparini & Marenin, 2005), in the post-Soviet area – by Georgia and Ukraine (Peacock & Cordner, 2016). Developing on Jones et al.'s (1996) premise of democratic policing scholars suggest that in post-totalitarian countries public trust in police agencies can be considerably boosted only by a 'democratic reform' that may transform the institution of police from a punitive instrument to an accountable organisation serving their citizens, not political elites (Marat, 2016). Although these country-level factors are interesting for investigation, they are not the subject of this study.

2.4   Main Gaps in the Literature

There are four main gaps in the existing research that my study attempts to fill. First, despite an expanding nature of the literature on public trust in the police, empirical evidence of trust's determinants in Europe remains scarce. Particularly, little is known about what affects individuals' perceptions about the police in post-socialist Eastern European countries. As has been seen from the review above, previous studies are primarily focused on the United States. The literature scrutinizing Europeans' confidence in the police is mostly limited to separate countries (predominantly the UK), not the region as a whole.[3]

Second, prior empirical research has not tested the procedural justice model cross-nationally for post-Soviet transition countries. This was partially due to data limitation, which did not allow the

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[3] Van Craen & Skogan (2015) provide a good overview of the geographical expansion of the research community studying trust in the police. There were also attempts to evaluate data from countries outside of the US, such as Australia, New Zealand, Germany, Japan, China, Israel, Latin American countries. Recently studies have also been expanded to countries in Asia (South Korea, Turkey) and Africa (Ghana and others).

researchers to operationalise variables from the theory of procedural justice. For instance, a few studies (e.g. Cao et al., 2012; Ivković, 2008) analysed determinants of confidence in the police across 28-50 nations, including some post-Soviet states. However, the main data they used in their analysis – the World Values Surveys, 1995 and 2005 waves – did not have any relevant questions. Staubli (2017) in her comparative analysis of the procedural-justice hypothesis in the European area, had data on Russia and Ukraine, but intentionally excluded them to focus on Eastern European countries. This research uses the European Social Survey and the Life in Transition Survey that contain data, respectively, on 38 and 35 countries, including Eastern European and post-Soviet countries.

Third, methodologically, the international studies that consider European and transition countries rely on a cross-sectional design (e.g. Cao et al., 2012; Jang et al., 2010; Stack & Cao, 1998; Staubli, 2017), which in contrast to panel data analysis does not account for country-constant and country-specific effects that change over time. For example, Cao et al. (2012, p. 48) acknowledge, that their cross-sectional design limits the possibility to analyse time-varying factors intrinsic in causal inference. My current research additionally to country fixed effects estimations uses year fixed effects and the country-year interaction to control for the influence of such factors.

Fourth, in the existing empirical research of the procedural justice model there is a lack of experimental and quasi-experimental research designs. In most studies the conclusions are commonly based on correlational data, which cannot overcome the issue of causality. As Murphy et al. have stated, even if we know "that perceptions of procedural justice are related to feelings of trust and confidence, we cannot be 100% certain that receiving procedural justice actually causes changes in the level of trust and confidence in police" (Murphy et al., 2014, p. 408). Just a few exceptions in the literature are randomized control trials conducted by Murphy et al. (2014), Lowrey et al. (2016), N. Sahin et al. (2017) and quasi-experiments conducted by Hohl et al. (2010) and Jonathan-Zamir & Weisburd (2013), which confirmed the significance of justice for positive attitudes toward the police. This study's final contribution to the literature on trust in the police is the application of the instrumental variable method to estimate the causal link between my proxy for 'procedural justice' (road police service quality and corruption) and perceptions about the police in Russia. To the best of my knowledge, no prior published work has applied a quasi-experimental setting for assessing this kind of relationship for post-Soviet countries.

Chapter 3

Research Design and Methods

This chapter provides a brief orientation of the research design and methods used before describing them in detail in subsequent chapters. My research uses the quantitative approach – a "data analysis of large numbers" (Porta & Keating, 2008, p. 27), in particular, I apply such a conventional quantitative method in the social sciences to measure causal inference as regression analysis (Brady & Collier, 2004).

As Gerring (2011, p. 3) has pointed out, the objective of any research design is testing hypotheses and the main focus of research is measuring a causal effect of independent variables on the dependent variable across a population of cases. The current research is empirical in nature: following deductive logic (Toshkov, 2016), I test hypotheses drawn from the existing literature rather than elaborating my own theoretical framework. In Chapter 4, I test the hypothesis that political trust is an important determinant of confidence in the police, in Chapter 5 I test the hypothesis that procedural justice, operationalised in the quality of road police service and corruption in the road police, affect trust in the police. My methodological approach is based on the statistical properties of the analysed data.

To estimate relationships between the variables of my interest, I compile and analyse observational data from different sources and databases. For instance, I take cross-sectional surveys of a random sample of households, conducted by the European Bank for Reconstruction and Development for 2006, 2010 and 2016, and form a pooled cross section to increase my sample size. I also merge some data from different sources to have variables in one dataset (e.g. the European Social Survey and the World Bank's data).[4] My final datasets also have panel (longitudinal) features, when I aggregate values on variables and respondents by the same countries from representative individual samples. This panel structure allows me to apply fixed effects estimation methods to control for countries' unobserved characteristics that are constant over time (Wooldridge, 2013).[5] As I have data for several years, the time fixed effects specifications of econometric models can also be used to eliminate bias arising from time-variant

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[4] The detailed description of the data used is given in the following chapters.

[5] In Chapter 4, when data for some countries are not available for all years, I exclude these countries from my analysis to have a "balanced panel", i.e. the same time periods for all countries (Wooldridge, 2013, p. 469).

omitted variables that affect all countries (Stock & Watson, 2015) like, for instance, some policing standards introduced in all participating countries that are similar across states in a given year, but vary over time.[6] In addition, adding the interaction between country dummies and year dummies into my regression analysis allows me to cancel out the effect of all country-specific factors that change over time.

In assessing causal relationships, data analyses and a research design look to precision and so-called internal and external validity. The former implies validity for the estimated sample, while the latter – validity for a greater unexplored population, respectively (Gerring, 2011). An ideal research design to analyse a causal relationship between my dependent and independent variables would be a field experiment, which is recognised as the 'gold standard' of research in the social sciences (Barakso, 2013, pp. 132–133). By controlling the data generation and random assignment processes, an experiment could exclude potential confounding factors to achieve a high degree of internal validity (Gertler et al., 2016), while natural, non-laboratory setting reflects the real world situation, ensuring a high level of external validity (Barakso, 2013). Unable to conduct such an experiment within the scope of this study, especially during the current COVID-19 crisis, in sections 5.3-5.5, Chapter 5 of my analysis I turn to the quasi-experimental approach. To set the appropriate level of precision and validity in quasi-experimental setting is difficult (Gerring, 2011), as it is more about judgments made by a researcher, investigating a research topic, and by scholars, reading and evaluating their findings (Robinson et al., 2009). Since in a quasi-experimental research design there is no direct intentional randomisation per se, to meet the methodological standard of scientific rigor, treatments should be exogenous (as-if randomised) and proper statistical techniques should be utilised to correct for selection effects (Gerring, 2011). I employ the method of instrumental variables to overcome the problem of endogeneity that may arise from two common sources – omitted variables and measurement error (Wooldridge, 2013). Simultaneously, I discuss how an economic crisis in Russia in 2014-2016 due to an exogenous shock in terms of the fall of oil prices and Western sanctions arguably leads to variations in the independent variables of my interest – the quality of road police service and corruption in the road police, creating naturally experimental conditions (Barakso, 2013).

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[6] An example of such a standard would be The European Code of Police Ethics, introduced in 2001 and recommended as a guide by The Council of Europe Committee of Ministers to the national governments of member states. However, this document is advisory in nature.

Chapter 4

Political Trust and Confidence in the Police

As it has been seen from the literature review, confidence in the police can be determined by political trust and socio-demographic factors. In this chapter, I test these relationships empirically, using data on 38 countries for the years 2002-2018 (a full list of countries is provided in Table A.1 in Appendix A).

Based on previous studies, I hypothesise that:

> *Individuals who have more favourable attitudes toward their country's political system have, ceteris paribus, a higher level of confidence in police agencies.*

4.1 Data Description

The principal data sources used for this chapter are the European Social Survey (ESS) for 2002-2019 and the World Bank database. ESS is a cross-country survey of behaviour and attitudes, conducted each two years in European countries as well as Israel, Russia, Turkey and Ukraine. The ESS requires a minimum effective sample size of 1500 from every country, except for small states, which have population of less than 2 million. My full sample includes up to 394,278 respondents. To check the external validity of my results I also use data from the Life in Transition Survey (LiTS), run by the European Bank for Reconstruction and Development jointly with the World Bank in 2006, 2010 and 2016 for mainly East-European and post-Soviet transition countries.

The dependent variable

The dependent variable comes from the following question asked from ESS respondents: *"Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. The police?"*. Being interested in the indication of strong confidence, I recoded all answers to a dummy variable, equal to 1 (Trust in the police), if scores are greater than 8 and equal to 0 for the remaining scores.

Political trust variables

Similar to the question of trust in the police, ESS asks respondents about their confidence in their country's political institutions and political system as a whole – parliament, political parties, the

legal system. There is no separate question on trust in the national government as an additional political institution, however this variable can be proxied by the question on satisfaction with the government: *"Now thinking about the [country] government, how satisfied are you with the way it is doing its job?"*. Response scores range from 0 (No trust at all/ Extremely dissatisfied) to 10 (Complete trust/Extremely satisfied), which I recoded the same way as for the dependent variable.

Satisfaction with life

Previous empirical research used people's perception of happiness as a control variable (Cao et al., 1998; Cao & Zhao, 2005). There are no specific questions on happiness in ESS. However, as a proxy of happiness, I use the following question from ESS: *"All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied."* It is expected that happiness/life satisfaction is positively associated with attitudes toward police agencies.

Internet use

ESS has the following question about Internet use: *"Now, using this card, how often do you use the Internet, the World Wide Web or e-mail - whether at home or at work - for your personal use?"*. Possible scores and answers include: 0 (no access at home or work), 1 (never use), 2 (less than once a month), 3 (once a month), 4 (several times a month), 5 (once a week), 6 (several times a week), 7 (every day), 77 (refusal), 88 (don't know) or 99 (no answer). Being interested in whether people use the Internet or not at all, I recoded all responses to a binary variable, equal to 1 (Internet use) for all scores from 2 to 7, and equal to 0 for scores 0 and 1. The categories of 77 (refusal), 88 (don't know), and 99 (no answer) were dropped from my analysis; in total they constitute less than 0.3% of all responses.

I include this variable because previous studies have shown that news and the Internet may influence public opinion about state institutions. For example, Weitzer & Tuch (2006) argue that exposure to negative media covering police cases is an important determinant of American citizens' support for the police. In a more recent paper, Guriev et al. (2019) after analysing data on over 840 thousand respondents from 116 countries report that individuals, who have access to broadband Internet are more likely to have a lower level of trust in their government as they become more aware of government corruption. Given that the Internet has become the main source of information for many people, I expect that using the Internet can negatively affect

public trust in the police as well, since people consume more negative news related to the police from mass and social media.

Socio-demographic and economic controls

ESS provides information on respondents' socio-demographic characteristics – employment status, income, education level, marital status, gender, age, urban/rural residence. All the variables (except for age and income) are recoded to dummies as follows: *Male* = 1, *Married/Partnered* = 1, *Tertiary education* (or higher) = 1, *Employed* = 1, *Urban* citizen = 1. For the income variable I use answers on household's estimated total net income, after tax and compulsory deductions, from all sources, classified by a range of 1-10 deciles. Controlling for incomes and employment status allows me to exclude any direct effect of material well-being. Based on previous empirical studies, older people, females, the married, the better educated, persons with higher income, employed people are expected to have more trust in the police than otherwise similar persons. I also use Log GDP per capita (in constant 2010 US Dollars) as an economic control variable at the country level, compiled from the World Bank database and merged with the ESS dataset.

Table 4.1 presents descriptive statistics for the variables. As averaged across all years and countries, only 15% of people report strong trust in their country's police, which is comparatively higher than confidence in the legal system (9%), the parliament (4%), and political parties (1%). There is huge heterogeneity across and within countries.

Table 4.1: Descriptive statistics

VARIABLES	N	Mean	S.D.	Min	Max
Trust in the police	389,270	0.15	0.36	0	1
Trust in the parliament	383,907	0.04	0.21	0	1
Trust in political parties	344,589	0.01	0.11	0	1
Trust in the legal system	384,144	0.09	0.29	0	1
Satisfaction with the government	379,812	0.03	0.17	0	1
Satisfaction with life	392,138	0.24	0.43	0	1
Internet use	229,072	0.51	0.50	0	1
Log GDP per capita	382,629	10.22	0.75	7.51	11.54

Education	351,195	0.29	0.45	0	1
Employment	394,278	0.50	0.50	0	1
Income	299,441	5.29	2.80	1	10
Urban	394,257	0.33	0.47	0	1
Male	394,278	0.46	0.50	0	1
Marital status	394,278	0.53	0.50	0	1
Age	392,647	49	17	18	123
Age squared	392,647	2738	1842	324	15,129

4.2 Empirical Approach

To test the impact of the variables of my interest on respondents' attitudes to the police as my baseline specification I use a linear probability model with fixed effects as follows:

$$Y_{ict} = \beta_0 + \beta_1 Polity_{ict} + \beta_2 SL_{ict} + \beta_3 Internet_{ict} + \beta_4 LogGDP_{ct}$$
$$+ \beta_5 Z_{ict} + \beta_6 C_c + \beta_7 T_t + \beta_8 (C_c * T_t) + \varepsilon_{ict} \quad (1)$$

where: Y_{ict} is a dummy for trust in the police; $Polity_{ict}$ is a vector of political dummy variables, reflecting trust in the parliament, trust in political parties, trust in the legal system, and satisfaction with the government by respondent i in country c at time t; SL_{ict} is a dummy variable, indicating satisfaction with life by respondent i in country c at time t; $Internet_{ict}$ is a dummy variable for whether or not respondent i in country c at time t uses the Internet or e-mail for personal use; $LogGDP_{ct}$ is Log GDP per capita (in constant 2010 USD); Z_{ict} is a vector of socio-demographic characteristics (employment status, income, education level, marital status, gender, age, urban/rural residence) for respondent i in country c at time t; ε_{ijt} is the random error term. It should be noted that the selection of control variables is limited by the content of data.

Fixed effects at the country (C_c) and year (T_t) levels are included to capture, respectively, the impact of country-level time-constant unobserved factors, and the influence of global time-specific shocks that impact all countries concurrently. In some specifications, the country-year interaction ($C_c * T_t$) is also used to control for all country-specific factors that change over time. As mentioned earlier, this is my methodological advantage over previous international studies

(Cao et al., 2012; Ivković, 2008; Jang et al., 2010; Stack & Cao, 1998; Staubli, 2017), which in analysing data from European and transition countries relied on a cross-sectional design.[7]

In specifying my econometric model I closely follow recent empirical studies on individuals' trust and attitudes (Aksoy et al., 2020; Foster & Frieden, 2017; Guriev et al., 2019). Since the ESS data contain many years, to avoid the problem of serial correlation in my outcome variable (Bertrand et al., 2004), in all specifications (except for otherwise indicated) standard errors are clustered by country.

4.3 Results and Discussion

Table 4.2 presents the results of OLS estimations. Columns 1-3 include separate political variables, life satisfaction and Internet use, respectively. I find that all the indicators, except Internet use, affect confidence in the police and the regression coefficients are statistically significant. Column 4 contains all the variables of interest together. Consistently with previous studies (e.g. Cao & Zhao, 2005), I find that individuals who have more confidence in the political system (the legal system, political parties, the government, the parliament) and who are happier (more satisfied with their lives), on average, demonstrate better attitudes toward the police. The largest magnitude of the effect is shown by trust in the legal system, which makes sense, as police agencies are an element of the law enforcement system and thus are broadly perceived as part of the country's legal system by people. Internet use is still not significantly associated with people's trust in the police.

The specification in column 5 with controls for socio-demographic characteristics explains 27% of all variations in trust in the police. After adding the socio-demographic controls the magnitudes of the coefficients on the political and life satisfaction variables do not considerably change, but the 'Internet use' variable becomes statistically significant. As expected, individuals who use Internet are less likely to trust the police. In line with Stack & Cao's (1998) and as opposed to Cao & Zhao's (2005) findings, I find that more educated respondents have less favourable attitudes toward the police. Females turned out to be more confident in police agencies than males, which is consistent with the majority of previous studies. Urban citizens are less favourable toward the police than rural residents. The coefficients on employment, income, marital status, and age are insignificant either statistically or economically.

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[7] For example, Cao et al. (2012, p. 48) acknowledge, that their cross-sectional design limits the possibility to analyse time-varying factors intrinsic in causal inference.

Table 4.2: Political and socio-economic determinants of Trust (OLS estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)
Trust in the parliament	0.144***			0.141***	0.141***
	(0.0153)			(0.0184)	(0.0232)
Trust in political parties	0.147***			0.143***	0.142***
	(0.0130)			(0.0146)	(0.0151)
Trust in the legal system	0.521***			0.508***	0.509***
	(0.0249)			(0.0179)	(0.0161)
Satisfaction with the government	0.116***			0.0842***	0.0926***
	(0.0128)			(0.0151)	(0.0152)
Satisfaction with life		0.154***		0.0916***	0.0825***
		(0.0189)		(0.0121)	(0.0106)
Internet use			-0.00837	-0.0132	-0.0135**
			(0.0172)	(0.00843)	(0.00603)
Log GDP per capita					0.0381***
					(0.00963)
Education					-0.0118***
					(0.00375)
Employment					0.000316
					(0.00377)
Income					-0.00182**
					(0.000849)
Urban					-0.0112**
					(0.00437)
Male					-0.00802***
					(0.00283)
Marital status					-0.00109
					(0.00936)
Age					-0.00116**
					(0.000546)
Age squared					1.57e-05***
					(4.70e-06)
Constant	0.0902***	0.115***	0.145***	0.0689***	-0.278**
	(0.0129)	(0.0138)	(0.0189)	(0.00983)	(0.103)
Observations	328,251	387,540	225,645	176,587	128,679
R-squared	0.234	0.033	0.000	0.254	0.267

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; robust standard errors in parentheses (clustered by countries)

Table 4.3 reports the estimations of my baseline specification with fixed effects. Columns 5 and 10 include the whole set of variables, controls for individual characteristics, year and country dummies. The specification in column 10 also includes the country-year interaction. Controlling for fixed effects slightly changes the magnitude of the impact of the main explanatory variables, but makes all explanatory variables (except for employment) statistically significant. Overall, the variables of my interest have the expected signs and are all statistically significant at the 99% level: trust in state institutions and political organisations, on average, is associated with a 9-47 percentage point (pp) greater chance of confidence in police agencies. Satisfaction with life, on average, increases individuals' confidence in the police by 7-12pps. Citizens, who do not use Internet are 2-4pps more likely to have a better perception of police, as opposed to Internet users.

For the robustness check, I run logistic regressions of different specifications (Table 4.4), similar to OLS estimations in Table 4.2. I also estimate the fixed effects models with 50-repition bootstrapping (see Table 4.5) to approximate standard errors from the sample data (Angrist & Pischke, 2009, pp. 300–301). These results are similar to the previous estimations in terms of magnitudes and statistical significance, indicating that my findings are quite robust.

Table 4.3: Results of FE estimations (clustered SE)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trust in the parliament	0.136***			0.134***	0.130***	0.137***			0.134***	0.130***
	(0.0130)			(0.0153)	(0.0160)	(0.0129)			(0.0154)	(0.0160)
Trust in political parties	0.166***			0.158***	0.156***	0.167***			0.158***	0.156***
	(0.00851)			(0.0123)	(0.0119)	(0.00860)			(0.0124)	(0.0121)
Trust in the legal system	0.474***			0.468***	0.472***	0.473***			0.467***	0.472***
	(0.0166)			(0.0127)	(0.0125)	(0.0164)			(0.0126)	(0.0125)
Satisfaction with	0.118***			0.0863***	0.0891***	0.118***			0.0874***	0.0893***
the government	(0.00996)			(0.0112)	(0.0125)	(0.00998)			(0.0109)	(0.0121)
Satisfaction with life		0.115***		0.0685***	0.0705***		0.114***		0.0684***	0.0702***
		(0.00824)		(0.00613)	(0.00685)		(0.00807)		(0.00617)	(0.00683)
Internet use			-0.0397***	-0.0330***	-0.0158***			-0.0394***	-0.0327***	-0.0160***
			(0.00633)	(0.00404)	(0.00243)			(0.00622)	(0.00404)	(0.00257)
Log GDP per capita					-0.0306*					-0.0814***
					(0.0151)					(0.0188)
Education					-0.0134***					-0.0132***
					(0.00228)					(0.00235)
Employment					0.00371					0.00372
					(0.00300)					(0.00303)
Income					-0.00173***					-0.00175***
					(0.000584)					(0.000571)
Urban					-0.0100***					-0.00987***
					(0.00285)					(0.00290)
Male					-0.00978***					-0.00987***
					(0.00261)					(0.00259)
Marital status					0.00814***					0.00844***
					(0.00211)					(0.00206)
Age					-0.00180***					-0.00182***
					(0.000414)					(0.000419)
Age squared					2.20e-05***					2.21e-05***
					(3.89e-06)					(3.90e-06)
Constant	0.0961***	0.156***	0.197***	0.0763***	0.401**	0.182***	0.119***	0.219***	0.0761***	0.934***
	(0.00458)	(0.0136)	(0.0114)	(0.00291)	(0.158)	(0.00267)	(0.00187)	(0.00256)	(0.00294)	(0.204)
Observations	328,251	387,540	225,645	176,587	128,679	328,251	387,540	225,645	176,587	128,679
R-squared	0.274	0.101	0.091	0.290	0.299	0.277	0.106	0.095	0.292	0.301
Country and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country*Year fixed effects						✓	✓	✓	✓	✓

*** p<0.01, ** p<0.05, * p<0.1; robust standard errors in parentheses (clustered by countries)

Table 4.4: Results of logistic estimations

VARIABLES	(1)	(2)	(3)	(4)	(5)
Trust in the parliament	0.877***			0.870***	0.930***
	(0.0862)			(0.109)	(0.160)
Trust in political parties	1.023***			1.003***	1.016***
	(0.0777)			(0.0916)	(0.0919)
Trust in the legal system	2.708***			2.718***	2.688***
	(0.0939)			(0.0742)	(0.0725)
Satisfaction with the government	0.854***			0.607***	0.692***
	(0.0826)			(0.0967)	(0.0855)
Satisfaction with life		1.041***		0.876***	0.720***
		(0.0683)		(0.0604)	(0.0344)
Internet use			-0.0691	-0.150	-0.167**
			(0.145)	(0.106)	(0.0763)
Log GDP per capita					0.513***
					(0.125)
Education					-0.157***
					(0.0494)
Employment					-0.0175
					(0.0428)
Income					-0.0192*
					(0.0106)
Urban					-0.122***
					(0.0458)
Male					-0.0915***
					(0.0296)
Marital status					-0.00902
					(0.103)
Age					-0.0103*
					(0.00612)
Age squared					0.000135***
					(5.15e-05)
Constant	-2.303***	-2.043***	-1.772***	-2.581***	-7.398***
	(0.152)	(0.136)	(0.153)	(0.144)	(1.375)
Observations	328,251	387,540	225,645	176,587	128,679

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; robust standard errors in parentheses (clustered by countries)

Table 4.5: Results of FE estimations (bootstrap SE)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trust in the parliament	0.136***			0.134***	0.130***	0.137***			0.134***	0.130***
	(0.00489)			(0.00487)	(0.00638)	(0.00406)			(0.00625)	(0.00672)
Trust in political parties	0.166***			0.158***	0.156***	0.167***			0.158***	0.156***
	(0.00793)			(0.00900)	(0.0117)	(0.00596)			(0.00928)	(0.00986)
Trust in the legal system	0.474***			0.468***	0.472***	0.473***			0.467***	0.472***
	(0.00327)			(0.00486)	(0.00583)	(0.00290)			(0.00474)	(0.00613)
Satisfaction with	0.118***			0.0863***	0.0891***	0.117***			0.0874***	0.0893***
the government	(0.00435)			(0.00578)	(0.00765)	(0.00429)			(0.00619)	(0.00803)
Satisfaction with life		0.115***		0.0685***	0.0705***		0.114***		0.0684***	0.0702***
		(0.00167)		(0.00201)	(0.00273)		(0.00133)		(0.00207)	(0.00183)
Internet use			-0.0397***	-0.0330***	-0.0158***			-0.0394***	-0.0327***	-0.0160***
			(0.00135)	(0.00130)	(0.00218)			(0.00157)	(0.00135)	(0.00206)
Log GDP per capita					-0.0306***					-0.0814
					(0.00871)					(0.164)
Education					-0.0134***					-0.0132***
					(0.00214)					(0.00197)
Employment					0.00371**					0.00372**
					(0.00149)					(0.00164)
Income					-0.00173***					-0.00175***
					(0.000328)					(0.000332)
Urban					-0.0100***					-0.00987***
					(0.00185)					(0.00204)
Male					-0.00978***					-0.00987***
					(0.00162)					(0.00140)
Marital status					0.00814***					0.00844***
					(0.00206)					(0.00148)
Age					-0.00180***					-0.00182***
					(0.000289)					(0.000274)
Age squared					2.20e-05***					2.21e-05***
					(2.88e-06)					(2.79e-06)
Constant	0.145***	0.156***	0.197***	0.0763***	0.401***	0.182***	0.119*	0.219***	0.0761***	0.934
	(0.00548)	(0.00398)	(0.00459)	(0.00676)	(0.0990)	(0.0298)	(0.0715)	(0.0178)	(0.00608)	(1.763)
Observations	328,251	387,540	225,645	176,587	128,679	328,251	387,540	225,645	176,587	128,679
R-squared	0.274	0.101	0.091	0.290	0.299	0.277	0.106	0.095	0.292	0.301
Country and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country*Year fixed effects						✓	✓	✓	✓	✓

*** p<0.01, ** p<0.05, * p<0.1; standard errors in parentheses (bootstrapped with 50 replications)

Finally, to check the external validity of my findings and understand whether these results are applicable to other countries not covered by ESS, I run the same regression analysis using data from the EBRD's Life in Transition Survey (LiTS) in 2006, 2010 and 2016. LiTS data contain similar questions for most variables. For the purpose of my analysis I exclude those countries that participated in ESS and look only at 12 remaining countries – mainly post-Soviet republics as well as Bosnia, Macedonia and Mongolia (the full list of countries is shown in Table A.1). My sample includes from 20,232 to 24,699 observations, depending on specifications and variables. Table 4.6 reports the results of this analysis. It is seen that the strong correlations between trust and explanatory variables persist for other countries, not covered by the European Social Survey, as well as for different time periods.[8]

In general, the findings in this chapter provide new evidence that political variables (trust in the country's legal system, political parties, government, and parliament) as well as satisfaction with life strongly predict confidence in the police. My novel explanation, of access to the Internet, for variations in trust in the police found tentative empirical support, which may be further explored in future studies.

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[8] All additional materials (data, do files, etc.) are available upon request.

Table 4.6: Checking external validity using LiTS data

VARIABLES	ESS (1)	LiTS (2)	ESS (3)	LiTS (4)	ESS (5)	LiTS (6)	ESS (7)	LiTS (8)
Trust in the parliament	0.134***	0.111***	0.130***	0.102***	0.134***	0.110***	0.130***	0.0979***
	(0.0153)	(0.0136)	(0.0160)	(0.0151)	(0.0154)	(0.0139)	(0.0160)	(0.0149)
Trust in political parties	0.158***	0.134***	0.156***	0.138***	0.158***	0.135***	0.156***	0.139***
	(0.0123)	(0.0292)	(0.0119)	(0.0306)	(0.0124)	(0.0281)	(0.0121)	(0.0294)
Trust in the legal system	0.468***		0.472***		0.467***		0.472***	
	(0.0127)		(0.0125)		(0.0126)		(0.0125)	
Trust in courts		0.309***		0.319***		0.310***		0.320***
		(0.0229)		(0.0251)		(0.0232)		(0.0252)
Satisfaction with/ Trust in the government (ESS/LiTS)	0.0863***	0.173***	0.0891***	0.173***	0.0874***	0.173***	0.0893***	0.174***
	(0.0112)	(0.0293)	(0.0125)	(0.0300)	(0.0109)	(0.0282)	(0.0121)	(0.0288)
Satisfaction with life	0.0685***	0.0470***	0.0705***	0.0456***	0.0684***	0.0494***	0.0702***	0.0485***
	(0.00613)	(0.00744)	(0.00685)	(0.00788)	(0.00617)	(0.00809)	(0.00683)	(0.00886)
Internet use	-0.0330***	-0.0185**	-0.0158***	-0.00909	-0.0327***	-0.0225***	-0.0160***	-0.0151**
	(0.00404)	(0.00716)	(0.00243)	(0.00613)	(0.00404)	(0.00633)	(0.00257)	(0.00548)
All controls included			✓	✓			✓	✓
Constant	0.0763***	0.149***	0.401**	0.282***	0.0761***	0.208***	0.934***	0.239***
	(0.00291)	(0.0301)	(0.158)	(0.0470)	(0.00294)	(0.0106)	(0.204)	(0.0413)
Observations	176,587	24,699	128,679	20,232	176,587	24,699	128,679	20,232
R-squared	0.290	0.347	0.299	0.351	0.292	0.352	0.301	0.357
Country and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Country*Year fixed effects					✓	✓	✓	✓

*** p<0.01, ** p<0.05, * p<0.1; robust standard errors in parentheses (clustered by countries)

Note: The regression results in columns (1), (3), (5) and (7) are from Table 4.3 (columns (4), (5), (9) and (10), respectively). The results in the other columns are estimated, using LiTS data for 12 countries, shown in Table A.1 (Appendix A). Control variables in columns (3) and (7) also include Log GDP per capita and individuals' income.

Chapter 5

Testing the Procedural Justice Model

In this chapter, I analyse whether procedural justice affects confidence in the police in transition economies. As discussed earlier, according to the concept of procedural justice, peoples' perceptions of the police are shaped by the treatment they receive from the police during an encounter (Tyler, 1997, 2006). If police officers treat citizens with procedural justice, i.e. with a high quality of treatment (respectfully) and with a high quality of decision-making (fairly and honestly), the treated individuals' attitudes toward the police is expected to be higher (Tankebe, 2013; Tyler, 2006).

This chapter proceeds as follows. Section 5.1 presents hypotheses, explains the empirical framework, data and variables used. Section 5.2 reports the results of econometric estimations. In section 5.3, an identification strategy is discussed and then in section 5.4 a causal relationship between the variables is tested, applying two-stage least squares (2SLS) methodology. Lastly, section 5.4 discusses the limitations of my identification and suggestions for future research.

5.1 Hypotheses, Variables and Empirical Framework

My empirical estimation uses data from the previously mentioned LiTS survey of households, conducted in 2006, 2010 and 2016 in European (mainly eastern) and post-Soviet states, as well as Mongolia and Turkey. In my final panel data I have 98,460 respondents as a maximum (depending on variables) for 26 countries. As the focus of this chapter is on transition economies, I drop observations for Turkey and five developed European countries (France, Germany, Italy, Sweden, and the UK). Kosovo, Tajikistan and Uzbekistan are also excluded from my analysis, as they do not have full data for all the years.

The hypotheses tested in this chapter are based on the theory of procedural justice (Tankebe, 2013; Tyler, 1997, 2006) and previous empirical studies (Kim et al., 2019; Zhorayev, 2020). Specifically, following Zhorayev's (2020) approach, I operationalise the procedural justice factors through the following proxy variables:

- The quality of respectful treatment is operationalised using the question of respondents' satisfaction with the quality and efficiency of road police services.

- The quality of honest/dishonest decision-making is operationalised using the question on respondents' experience of making unofficial payments (bribes, gifts) to road police officers.

My hypotheses are:

Hypothesis 1: Respondents, who are satisfied with the quality and efficiency of road police services, have a higher level of trust in the police than the unsatisfied respondents.

Hypothesis 2: Respondents, who have had the experience of making unofficial payment to road police officers, have a lower level of trust in the police than the respondents with no such experience.

Outcome variable

My outcome variable is calculated from people's responses to the following question: *"To what extent do you trust the police"*. Possible answers to this question include: 1 (complete distrust), 2 (some distrust), 3 (neither trust nor distrust), 4 (some trust) or 5 (complete trust). I recoded the answers to a dummy variable: 1 for "some trust" and "complete trust" and 0 otherwise. I also analyse responses to the same question about confidence in other institutions (religious organisations, trade unions, non-governmental organisations, and foreign investors) as placebo outcomes.

The independent variables of interest

LiTS asks respondents *"During the past 12 months have you or any member of your household used these services? a. Interact with the road police"*, and if their answer was "Yes" the next question follows: *"How satisfied were you with the quality and the efficiency of the service/interaction?"*. Possible answers are: 1 (very dissatisfied), 2 (dissatisfied), 3 (neither), 4 (satisfied) or 5 (very satisfied). I recoded the answers to a dummy variable, equal 1 (good quality), if respondents are satisfied and very satisfied, and 0 (poor quality) otherwise.

In addition, LiTS includes the following question: *"Did you or any member of your household make an unofficial payment or gift when using these services over the past 12 months? Interact*

with the road police".[9] I recoded data on this question to a dummy variable 1/0 for responses Yes/No, respectively.

Control variables

I control for respondents' attitudes towards their country's political system, from the LiTS question *"To what extent do you trust the following institutions?"*. There are six institutions (the presidency, the government, the parliament, courts, political parties, armed forces) taken into consideration. Respondents can answer with: 1 (complete distrust), 2 (some distrust), 3 (neither trust nor distrust), 4 (some trust) or 5 (complete trust). I calculate an average of answers for the six items and then recode the average to the "Political index" dummy variable – 1 for values, equal or greater than 4, and 0 otherwise.

LiTS also asks: *"To what extent do you agree with the following statement? All things considered, I am satisfied with my life now"*. Possible responses are: 1 (strongly disagree), 2 (disagree), 3 (neither disagree nor agree), 4 (agree), 5 (strongly agree). I recode responses to the "Satisfaction with life" dummy variable: 1 for 4-5, and 0 otherwise.

My controls also include LiTS information on respondents' individual characteristics – age, gender, marital status, education level, employment status, urban/rural residence. All these variables are recoded to dummies: *Male* = 1, *Married* = 1, *Tertiary education or higher* = 1, *Employed* = 1, *Urban* citizen = 1.

To assess the effect of the procedural justice variables on trust in the police I estimate the following specification[10]:

$$Y_{ict} = \beta_0 + \beta_1 Quality_{ict} + \beta_2 Corruption_{ict} + \beta_4 Political\ index_{ict}$$
$$+ \beta_5 Z_{ict} + \beta_5 C_c + \beta_5 T_t + \beta_5 (C_c * T_t) + \varepsilon_{ict} \qquad (2)$$

where for each respondent *i* in country *c* at time *t*: Y_{ict} is confidence in the police; $Quality_{ict}$ is the quality of road police service; $Corruption_{ict}$ is the fact of unofficial payment or gift;

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[9] The question on unofficial payments and gifts to the road police was asked in 2010 and 2016, but not in 2006.

[10] My specification is similar to that suggested by Zhorayev (2020). However, I develop his econometric model by adding Political index to control for political trust and Satisfaction with life, as from Chapter 4 it has been seen that these variables are important determinants of confidence in the police.

Political index$_{ict}$ is the index constructed from the six confidence variables (trust in the presidency, the government, the parliament, courts, political parties, armed forces); Z_{ict} is a vector of socio-demographic characteristics (age, gender, marital status, education level, income, employment status, urban/rural residence); C_c is country fixed effects; T_t is year fixed effects; $(C_c * T_t)$ is the country-year dummies interaction; ε_{ijt} is the random error term.

Table 5.1 reports the descriptive statistics of the variables. Figure 5.1 presents variations in confidence in the police (mean values) across the analysed countries.

Table 5.1: Sample characteristics

VARIABLES	N	Mean	S.D.	Min	Max
Outcome variable					
Trust in the police	94,905	0.452	0.498	0	1
Placebo outcomes					
Trust in banks	91,893	0.399	0.490	0	1
Trust in foreign investors	82,958	0.285	0.451	0	1
Trust in NGO	82,866	0.301	0.458	0	1
Trust in trade unions	83,034	0.300	0.458	0	1
Trust in religious institutions	88,855	0.441	0.497	0	1
Independent variables of interest					
Quality	16,081	0.451	0.498	0	1
Corruption	12,856	0.245	0.430	0	1
Control variables					
Political index	82,078	0.155	0.362	0	1
Satisfaction with life	96,495	0.459	0.498	0	1
Individual-level characteristics					
Education	98,444	0.212	0.409	0	1
Employment	89,441	0.534	0.499	0	1
Urban	98,460	0.585	0.493	0	1
Male	98,426	0.485	0.500	0	1
Marital status	94,445	0.621	0.485	0	1
Age	75,350	47.23	17.45	18	99
Age squared	75,350	2,536	1,749	324	9,801

Figure 5.1: Trust in the police across analysed countries
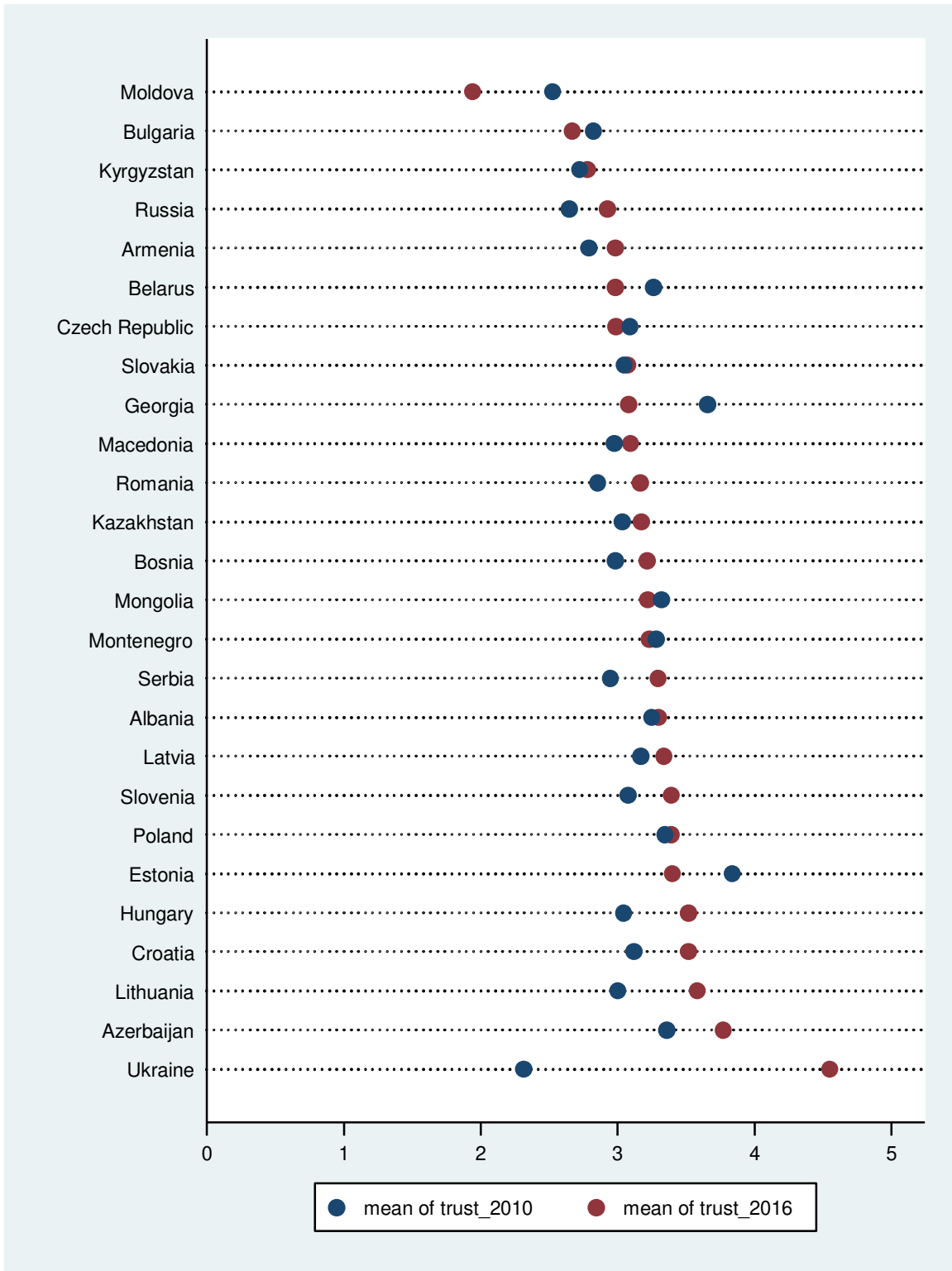
Note: Own calculations and visualisation in Stata. The figure shows the mean values of respondents' trust in the police across analysed countries in 2016 compared to 2010 on a five-point scale: 1 = 'complete distrust', 2 = 'some distrust', 3 = 'neither trust nor distrust', 4 = 'some trust' and 5 = 'complete trust'. *Data source*: LiTS.

5.2 Results of FE Estimations

Table 5.2 shows the results of fixed effects estimations. All specifications include the full set of country, year and country-year dummies.[11] Standard errors for the specification in column 5 are clustered by countries, while in column 6 bootstrap standard errors with 200 iterations are used. The literature suggests that 50-200 iterations are in general enough for estimating standard errors (Mooney & Duval, 1993, p. 11).[12]

Columns 1 and 2 each include the procedural justice variables – *Quality* and *Corruption*, correspondingly. The two variables markedly impact confidence in the police, and the coefficients on them are statistically significant at the 99% level. As hypothesised, respondents, who are satisfied with the quality and efficiency of road police services, on average, have a higher level of trust in the police by 17 percentage points (pp) than the unsatisfied respondents. Respondents, who have had the experience of making unofficial payment to road police officers, have a lower level of trust in the police by 13pp than the respondents with no such experience. Column 3 contains these two variables together with *Political index*, column 4 adds *Satisfaction with life*. Columns 5 and 6 additionally control for socio-demographic variables. Including these covariates slightly reduces the magnitude of the relationship between the procedural justice variables and trust in the police; however *Quality* and *Corruption* are still statistically significant at the 99% level. Among individual characteristics, only marital status is statistically significant, suggesting that the married are more inclined to trust the police compared with otherwise similar respondents.

Comparing the magnitudes of the effects between the variables, the quality of road police service has a larger impact on trust in the police than the fact of corruption. Satisfaction with life better predicts variation in attitudes toward police organisations than experience with corruption. However, more remarkably, political trust has much more explanatory power for citizens' perceptions of the police than procedural justice. These findings contribute to the existing empirical literature on trust in the police and might be of interest to policymakers, especially in transition countries.

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[11] Country dummies should capture the impact of country-specific and constant over time unobserved factors, year dummies somewhat cancel out the effect of global time-specific shocks. Adding country-year fixed effects should control for country-specific time-variant effects.

[12] Due to a larger sample of the data in Chapter 3, 200 bootstrapping iterations are complicated to run in Stata Stata/IC 12.1.

Table 5.2: The effect of Quality and Corruption on Trust (FE estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Quality	0.172***		0.137***	0.131***	0.126***	0.126***
	(0.00976)		(0.0128)	(0.0133)	(0.0136)	(0.00988)
Corruption		-0.128***	-0.0743***	-0.0750***	-0.0769***	-0.0769***
		(0.0155)	(0.0136)	(0.0133)	(0.0137)	(0.0116)
Political index			0.500***	0.480***	0.486***	0.486***
			(0.0222)	(0.0215)	(0.0224)	(0.0119)
Satisfaction with life				0.0867***	0.0921***	0.0921***
				(0.0134)	(0.0144)	(0.00927)
Education					-0.000918	-0.000918
					(0.0130)	(0.0104)
Employment					-0.00857	-0.00857
					(0.0129)	(0.0114)
Urban					-0.0111	-0.0111
					(0.0158)	(0.00885)
Male					-0.00989	-0.00989
					(0.00773)	(0.00919)
Marital status					0.0213**	0.0213**
					(0.00998)	(0.0104)
Age					0.00211	0.00211
					(0.00243)	(0.00192)
Age squared					-1.88e-05	-1.88e-05
					(2.79e-05)	(2.15e-05)
Constant	0.399***	1.101***	0.592***	0.534***	0.474***	0.474***
	(0.00192)	(0.00106)	(0.0178)	(0.0232)	(0.0570)	(0.0653)
Observations	15,775	12,621	11,058	10,967	10,143	10,143
R-squared	0.102	0.085	0.199	0.206	0.209	0.209
Country and Year fixed effects	✓	✓	✓	✓	✓	✓
Country*Year fixed effects	✓	✓	✓	✓	✓	✓
Standard errors	Clustered by countries	Clustered by countries	Clustered by countries	Clustered by countries	Clustered by countries	Bootstrapped with 200 iterations

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; robust standard errors in parentheses

In addition, similar to previous research (Aksoy et al., 2020; Zhorayev, 2020), I estimate my baseline specification using my placebo outcomes – confidence in religious institutions, trade unions, NGOs, and foreign investors (Table 5.3). This allows me to define whether what I am capturing is the impact of the procedural justice variables on trust in the police precisely, as different from any effect on people's general trust, including trust in other institutions and organisations. The results show that there are no significant relationships between the individual's experience of corruption and confidence in organisations other than police, consistent with my hypothesis that erosion of confidence due to corruption is specific to police agencies. Yet, my placebo test identifies a statistically significant relationship between the quality of road police service and trust in other organisations. I suppose this relationship might be a reflection of a phenomenon of 'social trust' ('faith in people') or what Taylor et al. (2007, p. 1) defined as "a belief in the honesty, integrity and reliability of others". To see if this might be the case I constructed a dummy variable for social trust from the following LiTS question: *"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please answer on a scale of 1 to 5: 1 (complete distrust), 2 (some distrust), 3 (neither trust nor distrust), 4 (some trust) and 5 (complete trust)."* Table 5.4 presents placebo tests with the *'Social trust'* variable included as an additional control. The results demonstrate again that the quality of road police services also shapes people's confidence in other institutions in society, not related to the police per se. This suggests that citizens' interactions with the road police probably have more complex consequences on their attitudes to different institutions in society, which requires more careful investigation beyond the scope of this research.[13]

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[13] All additional materials of this section (data, do files, etc.) are available upon request.

Table 5.3: Placebo outcomes (FE estimates)

OUTCOMES →	Trust in religious institutions		Trust in trade unions		Trust in NGOs		Trust in foreign investors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Quality	0.0858***	0.0487***	0.0792***	0.0515***	0.0696***	0.0409***	0.0683***	0.0437***
	(0.0139)	(0.0171)	(0.0106)	(0.00902)	(0.0114)	(0.0106)	(0.00961)	(0.00899)
Corruption	-0.00503	0.0138	-0.0116	0.00708	-0.00318	0.0152	-0.0174	-0.00207
	(0.0132)	(0.0137)	(0.0153)	(0.0145)	(0.0156)	(0.0151)	(0.0182)	(0.0179)
All controls included		✓		✓		✓		✓
Constant	0.727***	0.441***	0.701***	0.381***	0.620***	0.367***	0.712***	0.516***
	(0.0103)	(0.0542)	(0.00777)	(0.0423)	(0.00869)	(0.0422)	(0.00680)	(0.0549)
Observations	11,644	9,692	11,190	9,421	11,243	9,494	11,343	9,576
R-squared	0.062	0.139	0.063	0.154	0.049	0.129	0.056	0.141
Country and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Country*Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; robust standard errors in parentheses (clustered by countries)

Table 5.4: Placebo outcomes, controlling for Social trust (FE estimates)

OUTCOMES →	Trust in religious institutions		Trust in trade unions		Trust in NGOs		Trust in foreign investors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Quality	0.0797***	0.0482***	0.0697***	0.0479***	0.0621***	0.0396***	0.0619***	0.0426***
	(0.0134)	(0.0168)	(0.0100)	(0.00868)	(0.0113)	(0.0108)	(0.00872)	(0.00915)
Corruption	-0.00289	0.0140	-0.00382	0.0133	0.00314	0.0206	-0.0146	-0.000848
	(0.0131)	(0.0140)	(0.0147)	(0.0149)	(0.0162)	(0.0162)	(0.0190)	(0.0199)
Social trust	0.102***	0.0648***	0.126***	0.0825***	0.139***	0.101***	0.123***	0.0856***
	(0.0153)	(0.0129)	(0.0165)	(0.0171)	(0.0162)	(0.0164)	(0.0155)	(0.0146)
All controls included		✓		✓		✓		✓
Constant	0.701***	0.441***	0.679***	0.393***	0.578***	0.361***	0.683***	0.495***
	(0.0121)	(0.0523)	(0.00962)	(0.0460)	(0.00999)	(0.0441)	(0.00800)	(0.0565)
Observations	11,238	9,371	10,793	9,108	10,848	9,179	10,938	9,250
R-squared	0.071	0.141	0.080	0.158	0.069	0.139	0.073	0.151
Country and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Country*Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

*** p<0.01, ** p<0.05, * p<0.1; robust standard errors in parentheses (clustered by countries)

5.3   Identification Strategy

In this section, I develop an identification strategy to test a causal relationship between the quality of road police service and trust in the police as a whole. Throughout the section I refer to the *'quality of police service'*, which reflects both the quality of road police service and corruption in the road police.

From the public policy analyst's and econometrician's point of view, an ideal strategy would be a field experiment (Gerber & Green, 2012) that randomly allocates treatment (the quality of police service) from the road police in regards to drivers across regions in one country or groups of drivers (like in Murphy et al.'s (2014) randomised control trial in Australia) and estimates the causal effect on trust through measuring the difference between treated and control regions (or groups of drivers). Due to the difficulties of conducting such a resource-intensive experiment within the scope of this study, I employ instead a quasi-experimental research design.

In the previous chapters, I showed that confidence in police agencies is determined by a number of factors. However, due to limited access to data, it is not possible to include all relevant explanatory variables into my econometric models. Omission of important variables, if they are correlated with the included independent variables can produce endogeneity and biased estimates (Gujarati, 2017, pp. 114–115). Using fixed effects allows this study to partially capture the impact of omitted variables, but endogeneity concerns still remain. Therefore, to better address the issue of omitted variables bias, my next research design uses instrumental variable (IV) approach in the spirit of Ananyev & Guriev (2019), which can solve the problem of missing or control variables in a regression (Angrist & Pischke, 2009, p. 115). Also, as in any empirical work that relies on secondary datasets, there might be measurement errors in the data I use in my analysis for the independent variables. This may also result in biased as well as inconsistent OLS estimators. IV method can be a remedy for this problem (Gujarati, 2017, p. 136).

The Source of Exogenous Variation

For my IV research design I look at how trust in the police changed after the economic and financial crisis in Russia in 2014-2016. The crisis was a result of the dual shocks of a 45-percent fall in oil prices and sanctions with closed access to international financial markets for Russian entities (IMF, 2016). In 2015, the Russian economy went into a recession and the amount of citizens, who lived below the poverty line increased dramatically. It totalled to over 19 million people, or more than 13% of the population in 2015, vs. 16 million people, or 11%, in 2014. This was the highest level since 2006 in terms of the number of people and since 2008 in terms of

percentage (Ostroukh, 2016). Crises in Russia usually affect Russian regions differently, with a greater impact on the regions that are traditionally highly dependent on capital products as well as oil and gas production. Given the unexpected nature of the 2014-2016 crisis in Russia, it represents a 'natural experiment' allowing me to identify the relationship between the quality of police service and confidence in police.

The existing literature suggests that an economic crisis affects both perceived and experienced corruption. For instance, Ivlevs & Hinks (2015), similarly to our analysis, focused on 30 transition countries of Central Asia and Eastern Europe to investigate incidences of increased bribery. They found that people who experienced the worst of the financial crisis were more likely to interact with state officials; therefore, they were more likely to face corrupt transactions. Gugiu & Gugiu (2016), using data from the Eurobarometer 76.1 (September 2011), showed that citizens in 27 EU member states most affected by the economic crisis in terms of unemployment reported a higher perceived level of corruption in their governments.

There are also reasons to believe that a deteriorating economic situation may negatively impact police service delivery due to budget cuts and layoffs. This view is consistent with previous studies showing that police agencies were greatly hit by the Great Recession (COPS Program (U.S.), 2011), and according to different surveys, 22% of American municipal authorities reported fiscal cuts to public safety as a result of worsened economic conditions, 71% reported cuts to staff, which were likely to affect such police activities as service response times and crime prevention (McFarland, 2010). Similar police budget cuts took place in Russia as well, where, for example, during the global economic crisis of 2008-2009 the funding of the Federal Target Program 'Improving road safety in 2006-2012' was sequestrated and cut by 30-35% (*Road Traffic Injury*, 2009).

I further argue that in order to deal with fiscal constraints during economic and financial crises governments and police agencies could also be forced to reallocate resources from less priority services (e.g., road police services, thefts, non-felony assaults, etc.) to more prioritized public security tasks such as violent crime investigations. Therefore, a lack of resources, including staffing, may lead to the worsening of the quality of road police services to citizens, as evidenced by MCCA (Major Cities Chiefs Association) and PERF (Police Executive Research Forum) studies: as a result of fiscal and staffing cuts, 8% and 14% of police departments surveyed were no longer reacting respectively to car thefts and non-injury traffic accidents, 26% indicated a reduction in investigation follow-ups on traffic cases (MCCA, 2011; PERF, 2010, as cited in COPS Program (U.S.), 2011).

2SLS Methodology

For my instruments I use the following variables that reflect the composition of industrial employment in each region of Russia in 1989, suggested by Ananyev & Guriev (2019):

1) the share of employed in equipment and machinery production;
2) the share of employed in the oil and gas sector.
3) the share of employed in primary metal products;

My estimated equation has the following form:

$$\Delta Trust_i = \alpha + \beta \Delta Quality_i + \gamma \Delta Corruption_i + \delta_n \Delta X_{ni} + u_i \tag{3}$$

where:

$\Delta Trust_i$ is a change in $Trust_i$ (an average level of trust in the police in region *i*) from year 2010 and year 2016;

$\Delta Quality_i$ is a change in people's average level of the perceived quality of road police service in region *i* between 2010 and 2016;

$\Delta Corruption_i$ is a change in people's average level of experienced road police corruption in region *i* between 2010 and 2016;

ΔX_{ni} are changes in other *n* control variables in region *i* between 2010 and 2016: average *Age*, *Age squared*, *Higher education*;

u_i is the random error term.

As *Quality* and *Corruption* are endogenous variables to be instrumented (Angrist & Pischke, 2009, p. 126), I use the two-stage least squares (2SLS) estimation with the following first stage for both variables:

$$\Delta Quality_i = \kappa + \lambda Z_i + \mu_n \Delta X_{ni} + \varepsilon_i \tag{4}$$

$$\Delta Corruption_i = \pi + \omega Z_i + \phi_n \Delta X_{ni} + \epsilon_i \tag{5}$$

where Z_i are instrumental variables – regions' shares of employment in equipment and machinery, primary metal industries, and oil and gas production.

Let us denote $\Delta Quality_i$ as Q_i and $\Delta Corruption_i$ as C_i for simplicity. In order to obtain consistent estimators of parameters β and γ in Eq.(3) my instrumental variables should satisfy the following two conditions (Wooldridge, 2013, p. 514):

1) *Exogeneity*, i.e. the instruments are uncorrelated with the error terms in Eq.(4) and Eq.(5), respectively:

$$\text{Cov}(Z_i, \varepsilon_i) = 0 \tag{6}$$

and

$$\text{Cov}(Z_i, \epsilon_i) = 0 \tag{7}$$

2) *Relevance*, i.e. the instruments are correlated with variables $\Delta Quality_i$ and $\Delta Corruption_i$ in Eq.(4) and Eq.(5), respectively:

$$\text{Cov}(Z_i, Q_i) \neq 0 \tag{8}$$

and

$$\text{Cov}(Z_i, C_i) \neq 0 \tag{9}$$

If the relevance condition can be tested simply by estimating regressions between Z_i and Q_i and between Z_i and C_i, which I shall do in the next section, the exogeneity condition is not testable, since it involves the unobserved error. Yet, I appeal to the literature that supports the plausibility of this condition in my case. Past economic development literature identified path dependence in economic geography: Krugman (1991) argues that the modern concentration of American industry reflects settlements of the agricultural population in the Northeast of the early United States, when transportation was costly. Brown et al. (1993) claim that the industrial organisation of the Russian economy has Soviet heritage and it is significantly pre-determined by Soviet leaders' decisions in the past. Mikhailova (2012) finds that industrial policy under Stalin's management had a long-term impact on the development of Russian towns. Towns where labour camps were founded during the Stalin-era had a higher economic growth than otherwise identical towns. Notably, the impact was greater for the towns specialised in capital-intensive sectors (industrial construction) than for the towns specialised in labour-intensive sectors (agriculture). Therefore, the proposed instrumental variables are arguably exogenous to variations in income during the 2008-2009 crisis, and consequently, to the change in trust in the police. This exogeneity helps me identify the causal impact of the quality of police service on trust in the police.

Ananyev & Guriev (2019) confirm that the industrial employment of 1989 (USSR pre-collapse time) is highly correlated with variation in incomes during the economic turbulence – regions that depend more on oil and capital goods suffer more during the crisis. Therefore, I expect signs on coefficients λ and ω in Equations (4) and (5), respectively, to be negative, indicating that an increase in the employment share in the three industrial sectors (implying higher exposure to crisis by a particular region) leads to a decrease in the quality of police service through the channels, as explained above in the previous section.

Data Preparation

For my estimations I use data from two main sources:

1) Ananyev & Guriev's (2019) dataset, containing the composition of industrial employment from The 1989 Census of Soviet Manufacturers, initially compiled and reclassified by Brown et al. (1993) – for the instrumental variables;

2) The EBRD's LiTS surveys for transition countries (including Russia), conducted in 2006, 2010 and 2016 – for all other variables.

Ananyev & Guriev's dataset includes the shares of employment in machinery and equipment, primary metal industries, and oil and gas production across 68 Russian regions that account for about 90% of the Russian population (a full list of regions is shown in Table A.2 in Appendix A). Although LiTS contains data at the regional level by each country, there is no description of Russian regions. I identified regions by the 'Locality - settlement, town' variable for LiTS 2010 and by latitude and longitude for LiTS 2016. It turned out that there are only 36 Russian regions, covered in both LiTS 2010 and LiTS 2016; they constitute more than 65% of the Russian population. Then I calculated the average levels of respondents' responses by each variable (*Trust*, *Quality*, *Corruption*, *Age*, *Higher education*) across regions, and the changes (differences) in the average levels between 2010 and 2016 by each region. After that I merged this data with Ananyev & Guriev's dataset.[14] Figure 5.2 shows the average level of respondents' confidence in the police across Russian regions, asked by LiTS in 2016. A visual summary of the quality of road police service and corruption in road police across Russian regions are presented respectively in Figure A.1 and Figure A.2 (Appendix A).

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[14] Ananyev & Guriev additionally had data at the sub-regional level. Since their regions and sub-regions were the same over time, it allowed them to increase their number of observations up to 198. This was not possible with LiTS.

Figure 5.2: Regional differences in trust in the police in Russia
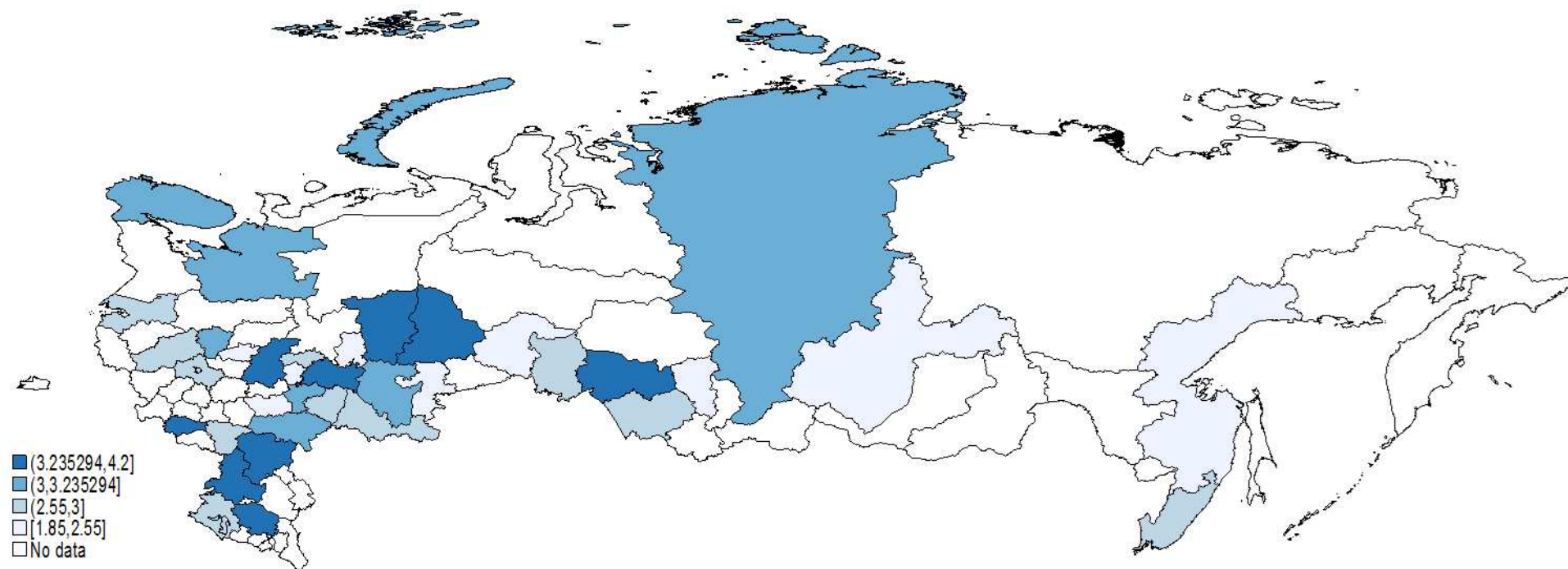
Legend:
- (3.235294,4.2]
- (3,3.235294]
- (2.55,3]
- [1.85,2.55]
- No data

Note: Own calculations and visualisation in Stata. The map plots the average levels of respondents' confidence in the police across Russian regions in 2016 on a scale of 1-5: 1 (complete distrust), 2 (some distrust), 3 (neither trust nor distrust), 4 (some trust) and 5 (complete trust). The bluer areas indicate the highest level of trust. The white areas are the regions, which are not covered by LiTS, and data for them are not available. All regions with available data comprise more than 65% of the Russian population. Chukotskiy Avtonomniy Okrug, data on which are not available, is excluded from the map for better visualisation. *Data source:* LiTS and GADM.org.

5.4 Results of IV Estimations

I first report the OLS results in Table 5.5. I regress the change in individuals' average trust in the police between 2010 and 2016 on the change in the average levels of perception of the quality of road police service (column 1), and on the change in the average level of experienced road police corruption (column 2) between 2006 and 2010, and then I include an array of controls (columns 4 and 5). The estimated coefficients on both variables of my interest are not statistically different from zero in all the specifications.

Table 5.5: Determinants of Trust (OLS estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)
Quality change	0.110		0.110	0.111	0.118
	(0.128)		(0.130)	(0.135)	(0.122)
Corruption change		-0.0127	-0.00757	0.00639	-0.0386
		(0.140)	(0.136)	(0.144)	(0.130)
Education change				-0.0985	0.336
				(0.251)	(0.291)
Age change					-0.151
					(0.134)
Age squared change					0.00190
					(0.00130)
Constant	0.142	0.167	0.142	0.166	0.240**
	(0.113)	(0.110)	(0.117)	(0.108)	(0.107)
Observations	36	36	36	36	36
R-squared	0.022	0.000	0.022	0.027	0.171

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; robust standard errors in parentheses (clustered by regions)

After running regressions of different specifications, I found that only the two instruments – *Employment in oil and gas* and *Employment in primary metals* – predict the change in the quality of road police service. Table 5.6 reports the first stage estimates of 2SLS approach for *Quality* as a determinant of *Trust*, using two instruments (all other specifications are in Appendix B, Tables B.1-B.10). For the instruments to be relevant for explaining variation in *Quality*, I should be able to reject the null hypothesis that the regression coefficients on the instrumental variables are equal to zero at least at the 95% significance level (Wooldridge, 2013, pp. 514–515). As seen in Table 5.6, the two instruments are economically relevant in explaining the change in quality during the crisis, as well as being statistically significant. However, only *Employment in oil and gas* is statistically significant at the 95% level in two specifications. The second-stage estimates

in Table 5.7 show statistically significant coefficients on *Quality change* in all the specifications with the size of the effect on *Trust* varying from 0.38 to 0.65.[15]

Table 5.6: Determinants of Quality,
using two instruments (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in primary metals	-10.38*	-10.44*	-10.50
	(5.729)	(5.940)	(7.496)
Employment in oil and gas	24.60**	25.17*	30.01**
	(11.80)	(12.99)	(14.53)
Education change		-0.0412	-0.243
		(0.271)	(0.526)
Age change			-0.00402
			(0.247)
Age squared change			-0.000183
			(0.00256)
Constant	0.274	0.283	0.240
	(0.173)	(0.181)	(0.202)
Observations	36	36	36
R-squared	0.076	0.077	0.093

Robust standard errors in parentheses (clustered by region); *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.7: The effect of Quality on Trust,
using two instruments (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Quality change	0.610**	0.648**	0.383*
	(0.259)	(0.278)	(0.227)
Education change		-0.118	0.326
		(0.263)	(0.306)
Age change			-0.135
			(0.153)
Age squared change			0.00177
			(0.00152)
Constant	0.0252	0.0437	0.189
	(0.138)	(0.128)	(0.121)
Observations	36	36	36
F-statistic	5.5	4.2	3.2

Robust standard errors in parentheses (clustered by region); *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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[15] All IV estimations have been done in Stata/IC 12.1 using the "ivregress 2sls" command (Baum, 2006). As my variables are aggregated at the regional level, I cluster standard errors by regions.

It should be noted, however, that the estimate on the share of the 1989 oil and gas employment has the unexpected positive sign, indicating that regions with a higher employment share in this sector and accordingly higher exposure to the crisis have a higher level of quality of road police service after the crisis. One of the possible explanations of this puzzle that requires detailed examination is that in the rapidly developing oil and gas sector there could be first-hand field projects in new areas of Russian regions without catching up road infrastructure. Hence, even if those regions suffered significantly from the crisis, their residents do not have a high chance of interacting with the road police.

5.5   Limitations and Future Study

A few limitations and challenges became apparent while conducting this part of the research. First, I was not able to identify Russian regions in the LiTS 2006 by their coded numbers, as there was neither locality (settlement, town), nor latitude/ longitude in the data.[16] For future studies, it would be sound to look at the differences in the variables of interest between 2006 and 2010. Since there was another economic crisis in Russia in 2008-2009, it is likely that the quality of police service had already changed by 2010 without further higher variation between 2010 and 2016.

Second, despite the statistical significance of my instrumental variables, the F-statistic for testing the null hypothesis that the instrument does not enter the first-stage regression, is below 10 (Baum et al., 2007; Staiger & Stock, 1997).[17] This indicates that the 1989 employment in the oil and gas sector is not a strong enough instrument for the quality of road police service. Although it used to be common for the reported first-stage F-statistic to take on a value less than 10 in the past (even influential) empirical studies that applied the IV approach[18] (Staiger & Stock, 1997, pp. 557–559), it is reasonable to attempt to find other stronger instruments for a causal identification of the effect of the quality of road police service on trust in the police, which could be the subject of further investigation.

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[16] There were not any explanations/descriptions in the LiTS Technical Report, while my email to experts in the EBRD revealed unluckily that the person responsible for LiTS was on leave at the time of conducting this analysis.

[17] All additional materials of this section (data, do files, etc.) are available upon request.

[18] For example, Angrist and Krueger's (1991) classic paper on the returns to education reports F-statistic below 10 in their several specifications, like in my case. However, their paper was criticized later on econometric grounds (e.g. Bound et al., 1995).

Third, one might also argue that my instrumental variables estimation used in this chapter suffer from a low number of observations, limited by data availability. If the conditions in Equations (6)-(9) are met, by the law of large numbers the IV estimator would be consistent for my parameters β and γ in Eq. (3).[19] However, in small samples, the IV estimator can have a bias (Wooldridge, 2013, p. 517). The possible solution to address this issue would be including additional observations on regions of other post-Soviet states whose economies are to a large extent inherited from Soviet-era industrialisation (e.g. Ukraine or Kazakhstan). For example, currently the iron and steel industry is dominant in the Ukrainian economy, providing around 25 percent of the country's GDP and 40 percent of its export revenues (Shatokha, 2014); Zaporizhstal, one of the largest mining and metals companies of Ukraine (*The Metallurgical Industry of Ukraine*, 2019) was founded in 1933 (*Zaporizhstal Today*, n.d.). The industrial, Karaganda region of Kazakhstan is mainly dependent on the Karaganda metallurgic plant (informally called "Kazakhstani Magnitogorsk"), which was put into operation in 1960 (*Modern Kazakhstan Magnitogorsk*, 2015). However, regional data on the structure of manufacturing employment of Ukraine and Kazakhstan in 1989 are not available online, and access to archival data was not possible due to COVID lockdowns in these countries at the time of writing this paper. Therefore, all these challenges open up avenues for future research on this topic.

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[19] A consistent estimator is the one that approaches the true population parameter as the sample size increases (Wooldridge, 2013, p. 846).

Chapter 6

Conclusion

This research analysed the determinants of people's attitudes towards the police. Recalling from the existing literature, there are different factors that could affect these attitudes. The *procedural justice* model predicts that citizens' trust in police organisations is determined by the way police officers treat individuals and make decisions, specifically, if the treatment is provided with respect and honesty and whether it is fair (Tyler, 1997, 2006). The *political trust* studies suggest that individuals' perceptions of police are highly related to their general trust in the country's political system (Alalehto & Larsson, 2016; Bridenball & Jesilow, 2008; Goldsmith, 2005).

Unlike previous cross-sectional-design studies (e.g. Cao et al., 2012; Jang et al., 2010; Stack & Cao, 1998; Staubli, 2017), exploiting an advantage of panel design, I provide new evidence on the importance of political trust on confidence in the police in 38 (mainly European) countries. Specifically, according to my baseline estimates, public trust in and satisfaction with state political institutions – government, parliament, political parties and the legal system – are associated with, respectively, a 9, 13, 16 and 47 percentage-point (pp) greater chance of confidence in police agencies. The results of my econometric analyses are quite robust for different specifications, even after controlling for country-level (Log GDP per capita) and individual-level characteristics. The findings also hold when using simple OLS, fixed effects, and logistic estimations. Moreover, after checking the external validity of my findings using data from the Life in Transition Survey (LiTS), the results demonstrate certain generalisability for other regions, and particularly for transition countries outside of Europe.

I also show that citizens using the Internet are more inclined to have less trust in the police. The possible explanation of this effect is based on previous studies (Guriev et al., 2019; Weitzer & Tuch, 2006), suggesting that access to the Internet lowers the level of confidence in state institutions due to people being more exposed to consuming negative mass and social media news (i.e. corruption cases of state officials). I find that Internet users' attitudes toward the police are less favourable by at least 2pp as compared to those who do not use the Internet at all. However, Internet use as a control variable was not the primary focus of this study. Therefore, I view these findings as supplementary, and leave more comprehensive examination of the links between trust in the police and Internet use for further research.

This study also contributes to the literature by testing the procedural-justice-based model for 26 transition countries, using LiTS data. According to my baseline estimate, controlling for all

socio-demographic characteristics, citizens' satisfaction with road police services leads to an increase in the level of their trust in the police by 13pp; on the contrary, the experience of unofficial payments (bribes or gifts) during an individual's encounter with a police officer, erodes trust by 8pp. These findings are consistent with previous studies for other regions and countries (Gau et al., 2012; Murphy et al., 2014; N. Sahin et al., 2017; Tyler & Huo, 2002 and others). I also find that composite political trust of six state institutions (trust in political parties, courts, parliament, government, presidency, and armed forces) has a greater impact on confidence in the police than the 'procedural justice' variables.

Acknowledging the possibility of omitted variables bias, I apply the instrumental variable approach to test the causal relationship between the quality of road police service and trust in the police, using data on Russian regions from the same LiTS surveys. I show that my instruments (the Soviet structure of two industrial sectors, primary metals and oil and gas) are correlated with the change in the quality of road police service, which is statistically significant in explaining the change in trust in the police in the second stage. However, I present these results with caution, since my instruments turned out not to be strong enough – the first-stage F-statistic is below 10 (Baum et al., 2007; Staiger & Stock, 1997).

Findings from this research also have some important policy implications for the governments, especially those that are trying to improve their citizens' confidence in the police. First of all, as trust in the police is significantly related to people's overall satisfaction with state institutions, to win public support, police agencies' programs should be incorporated into the government's general strategy aimed at improving its own efficiency and political trustworthiness. Second, the quality of road police services is a robust factor in determining public attitudes toward the police as a whole. Therefore, a special 'procedural justice' training for police officers (the issues of polite and fair communications with citizens) could be helpful. Finally, the problem of road police corruption should be seriously taken into account. In countries where road police corruption is a chronic disease, a 'shock therapy' approach that includes firing all current staff and recruiting new professionally trained personnel (Peacock & Cordner, 2016) should be considered.

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Appendices

Appendix A: Additional tables and figures

Table A.1: List of countries

Countries in ESS Data[1]	Countries in LiTS Data[2]	Countries analysed for checking external validity in Chapter 4	Countries analysed in Chapter 5
Albania	Albania		Albania
	Armenia	Armenia	Armenia
Austria			
	Azerbaijan	Azerbaijan	Azerbaijan
	Belarus	Belarus	Belarus
Belgium			
	Bosnia	Bosnia	Bosnia
Bulgaria	Bulgaria		Bulgaria
Croatia	Croatia		Croatia
Cyprus			
Czech Republic	Czech Republic		Czech Republic
Denmark			
Estonia	Estonia		Estonia
Finland			
France	France		
	Georgia	Georgia	Georgia
Germany	Germany		
Greece			
Hungary	Hungary		Hungary
Iceland			
Ireland			
Israel			
Italy	Italy		
	Kazakhstan	Kazakhstan	Kazakhstan
Kosovo	Kosovo		
	Kyrgyzstan	Kyrgyzstan	Kyrgyzstan
Latvia	Latvia		Latvia
Lithuania	Lithuania		Lithuania

Luxembourg			
	Macedonia	Macedonia	Macedonia
	Moldova	Moldova	Moldova
	Mongolia	Mongolia	Mongolia
Montenegro	Montenegro		Montenegro
Netherlands			
Norway			
Poland	Poland		Poland
Portugal			
Romania	Romania		Romania
Russia	Russia		Russia
Serbia	Serbia		Serbia
Slovakia	Slovakia		Slovakia
Slovenia	Slovenia		Slovenia
Spain			
Sweden	Sweden		
Switzerland			
	Tajikistan	Tajikistan	
Turkey	Turkey		
Ukraine	Ukraine		Ukraine
United Kingdom	United Kingdom		
	Uzbekistan	Uzbekistan	
38 countries	35 countries	12 countries	26 countries

Sources:
[1] https://www.europeansocialsurvey.org/
[2] https://www.ebrd.com/what-we-do/economic-research-and-data/data/lits.html

Table A.2: List of Russian regions

Regions, analysed by Ananyev & Guriev (2019)	Regions, covered by LiTS 2010	Regions, covered by LiTS 2016	Regions, used for 2SLS estimations in Chapter 4	Population by region, as of 1 January 2018
Altayski Krai	Altayski Krai	Altayski Krai	Altayski Krai	2 350 080
Amur Oblast	-	-	-	798 424
Arkhangelsk Oblast	Arkhangelsk Oblast	Arkhangelsk Oblast	Arkhangelsk Oblast	1 111 031
Astrakhan Oblast	Astrakhan Oblast	-	-	1 017 514
Bashkortostan	Bashkortostan	Bashkortostan	Bashkortostan	4 063 293
Belgorod oblast	-	-	-	1 549 876
Bryansk Oblast	-	-	-	1 210 982
Chelyabinsk Oblast	Chelyabinsk Oblast	Chelyabinsk Oblast	Chelyabinsk Oblast	3 493 036
Chuvash Rep	Chuvash Rep	Chuvash Rep	Chuvash Rep	1 231 117
Evreyskaya Avt. Oblast	-	-	-	162 014
Irkutsk Oblast	Irkutsk Oblast	Irkutsk Oblast	Irkutsk Oblast	2 404 195
Ivanovo Oblast	Ivanovo Oblast	Ivanovo Oblast	Ivanovo Oblast	1 014 646
Kaliningrad Oblast	-	-	-	994 599
Kaluga Oblast	-	-	-	1 012 156
Kamchatski Krai	-	-	-	315 557
Kareliya	-	-	-	622 484
Kemerovo Oblast	Kemerovo Oblast	Kemerovo Oblast	Kemerovo Oblast	2 694 877
Khabarovski Krai	Khabarovski Krai	Khabarovski Krai	Khabarovski Krai	1 328 302
Khakas Rep	-	-	-	537 513
Khanty-Mans. Avt. Oblast	-	-	-	1 655 074
Kirov Oblast	-	-	-	1 283 238
Komi	-	-	-	840 873
Kostroma Oblast	-	-	-	643 324
Krasnodarski Krai	Krasnodarski Krai	Krasnodarski Krai	Krasnodarski Krai	5 603 420
Krasnoyarski Krai	Krasnoyarski Krai	Krasnoyarski Krai	Krasnoyarski Krai	2 876 497
Kurgan Oblast	-	-	-	845 537
Kursk Oblast	Kursk Oblast	Kursk Oblast	Kursk Oblast	1 115 237
Leningrad Oblast	-	Leningrad Oblast	-	1 813 816

Lipetsk Oblast	-	-	-	1 150 201
Magadan Oblast	-	-	-	144 091
Mari El	Mari El	Mari El	Mari El	682 333
Mordovia	-	-	-	805 056
Moscow	Moscow	Moscow	Moscow	12 506 468
Moscow Oblast	-	Moscow Oblast	-	7 503 385
Murmansk Oblast	Murmansk Oblast	Murmansk Oblast	Murmansk Oblast	753 557
Nizhegorodskaya Oblast	Nizhegorodskaya Oblast	Nizhegorodskaya Oblast	Nizhegorodskaya Oblast	3 234 752
Novgorod Oblast	-	-	-	606 476
Novosibirsk Oblast	Novosibirsk Oblast	Novosibirsk Oblast	Novosibirsk Oblast	2 788 849
Omsk Oblast	Omsk Oblast	Omsk Oblast	Omsk Oblast	1 960 081
Orel Oblast	-	-	-	747 247
Orenburg Oblast	Orenburg Oblast	Orenburg Oblast	Orenburg Oblast	1 977 720
Penza Oblast	Penza Oblast	Penza Oblast	Penza Oblast	1 331 655
Permski Krai	Permski Krai	Permski Krai	Permski Krai	2 623 122
Primorski Kray	Primorski Kray	Primorski Kray	Primorski Kray	1 913 037
Pskov Oblast	-	-	-	636 546
Rostov Oblast	Rostov Oblast	Rostov Oblast	Rostov Oblast	4 220 452
Ryazan Oblast	-	-	-	1 121 474
Sakhalin Oblast	-	-	-	490 181
Samara Oblast	Samara Oblast	Samara Oblast	Samara Oblast	3 193 514
Saratov Oblast	Saratov Oblast	Saratov Oblast	Saratov Oblast	2 462 950
Smolensk Oblast	-	-	-	949 348
St Petersburg	St Petersburg	St Petersburg	St Petersburg	5 351 935
Stavropolski Krai	Stavropolski Krai	Stavropolski Krai	Stavropolski Krai	2 800 674
Sverdlovsk Oblast	Sverdlovsk Oblast	Sverdlovsk Oblast	Sverdlovsk Oblast	4 325 256
Tambov Oblast	-	-	-	1 033 552
Tatarstan	Tatarstan	Tatarstan	Tatarstan	3 894 284
Tomsk Oblast	-	-	-	1 078 280
Tula Oblast	-	-	-	1 491 855
Tver Oblast	Tver Oblast	Tver Oblast	Tver Oblast	1 283 873

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Tyumen Oblast	Tyumen Oblast	Tyumen Oblast	Tyumen Oblast	1 498 779
Udmurt Rep	Udmurt Rep	Udmurt Rep	Udmurt Rep	1 513 044
Ulyanovsk Oblast	Ulyanovsk Oblast	Ulyanovsk Oblast	Ulyanovsk Oblast	1 246 618
Vladimir Oblast	-	-	-	1 378 337
Volgograd Oblast	Volgograd Oblast	Volgograd Oblast	Volgograd Oblast	2 521 276
Vologda Oblast	-	-	-	1 176 689
Voronezh Oblast	Voronezh Oblast	Voronezh Oblast	Voronezh Oblast	2 333 768
Yaroslavl Oblast	Yaroslavl Oblast	Yaroslavl Oblast	Yaroslavl Oblast	1 265 684
Zabaikalski Krai	Zabaikalski Krai	-	-	1 072 806
68 regions	38 regions	38 regions	36 regions	

Note: All the regions, used for 2SLS estimations in Chapter 4, account for more than 65% of the Russian population. Data on population are from the Federal State Statistics Service of the Russian Federation.

Figure A.1: Regional differences in the quality of road police service in Russia
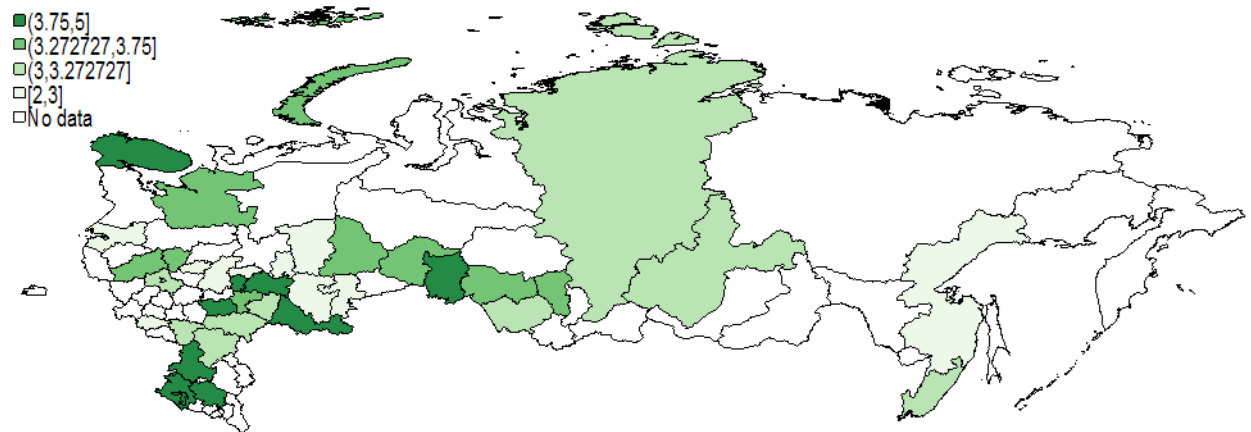
Note: Own calculations and visualisation in Stata. The map plots the average levels of respondents' satisfaction with the quality and the efficiency of road police service across Russian regions in 2016 on a scale of 1-5: 1 (very dissatisfied), 2 (dissatisfied), 3 (neither), 4 (satisfied) or 5 (very satisfied). The greener areas indicate the highest level of satisfaction. The white areas are the regions, which are not covered by LiTS, and data for them are not available. All regions with available data comprise more than 65% of the Russian population. Chukotskiy Avtonomniy Okrug, data on which are not available, is excluded from the map for better visualisation. *Data source:* LiTS and GADM.org.

Figure A.2: Regional differences in the perception of corruption in the road police in Russia
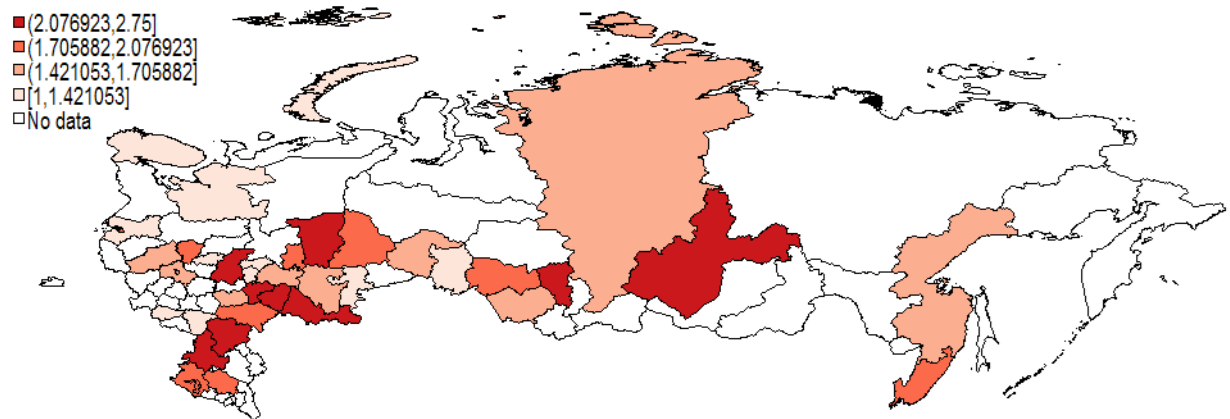
Note: Own calculations and visualisation in Stata. The map plots the average levels of respondents' perception of corruption in the road police across Russian regions in 2016 *(Question: "In your opinion, how often do people like you have to make unofficial payments or gifts when interacting with the road police?")* on a scale of 1-5: 1 (never), 2 (seldom), 3 (sometimes), 4 (usually) or 5 (always). The redder areas indicate the highest level of perceived corruption. The white areas are the regions, which are not covered by LiTS, and data for them are not available. All regions with available data comprise more than 65% of the Russian population. Chukotskiy Avtonomniy Okrug, data on which are not available, is excluded from the map for better visualisation. *Data source:* LiTS and GADM.org.

Appendix B: Results of IV estimations – different specifications

Table B.1: Determinants of Quality, using 3 instruments (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in primary metals	-12.44*	-12.50*	-12.89
	(6.493)	(6.694)	(8.370)
Employment in machinery and equipment	9.507	9.510	11.03
	(7.031)	(7.187)	(7.396)
Employment in oil and gas	30.67***	31.26**	38.67**
	(11.21)	(12.66)	(15.37)
Education change		-0.0420	-0.309
		(0.255)	(0.498)
Age change			-0.00704
			(0.251)
Age squared change			-0.000227
			(0.00260)
Constant	0.0356	0.0445	-0.0506
	(0.213)	(0.218)	(0.249)
Observations	36	36	36
R-squared	0.116	0.116	0.145

Robust standard errors in parentheses (clustered by regions);
*** p<0.01, ** p<0.05, * p<0.1

Table B.2: The effect of Quality on Trust,
using 3 instruments (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Quality change	0.325	0.350	0.106
	(0.252)	(0.263)	(0.199)
Education change		-0.106	0.315
		(0.235)	(0.264)
Age change			-0.148
			(0.122)
Age squared change			0.00186
			(0.00119)
Constant	0.0921	0.111	0.248**
	(0.130)	(0.123)	(0.116)
Observations	36	36	36
F-statistic	4.4	3.4	2.6

Robust standard errors in parentheses (clustered by regions);
*** p<0.01, ** p<0.05, * p<0.1

Table B.3: Determinants of Corruption, using 3 instruments (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in primary metals	-3.304	-2.806	-1.841
	(13.14)	(13.83)	(13.33)
Employment in machinery and equipment	1.125	1.106	0.791
	(6.575)	(6.890)	(6.873)
Employment in oil and gas	20.37*	15.69*	13.15
	(10.57)	(8.735)	(11.81)
Education change		0.336	0.463
		(0.344)	(0.430)
Age change			-0.0880
			(0.101)
Age squared change			0.000961
			(0.00104)
Constant	-0.152	-0.223	-0.194
	(0.269)	(0.300)	(0.321)
Observations	36	36	36
R-squared	0.030	0.071	0.084

Robust standard errors in parentheses (clustered by region);
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table B.4: The effect of Corruption on Trust,
using 3 instruments (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Corruption change	0.871	1.231	0.735
	(0.763)	(1.292)	(1.035)
Education change		-0.554	-0.0843
		(0.565)	(0.657)
Age change			-0.0814
			(0.179)
Age squared change			0.00109
			(0.00188)
Constant	0.262*	0.428	0.388*
	(0.154)	(0.289)	(0.208)
Observations	36	36	36
F-statistic	2.2	1.4	0.6

Robust standard errors in parentheses (clustered by region);
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table B.5: Determinants of Corruption, using 2 instruments (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in primary metals	-3.060	-2.567	-1.669
	(12.85)	(13.43)	(13.02)
Employment in oil and gas	19.66**	14.98*	12.53
	(8.135)	(7.484)	(10.47)
Education change		0.336	0.468
		(0.341)	(0.439)
Age change			-0.0878
			(0.0995)
Age squared change			0.000964
			(0.00101)
Constant	-0.124	-0.195	-0.173
	(0.157)	(0.190)	(0.206)
Observations	36	36	36
R-squared	0.029	0.070	0.084

Robust standard errors in parentheses (clustered by region);
*** p<0.01, ** p<0.05, * p<0.1

Table B.6: The effect of Corruption on Trust,
using 2 instruments (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Corruption change	0.936	1.354	0.917
	(0.783)	(1.399)	(1.171)
Education change		-0.601	-0.182
		(0.660)	(0.764)
Age change			-0.0636
			(0.184)
Age squared change			0.000890
			(0.00195)
Constant	0.269	0.452	0.417
	(0.165)	(0.335)	(0.255)
Observations	36	36	36
F-statistic	3.1	2.1	0.9

Robust standard errors in parentheses (clustered by region);
*** p<0.01, ** p<0.05, * p<0.1

Table B.7: Determinants of Quality, using 1 instrument (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in oil and gas	27.76**	28.07**	32.49**
	(11.74)	(13.09)	(15.19)
Education change		-0.0220	-0.199
		(0.271)	(0.541)
Age change			-0.0344
			(0.232)
Age squared change			0.000127
			(0.00244)
Constant	0.171	0.176	0.139
	(0.144)	(0.144)	(0.180)
Observations	36	36	36
R-squared	0.036	0.037	0.054

Robust standard errors in parentheses (clustered by region);
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table B.8: The effect of Quality on Trust,
using 1 instrument (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Quality change	0.510	0.570	0.215
	(0.379)	(0.389)	(0.315)
Education change		-0.115	0.320
		(0.254)	(0.273)
Age change			-0.143
			(0.129)
Age squared change			0.00182
			(0.00127)
Constant	0.0487	0.0613	0.225*
	(0.155)	(0.154)	(0.136)
Observations	36	36	36
F-statistic	5.6	4.6	4.6

Robust standard errors in parentheses (clustered by region);
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table B.9: Determinants of Corruption, using 1 instrument (First-stage estimates)

VARIABLES	(1)	(2)	(3)
Employment in oil and gas	20.59**	15.70*	12.92
	(8.471)	(7.849)	(9.710)
Education change		0.341	0.475
		(0.331)	(0.447)
Age change			-0.0926
			(0.114)
Age squared change			0.00101
			(0.00120)
Constant	-0.154	-0.221	-0.189
	(0.145)	(0.185)	(0.185)
Observations	36	36	36
R-squared	0.025	0.067	0.083

Robust standard errors in parentheses (clustered by region);
*** p<0.01, ** p<0.05, * p<0.1

Table B.10: The effect of Corruption on Trust,
using 1 instrument (Second-stage estimates)

VARIABLES	(1)	(2)	(3)
Corruption change	0.688	1.019	0.541
	(0.594)	(0.760)	(0.905)
Education change		-0.474	0.0200
		(0.499)	(0.679)
Age change			-0.100
			(0.164)
Age squared change			0.00130
			(0.00175)
Constant	0.242*	0.387	0.357*
	(0.140)	(0.252)	(0.196)
Observations	36	36	36
F-statistic	5.9	4.0	1.8

Robust standard errors in parentheses (clustered by region);
*** p<0.01, ** p<0.05, * p<0.1