Studies about the Role of Governance and Violent Conflicts in Society and Economics

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I dedicate this work to my grandmother Maria Theresia.

Abstract

This thesis studies the question: *Why are developed countries rich and developing countries poor?* I asked myself this question for the first time during my volunteer service in Central America. Therefore, I analyze the role of governance and violent conflicts in society and economics. It consists of four scientific papers: The first paper investigates the impact of governance on inward foreign direct investment. FDI is important for socioeconomic development because it represents a significant channel of capital, knowledge, and technology transfer. The second paper examines the effect of financial development and ethnic heterogeneity on regional consumption risk-sharing in Ukraine. Consumption risk-sharing is a relevant socioeconomic approach to smoothen negative income shocks. The third paper reviews the impact of governance on populist rhetoric. This is crucial because populist trends can be obstructive to socioeconomic development. Finally, the fourth paper correlates the drug war with regional social capital in Mexico. Social capital, i.e., trust, is a foundation for socioeconomic development.

The results show:

(1) Governance indicators are important determinants of inward FDI for 38 developed countries. In comparison, for 79 developing countries, another country characteristic – the mean tariff rate – is more important than the institutional setting.

(2) In Ukraine, regional consumption risk-sharing is significantly higher in the regions with a large Russian minority. In contrast, the degree of financial development does not affect the regional degree of consumption risk-sharing.

(3) Governance indicators are important determinants of mitigating populist rhetoric for 40 developing and developed countries. Moreover, we document a positive spatial correlation for populist rhetoric.

(4) In Mexico, regional social capital is significantly lower in regions that experience a high degree of violence due to the drug war. Moreover, we document a positive spatial correlation for social capital.

Overall, it can be stated that governance is an important determinant for economic development and the well-being of the society, whereas violent conflicts lead to a deterioration in economic and social welfare as the case studies of Ukraine (War in Donbas) and Mexico (drug war) show.

Table of Contents

Lists of Figures, Tables, and Abbrevations

List of Figures

List of Tables

List of Abbreviations

CONAP:	Consejo Nacional de Población
DTO:	Drug Trafficking Organizations
FDI:	Foreign Direct Investment
GDP:	Gross Domestic Product
GMM:	Generalized Method of Moments
GRP:	Gross Regional Product
INEGI:	Instituto Nacional de Estadística y Geografía
OCHA:	United Nation Office for the Coordination of Humanitarian Affairs
OECD:	Organization for Economic Co-operation and Development
OLS:	Ordinary Least Square
PAN:	Partido Acción Nacional
PRI:	Partido Revolucionario Institucional
SEP:	Secretaría de Educación Pública
SLDV:	Spatial Lagged Dependen Variable
UNHCR:	United Nations High Commissioner for Refugees
V-Dem:	Varieties of Democracy Research Institute
WDI:	World Development Indicators
WGI:	Worldwide Governance Indicators

Motivation

The voluntary service "weltwärts" that I worked for in Central America has had a long-term effect on my life. From 2009 to 2010 I lived in Granada in Nicaragua and worked as a tutor. Nicaragua is a developing country with a high population growth rate of 2.2 percent per year, i.e. the population doubles every 32 years.[1] In comparison with Germany the level of economic development was shocking (GDP per capita in Nicaragua 2020: $1,905 US, GDP per capita in Germany 2020: $46,208 US (World Bank 2022). I asked myself: Why is Germany such a rich country and Nicaragua such a poor one?

Therefore, I studied *Development Studies* at Vienna University from 2010 to 2013. During my bachelor's studies I realized that there is no single answer to development. Interdisciplinarity is the appropriate approach to understanding the different outcome of countries in the context of development. We used four different perspectives to analyze development: political, sociological, historical, and economic perspectives.[2]

For my masters I studied *International Business and Economics* at the University of Hohenheim from 2013 to 2016. I focused on international trade where we learnt different trade models.[3] Moreover, I studied econometrics and became interested in empirical research.

From 2016 to 2018 I worked for different C*hambers of Industry and Commerce in Germany, Brazil, and Ireland*. This work experience allowed me to understand the importance of economic cooperation and the promotion of trade.

Since 2019 I have been working as a research assistant together with Prof. Jarko Fidrmuc at his chair of *International & Digital Economics* at Zeppelin University of Friedrichshafen. I am teaching *scientific working methods, introductory economics, economics for a changing world,* and *macroeconomics* in the first, second, and seventh semester. My research interest is development economics with a focus on governance and institutions, as well as violent conflicts. This work is the result of three years of research and focused on my initial question: *Why are developed countries rich and developing countries poor?*

[1] Ln(2) / ln(1,022) = 31.85

[2] In political science we discussed different economic systems (socialism and capitalism) and development theories (e.g modernization theory by Rostow (1960), dependency theory by Raúl Prebisch (1964) and André Grunder Frank (1966)). In sociology we studied further development theories (e.g. world-system theory by Immanuel Wallerstein (1988)) and discussed the consequences of globalization for developing and developed countries. In history, we analyzed the long-term effects of colonialization (e.g. Acemoglu & Robinson 2001). In economics, we studied micro- and macroeconomics. In microeconomics we learnt the theory of consumer choice and the theory of the firm (Schott et al. 2005). In macroeconomics we discussed determinants of economic growth, such as consumption, technology, education, and institutions (Blanchard 2002).

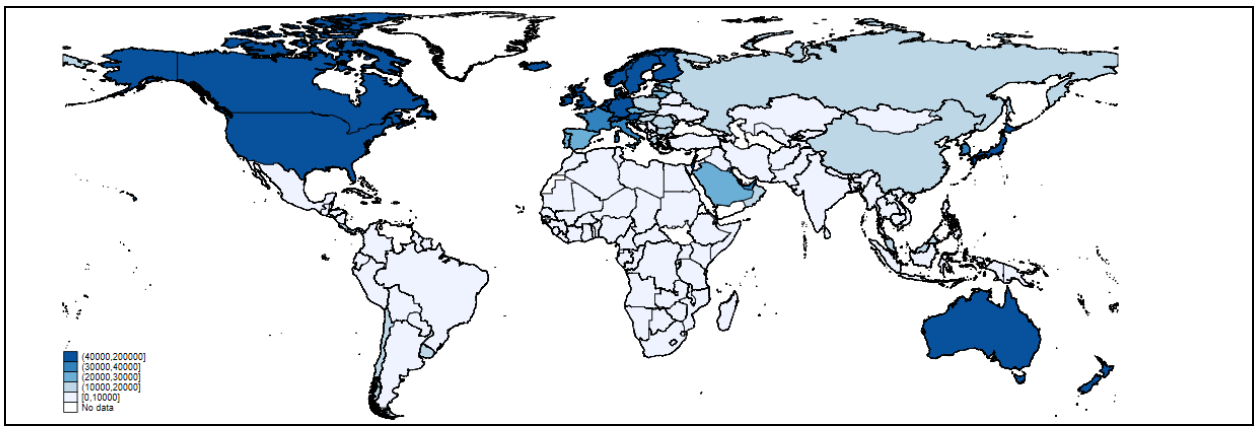
[3] For example, the Ricardian model of comparative advantage (Dornbusch et al. 1977a), the Heckscher-Ohlin model of comparative advantage with the expansion of factor endowment (Dornbusch et al. 1977b), the monopolistically competitive trade model by Krugman (1996), and the Melitz model of firm heterogeneity (Melitz et al. 2004).

I. Synopsis

1. Introduction

Economic wealth is unequally distributed within the world, which is shown in Figure 1. While selected OECD countries, e.g.: Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Iceland, Ireland, Israel, Japan, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, United Kingdom, the United States of America, and New Zealand had a GDP per capita above $40,000 US per year in 2020, developing countries lie mainly below $10,000 US (Worldbank 2022).

Figure 1: Synopsis - GDP per Capita in 2020



Source: Own compilation base on WDI data.

My research goal is to understand the determinants of economic development with a focus on governance and institutions, as well as violent conflicts. By 1991 North (1991) had already highlighted the importance of institutions for economic activity. He defines institutions as "[…] the humanly devised constraints that structure political, economic and social interaction". He argues that institutions reduce uncertainty and therefore determine transaction and production costs and hence the profitability of engaging in economic activity.

Moreover, violent conflicts affect the sustainable socioeconomic development (e.g.: Coletta & Cullen 2000; De Luca & Verpoorten 2014; Rubio 2014). Therefore, this thesis analyzes the case studies of Ukraine and Mexico. Both countries have experienced violent conflicts. In Ukraine violence started in November 2013 with large protests in Kiev, because the former president Victor Yanukovych refused to sign the Ukraine-European Union Association Agreement. In Mexico President Fox (2000-2006) broke the state-cartel symbiosis on behalf of the USA. In 2006, President Calderón (2006-2012) even declared war on the drug cartels and sent out military groups to fight them. The drug barons responded with private armies, which lead to ever-increasing violence in Mexico.

Both, good governance on the one hand, and violent conflicts on the other hand, are argued to have an impact on economic development and welfare. This thesis consists of four empirical papers in the context of the role of governance and violent conflicts in society and economics:[4]

- ***Impact of Governance on FDI***
  - *Applied Economics Quarterly, (published 2020)*
  - Fabian Reck (single author)

- ***Regional Risk-Sharing in Ukraine***
  - *Empirica, (published 2021)*
  - Jarko Fidrmuc (first author), Serhiy Moroz, and Fabian Reck

- ***Impact of Governance on Populist Rhetoric***
  - *Economic Systems, (resubmitted version 2023)*
  - Fabian Reck (first author), Jarko Fidrmuc, and Frédéric Gruninger

- ***Impact of the Drug War on Regional Social Capital in Mexico***
  - *Journal of International Development (resubmitted version 2023)*
  - Julian Vögele (first author), Fabian Reck, and Jarko Fidrmuc

First, FDI is a fundamental element for economic integration and therefore crucial for a country's economic development. FDI transfers technology and brings positive knowledge spillovers (Smeets 2008, Bitzer & Kerekes 2008). Having well-functioning institutions in the host country signals less investment risk to foreign investors. In the first paper I analyze the impact of governance on inward FDI.

Second, consumption risk-sharing can smooth income-shocks between countries and regions and is therefore relevant for a country's economic development, too (Fidrmuc & Degler 2019). Channels of consumption risk-sharing in developed countries are assets in capital markets, loans and savings, as well as tax transfers (Asdrubali et al. 1996). This means the development of financial institutions is an important channel of consumption risk-sharing in industrialized countries. In comparison, developing countries may depend more on unofficial transmission channels such as remittances (Balli & Rana 2015). In the second paper, Jarko Fidrmuc, Serhiy Moroz, and I analyze regional consumption risk-sharing in Ukraine.

[4] The key findings of these four papers you can find in Table 2 in the appendix of this synopsis.

Third, a populist regime can hinder a country's economic development. Populist parties use divisive rhetoric and suggest simple solutions to complex questions. Rode and Revuelta (2014) show that populist parties worsen legal security, reduce freedom of trade, and tighten economic regulations. In the third paper, Jarko Fidrmuc, Frédéric Gruninger and I analyze the impact of governance on populist rhetoric.

Fourth, a violent conflict can worsen the level of social capital, which also influences economic development. De Luca and Verpoorten (2015) show that violence destroyed social capital in Uganda. In the fourth paper, Julian Vögele, Jarko Fidrmuc and I analyze the impact of the drug war on regional social capital in Mexico.[5]

The contribution of this thesis is on the one hand the empirical investigation of institutional economic theory (e.g.: North 1990; North 1991; Williamson 1985). On the other hand, the interdisciplinary approach with an economic, political, and sociological perspective contributes to the research filed of institutional economics. Moreover, this thesis adds, with the use of advanced methodology, OLS models with fixed effects, common correlated effects models, system GMM estimations, random slope regressions, and spatial models.

The structure of this synopsis is as follows. Chapter 2 describes the theoretical framework of institutional economics. Chapter 3 explains the research gaps in previous literature and highlights the contribution of this thesis. Chapter 4 describes the data, explains the methodological approach, and presents the results of the four papers separately. Chapter 5 shows the nexus between the four papers. Chapter 6 presents a critical discussion. Chapter 7 summarizes and concludes. Finally, chapter 8 provides an outlook on future research endeavors.

[5] Prof. Jarko Fidrmuc and I published additional papers with guest researchers and alumni from Zeppelin University. For further details see Table 3 in the appendix of this synopsis.

2. Theoretical Framework

2.1 Natural Experiments

North and South Korea

Governance and institutions play a key role in the economic development of a country. This has been shown by the natural experiment of North and South Korea. In 1948, the two countries separated. South Korea became the Republic of Korea, and the North Korea became the Democratic People's Republic. Until the separation, North and South Korea shared the same history and cultural roots. After the separation, the two independent countries established completely different institutions. North Korea followed a communist model and South Korea followed a liberal model (Acemoglu et al. 2005, 2010). In 2019, GDP in South Korea was about 54 times higher than in North Korea (Ministry of Unification, Republic of Korea 2021). This first natural experiment highlights the importance of governance and institutions for the economic development of North and South Korea.

West and East Germany

Another natural experiment is the separation of West and East Germany. In 1949, the two countries separated. West Germany became the Federal Republic of Germany, and East Germany became the German Democratic Republic. Until the separation, East and West Germany also shared the same history and cultural roots. After the separation, the two independent countries established two completely different institutional settings. Eastern Germany, which was occupied by the Soviets, became a communist state. West Germany, which was occupied by Great Britain, France, and the United States, became a liberal state. After reunification in 1990, GDP per capita was about three times higher in West Germany than in East Germany. After 30 years Eastern Germany's GDP per capita is still about 1.5 times lower than Western Germany's (Federal Ministry for Economic Affairs and Energy 2020). This second natural experiment underlines the relevance of governance and institutions for the economic development of East and West Germany.

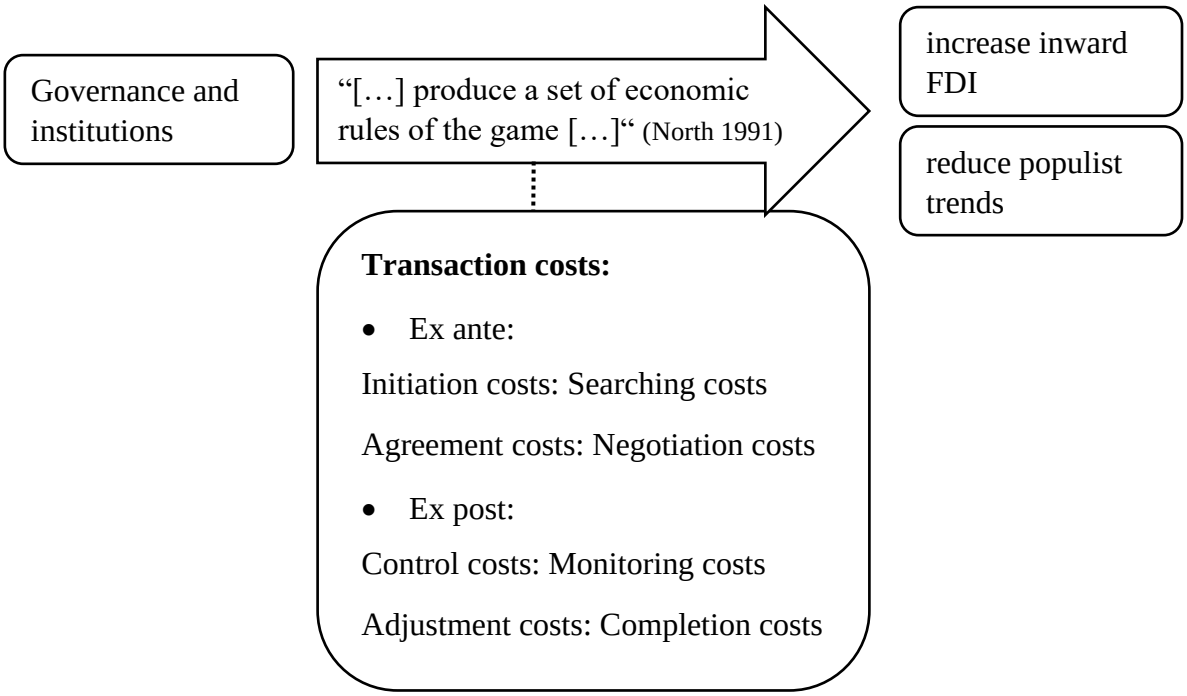
Rwanda and Columbia

Besides governance and institutions, social capital and violent conflicts are also key determinants of economic well-being. While a high level of social capital facilitates business activities, violent conflicts lead to fear and mistrust, which hinders collective action. Colletta and Cullen (2000) show with the case study of Rwanda that social capital atrophied after the genocide of the Hutu against the Tutsi in 1994. In addition, Rubio (2014) shows that armed conflicts negatively affect social capital in Columbia. The effect is higher for selective violence (murders) than for general violence (terrorist attacks).

2.2 Theory - Institutions

North (1990) argues that the notion of perfect rationality and efficient markets is outdated. He disagrees with these simplified assumptions and instead supports the transaction cost theory with costly information and imperfect enforcement of agreements. North (1991) sees institutions as key determinants of economic development. He states "[institutions] produce a set of economic rules of the game (with enforcement) that induce sustained economic growth."

Figure 2: Synopsis - Relationship between Governance and Pol.-Eco. Variables



Source: Own compilation based on Willamson (1985) and North (1991).

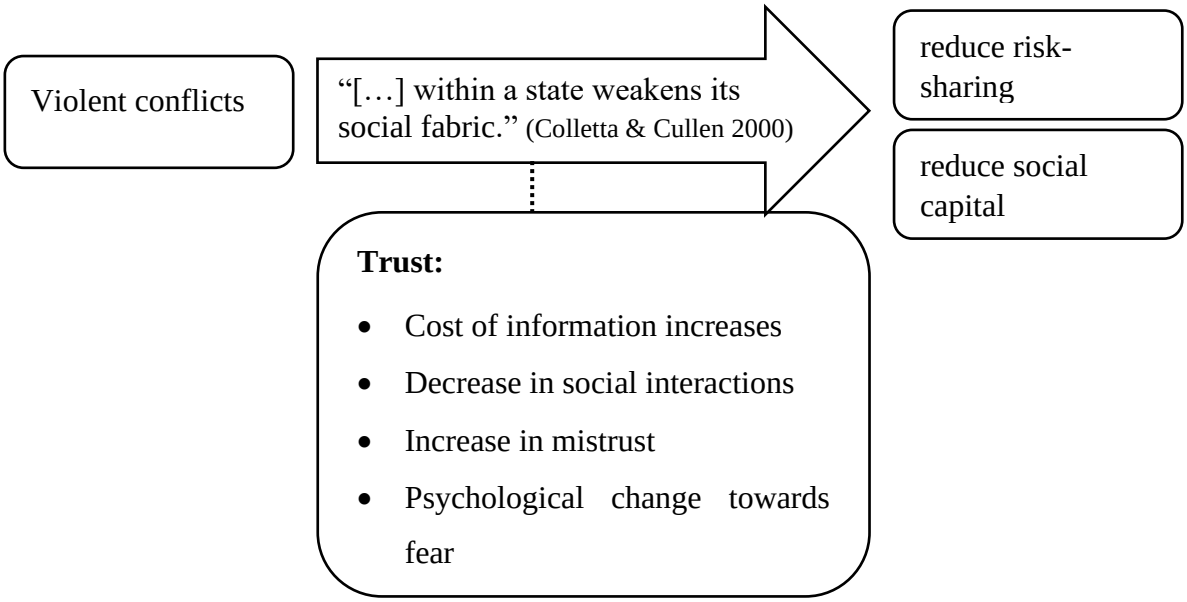
These economic rules have an impact on the transaction costs, which have been described by Williamson (1985). He differentiates between ex ante and ex post transaction costs. On the on hand, ex ante costs are initiation costs (e.g.: searching costs, information costs) and agreement costs (e.g.: negotiation costs, decision-making costs, implementation costs). On the other hand, ex post costs are control costs (e.g.: monitoring costs, enforcement costs) and adjustment costs (e.g.: renegotiation costs, opportunity costs, completion costs).

Regarding our papers about inward FDI flows as well as populist rhetoric: *First*, governance and institutions shape the transaction costs of doing business and thus affect the incentives of national and international investors. We expect that a country with a better governance infrastructure attracts more inward FDI flows. *Second*, governance and institutions also shape transaction costs when interacting with the government. An open and transparent system should generally lead to more satisfaction and thus hinder populist trends from emerging.

2.3 Theory - Violent Conflicts

Colletta and Cullen (2000) argue that violent conflicts weaken a country's social fabric. It divides the population by undermining group trust. For example, violence destroys norms and values that underlie cooperation and collective action for common good. This not only damages the bridges within a civil society, but also between the civil society and the state.

Figure 3: Synopsis - Relationship between Violent Conflicts and Socioec. Variables



Source: Own compilation based on Willamson (1985) and Colletta & Cullen (2000).

During a violent conflict the cost of acquiring information on other individual increases, consequently social interactions decrease, whereas mistrust increases. In general terms, it leads to a psychological change towards fear.

Regarding our papers about regional consumption risk-sharing and social capital: Violent conflicts increase the cost of interacting with friends and family members. Fewer personal meetings increase mistrust. Hence, we expect that the war in Donbass drastically reduces regional consumption risk-sharing in Ukraine, and that the drug war significantly decreases the level of regional social capital in Mexico.

To sum up, the real-life examples of North and South Korea (1948-today), as well as East and West Germany (1949-1990) clearly show the importance of governance and institutions for economic development. Moreover, the natural experiments of violent conflicts in Rwanda (1994), or Columbia (2004-2009) highlight the danger of violent conflicts for society. North (1991) realized the importance of institutions for economic development. Similarly, Colletta and Cullen (2000) realized the importance of violent conflicts for social capital and social cohesion.

2.4 Reasons for Differences in Institutions

According to the Coase theorem (Coase 1960; Acemoglu et al. 2005), costless negotiation will lead to a Pareto efficient outcome in the presence of externalities. This would imply that two bargaining parties would reach an equilibrium with institutions that work well in the medium run. However, what we observe is that numerous countries have suboptimal institutions. Rich countries have by trend better governments than poor ones. This may be due to commitment problems, e.g., incomplete contracts, corruption, and renegotiations.

The social conflict theory provides a good explanation for institutional differences. The theory states that within a society, different groups have different amounts of power. The most important group are policy-makers and enterprises. Policy-makers have *de jure* power and enterprises have *de facto* power. Each group wants to maximize its income, rents, and privileges and tries to establish that kind of institutional setting that works best for their interests (Acemoglu et al. 2005). In addition, La Porta et al. (1999) show historical circumstances also influenced institutions of today. For example, predominantly Protestant countries have better governments than predominantly Catholic or Muslim countries. Furthermore, Acemoglu et al. (2001) explains that Europeans adopted different institutions in different colonies – depending on the European mortality rates. In colonies with a high mortality rate due to dengue fever or malaria, they could not settle and thus installed extractive institutions. In comparison, in colonies with a low mortality rate, they established democratic institutions with a focus on welfare. The authors argue that these differences in institutional setting persists until today. Also, Nunn & Wantchekon (2011) see colonial history, namely the slave trade, as the origin of mistrust in Africa. They argue that this distrust prevails until today.

Moreover, elites may block reforms and new technologies in undemocratic countries when they invest in obsolete technologies. Only without political and technological change can they maintain their privileges and power. A good example where elites opposed innovation was during the industrialization in England. In 1589, Queen Elizabeth was so worried about the employment impact of William Lee's knitting machine that she refused to provide him a patent (Robinson & Acemoglu 2012; Fiedler et al. 2021).

To sum up, it is a combination of factors that lead to differences in the institutional setting. Whereas the Coase theorem would predict an equilibrium with institutions that work well, the social conflict theory provides an explanation for institutional differences between countries. Powerful groups within a society fight for their own benefit. Moreover, colonial history clearly shaped the institutional infrastructure and level of trust within a society.

3. Research Gaps and Contribution of the Four Papers

Institutional economics is a well-established research field in economics (e.g.: Williamson 1985, North 1990, North 1991, Acemoglu et. al. 2001, Acemoglu et al. 2005, Acemoglu & Robinson 2010). However, it is still in debate which components of governance are most relevant for economic development. Moreover, it is still in debate whether governance and financial institutions are equally important for developed and developing countries. Furthermore, it is argued that institutions are inert, however, this can be questioned as Acemoglu et al. (2020) showed. Finally, the institutional perspective should be extended with a view on violent conflicts.

Regarding our *first* paper about governance and inward FDI flows: Obviously, FDI is an important channel of capital, knowledge, and technological transfers. However, not all FDI is equal. While developed countries receive mainly horizontal FDI, developing countries receive to a larger extent vertical FDI.[6] Only FDI at an industry level is associated with higher growth and value added (Alfaro & Charlton 2007). Consequently, it is likely that for developing countries primarily the institutional setting is not the most important determinant of inward FDI flows but other country characteristics. One reason for investing in developing countries may be to get access to key natural resources or to prevent taxes. This discrepancy between developed and developing countries regarding inward FDI will be further investigated. Moreover, pioneers in this research field like Globerman & Shapiro (2002) used an aggregated governance indicator. This makes sense in regard of multicollinearity, but at the same time it dilutes the insights. The authors also did not control for dynamic effects. This is important as inward FDI flows go on for a long time. Therefore, they may be influenced by past investment flows. To control for this shortcoming, I use two subsamples in my first paper, one with developed countries and another with developing countries. I also consider each of the worldwide governance indicators separately, as well as control for dynamic effect and possible endogeneity.

Regarding our *second* paper about regional consumption risk-sharing in Ukraine: Asdrubali et al. (1996) find that for US states consumption risk-sharing was about 75%. The channels of risk-sharing are capital markets (39%), credit markets (23%), and tax transfers (13%). The remaining 25% of consumption risk-sharing remains unsmoothed. However, the USA is a developed country and channels of risk-sharing may be quite different in developing countries like Ukraine. Especially unofficial transfers, i.e. remittances, may be more relevant than financial development. The degree of risk-sharing in developing and emerging countries is less well researched and

[6] Horizontal FDI: Multinational firms produce a similar good in the host country with the goal of market extension. Vertical FDI: Multinational firms move up- or downstream the value chain in the host country with the goal of getting access to the local supplier or distributer network.

deserves additional investigation. We base our research on a paper about risk-sharing in Russia by Fidrmuc and Degler (2019). We contribute with a similar case study about regional consumption risk-sharing in Ukraine. We chose Ukraine because one of our co-authors is Ukrainian and had access to regional data. In addition, Ukraine is an interesting country because it allows us to analyze the effect of the War in Donbass on regional consumption risk-sharing.

Regarding our *third* paper about governance and populist rhetoric: The discourse about populism has been to a large extent been theoretical (e.g.: Mudde 2004; Kaltwasser 2018; Guriev 2018; Rodrik 2018). This is because of the difficulty of measuring populism. We consider populism as the communication strategy within a political movement. The speeches of populist are characterized by out-group rhetoric. Capitalists and immigrants are often the scapegoats for self-inflicted problems. An innovative way to measure populism is via the text data which is bases on political speeches. Our contribution to literature is an empirical investigation of the impact of governance on populist rhetoric using text data.

Regarding our *fourth* paper about violent conflicts and regional social capital in Mexico: While previous literature studied the relationship between violent conflicts on economic and geopolitical factors such as FDI or migration (Verdugo-Yepes & Xingwei 2015), we focus on the effect of violence on social capital. In our introduction we also provide a short historical overview of Mexico's modern history. For our analysis about the effect of the drug war on regional social capital in Mexico we develop our own social capital index based on Google searches.

An embracing contribution of all four papers is the usage of an interdisciplinary perspective. We combine an economic, historical, political, and social perspective. This allows more comprehensive conclusions about the role of governance and violent conflicts in society and economics. In all four papers we also use advanced methodologies: (a) OLS models with fixed effects to control for unit-fixed effects as well as time-fixed effects; (b) system GMM estimations to control for endogeneity; (c) random slope regressions to control for heterogeneity within the data; and (d) spatial models to control for spatial dependence.

To sum up, this thesis does not reinvent the wheel. However, with an empirical approach, an interdisciplinary perspective, and advanced methodology it contributes to the research field of institutional economics. Moreover, the two case studies regarding Ukraine and Mexico bring additional insights at a regional level to consumption risk-sharing and social capital respectively.

4 Data, Methodology, and Results of the Four Papers

4.1 Impact of Governance on FDI

FDI is an important element in today's global economy. These cross-border investments enable countries to expand their markets and to increase proximity to new markets (horizontal FDI), as well as to enjoy production cost advantages (vertical FDI). FDI brings capital in forms of money and machines, as well as knowledge through expatriates, and technology via innovative production processes. Capital, knowledge, and technology can spill over to companies in the host country. Consequently, FDI can be very supportive to economic development. Therefore, I ask the following research question:

- **What is the Impact of Governance on FDI?**

Data

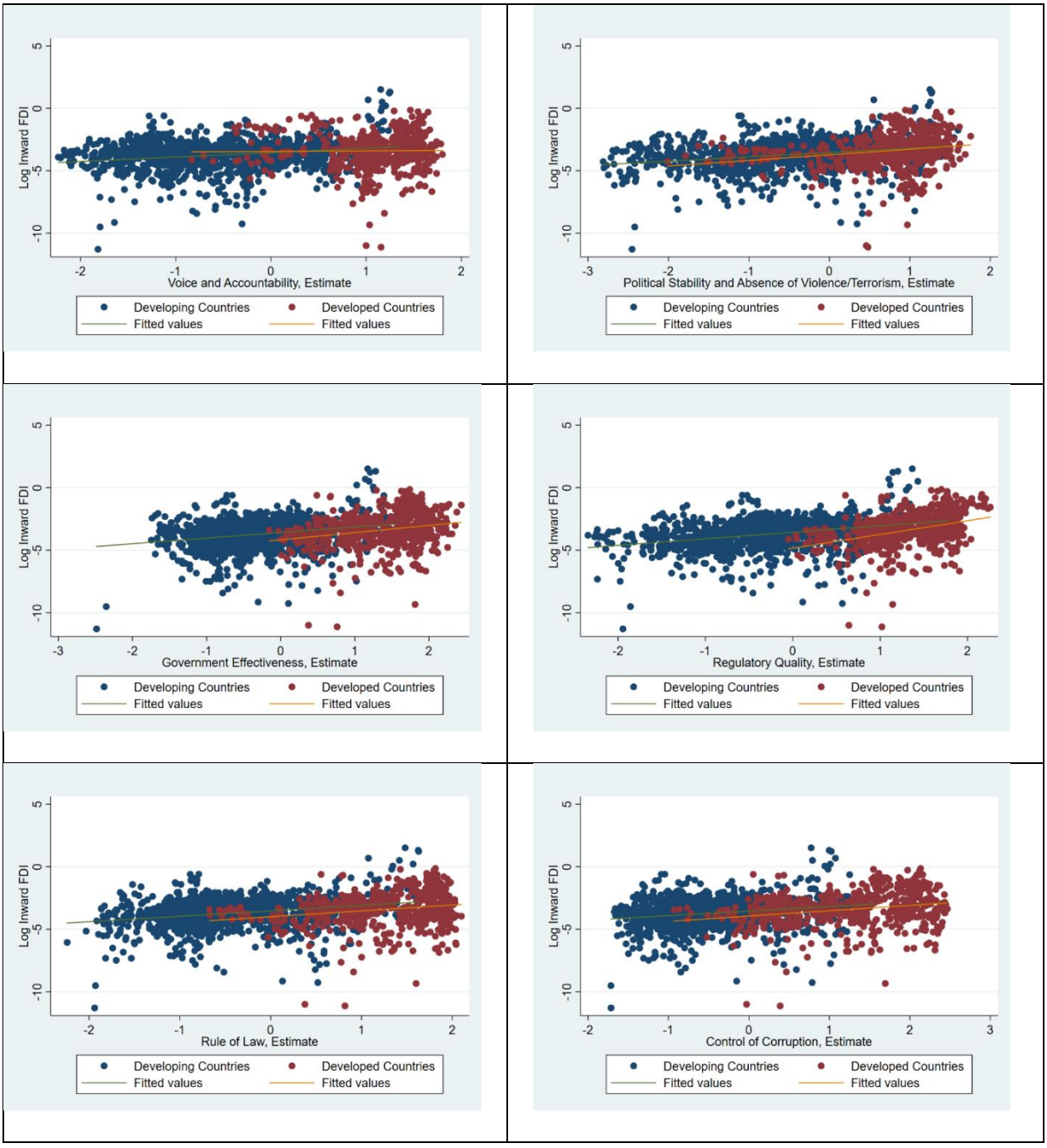
In my first paper I exclusively use World Bank data: World Development Indicators (WDI) and Worldwide Governance Indicators (WGI). The sample consists of 38 developed and 79 developing countries and covers the period between 2000 and 2018.

The dependent variable *FDI inflows as percentages of GDP* is a World Development Indicator. The explanatory variables are the six Worldwide Governance Indicators. Kaufmann et al. (2010) define the six Worldwide Governance Indicators as follows. *First, voice and accountability* (VA) captures democratic values, secured human rights, freedom of expression, freedom of association, and free media. *Second, political stability and absence of violence* (PV) captures the likelihood that the government will be destabilized or overthrown by violent means. *Third, government effectiveness* (GE) captures the quality of public administration, and the quality of civil service. *Fourth, regulatory quality* (RQ) captures the ability of the government to formulate and implement sound policies for private sector development. *Fifth, rule of law* (RL) captures the confidence in contract enforcement, property rights, the police, and courts. *Sixth, control of corruption* (CC) captures whether power is exercised for private gain or whether the state is captured by elites and private interests. The control variables, namely *GDP growth*, the *mean tariff rate*, and *openness* (trade as percentage of GDP) are also World Development Indicators.

I argued that a good institutional setting, measured with the six governance indicators, lead to more investment in the home country. I control for business cycles, trade barriers, and openness toward trade. Before going to the empirical analysis, a scatterplot is presented and discussed.

Figure 4 shows graphically the correlation between *governance indicator*s and *inward FDI flows as percentage of GDP* for developing and developed countries.

Figure 4: Synopsis - Scatterplot of the Six WGI and Inward FDI Flows

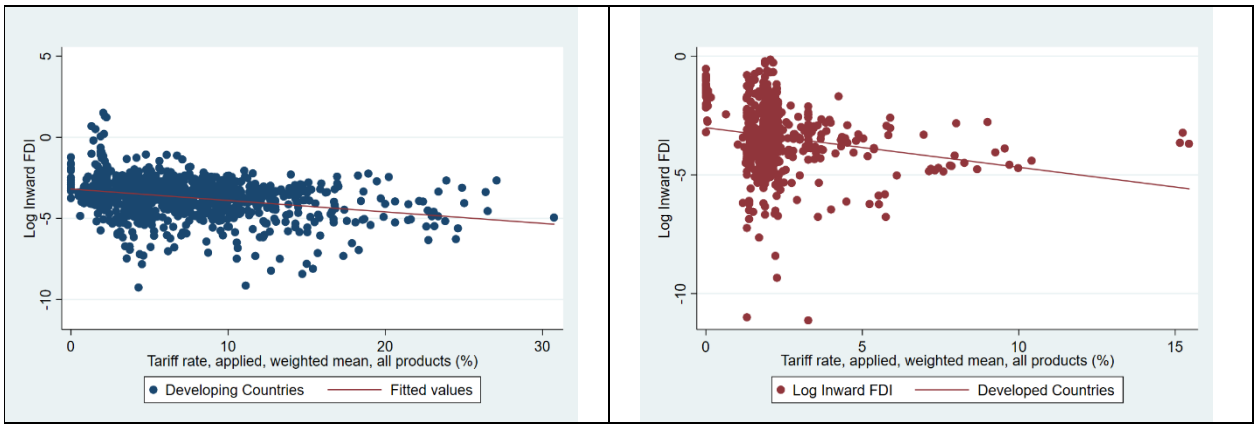


Source: Own compilation based on WGI and WDI data.

In consideration of Figure 4, two patterns become clear: *First* developed countries have a better institutional setting than developing countries and, *second*, there is a positive correlation between the six *governance indicators* and *FDI inflows as percentage of GDP*.

For developing countries, the *mean tariff rate* is a relevant determinant of *FDI inflows as percentage of GDP* (see Figure 5).

Figure 5: Synopsis - Scatterplot of Mean Tariff Rate and Inward FDI Flows



Source: Own compilation based on WDI data.

The left scatterplot, displaying developing countries, shows a negative correlation between the *mean tariff rate* and the *dependent variable (LogInward FDI)*. For developed countries the pattern is less clear.

The negative correlation for developing countries makes sense as the main reason for investment in developing countries is not market extension (horizontal FDI), but access to the local supplier and distributor network (vertical FDI). The (semi-finished) products are thus transported between the home and host country, which is facilitated by a low tariff rate.

Methodology

For our first paper we use an Ordinary Least Square (OLS) estimation as a starting point. This methodology uses a linear regression. The aim is to minimize the difference between observed data and the prediction by the linear approximation of the data. This means finding the line that minimizes the sum of squared residuals (see Figure 4 and Figure 5 for comparison).

We further use a system generalized method of moments (GMM) estimations following Arellano and Bover (1995) and Blundell and Bond (1998). System GMM is used when some independent variables are endogenous, and the dependent variable is dynamic, depending on its own past realizations (Roodman 2007). To control for endogeneity the lagged dependent variables are used as instruments. To control for dynamic effects one lagged dependent variable is added.

Results

The results of the OLS estimation are mixed due to possible endogeneity. The system GMM estimation, which controls for endogeneity, suggests that the six Worldwide Governance Indicators - *Voice and Accountability*, *Political Stability and Absence of Violence*, *Governance Effectiveness*, *Regulatory Quality*, *Rule of Law*, and *Control of Corruption* are important determinants of inward FDI in developed countries. Moreover, it is shown that it is important to control for dynamic effects. For developing countries, another country characteristic – the mean tariff rate – is more important than the institutional setting.

4.2 Regional Risk-Sharing in Ukraine

In November 2013, President Victor Yanukovych refused to sign the Ukraine-European Union Association Agreement. However, the Ukrainian population wanted an approximation to the European Union. The result was the Maidan Uprising, a demonstration in Maidan Square in Kyiv. The protests spread within Ukraine and reinforced the separation-movements in the oblasts of Donetsk and Luhansk, where many ethnic Russians who support pro-Russian politics live. In February 2014, Russia annexed the Autonomous Republic of Crimea, which intensified tensions between Ukraine and Russia. In April 2014, Donetsk and Luhansk declared independence from Ukraine. What followed for the next eight years was to become known as the War in Donbass. On the 24th of February 2022, a new level of escalation was reached when Russia invaded Ukraine.

The risk-sharing hypotheses says that regional consumption per capita is not related to regional-specific income shocks. Hence, a negative national income shock should evenly affect consumption in all regions. In developing countries such as Ukraine the channels of consumption risk-sharing are most likely different to high income countries. In particular, remittances may play a significant role in consumption risk-sharing in Ukraine. Consumption risk-sharing may also have changed after the outbreak of the War in Donbass. Therefore, we ask the following research question.

- **What is the Level of Regional Consumption Risk-Sharing in Ukraine?**

Data

In our second paper we use data from the State Statistic Service of Ukraine and the National Bank of Ukraine. We also use data from the Ukrainian population census in 2001. The geo-data is provided by the United Nation Office for the Coordination of Humanitarian Affairs (OCHA). The sample consists of the 25 Ukrainian oblasts and covers the period between 2003 and 2016.

From the State Statistics Service of Ukraine, we collected annual regional data about the gross regional product (GRP), the consumer price index[7], permanent population and final consumption expenditures. From the National Bank of Ukraine, we retrieved data on deposits of the corporate sector and households, as well as loans provided by depository corporations to the corporate sector and households as shares of GRP. From the 2001 Ukraine Population Census we use data regarding the regional national distribution of Ukrainian, Russian, and Tatar populations. Finally, we added geo-data from OCHA to draw maps.

[7] With the help of the consumer price index and the permanent population we calculated the real gross regional product per capita as well as the real final consumption expenditures per capita.

The dependent variable is *consumption deviation* of a certain oblast at a certain time from the country average. On the right-hand side of the equation stands *income deviation*, as well as β - *the coefficient of consumption risk-sharing*. If β is equal to zero, this implies perfect consumption risk-sharing. 1-β defines the degree of risk sharing. Moreover, we control for *financial development* and the interaction of the *Russian share multiplied with income deviation*, whereby the Russian share is a proxy for social capital, ethnic fractionalization, migration, and remittances. Ethnic heterogeneity across regions is common within Ukraine. The share of Ukrainian nationality is between 24 percent and 98 percent. Ethnic Russians are the largest minority in Ukraine, standing at an average of 13 percent of the population. The Tatar minority accounts for about 11 percent of the population in Crimea, whereas its mean is 0.533. Other ethnic groups (i.e. Romanians and Hungarians) account for about five percent of the Ukrainian population.

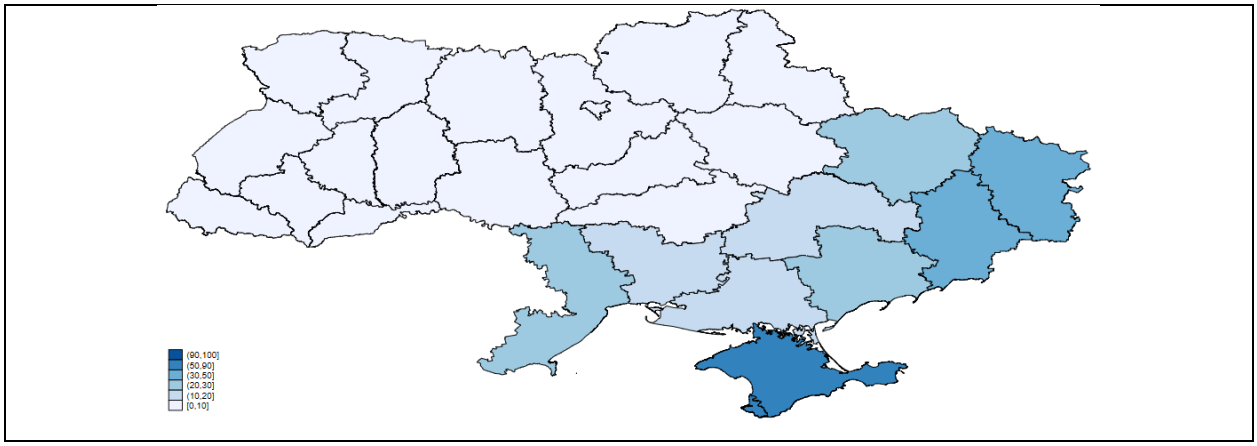
Table 1: Synopsis - Ukrainian Oblast with Selected Ethnic Minorities

Region	Ukrainian (%)	Russian (%)	Tatars (%)	Other (%)
Cherkasy	93.054	5.405	0.035	1.507
Chernihiv	93.470	5.033	0.031	1.466
Chernivtsi	74.977	4.122	0.016	20.885
Crimea and Sevastopol	24.015	60.403	10.782	4.801
Dnipropetrovsk	79.349	17.621	0.108	2.922
Donetsk	56.867	38.221	0.397	4.514
Ivano-Frankivsk	97.519	1.773	0.011	0.697
Kharkiv	70.747	25.624	0.144	3.485
Kherson	81.998	14.088	0.630	3.283
Khmelnytskiy	93.880	3.553	0.029	2.539
Kirovohrad	90.132	7.456	0.042	2.371
Kyiv region & city	86.499	10.179	0.076	3.247
Luhansk	57.963	39.045	0.336	2.656
Lviv	94.823	3.552	0.023	1.603
Mykolayiv	81.910	14.057	0.098	3.935
Odesa	62.807	20.709	0.105	16.379
Poltava	91.362	7.221	0.047	1.370
Rivne	95.899	2.572	0.011	1.518
Sumy	88.839	9.381	0.028	1.751
Ternopil	97.806	1.247	0.007	0.941
Vinnytsya	94.909	3.827	0.023	1.241
Volyn	96.949	2.377	0.018	0.656
Zakarpattya	80.513	2.470	0.017	17.000
Zaporizhzhya	70.796	24.743	0.295	4.167
Zhytomyr	90.323	4.956	0.030	4.691
Average	81.896	13.185	0.533	4.385

Source: Own calculation based on the 2001 Ukraine Population Census.

Figure 6 graphically shows the average ethnic Russian population share by oblast. It is clearly visible that the Russian share of the population lives primarily in the east of Ukraine.

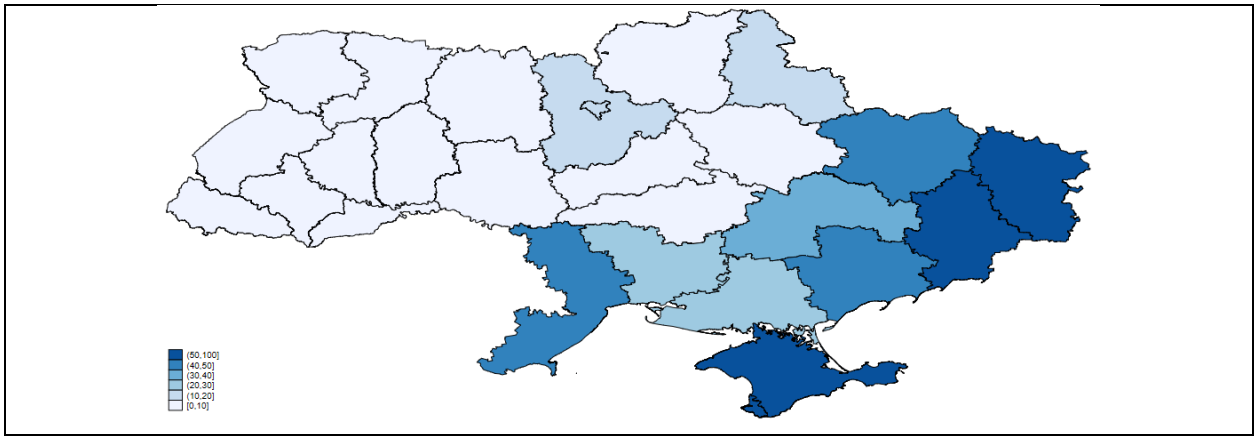
Figure 6: Synopsis - Average Ethnic Russian Share, 2003 to 2013



Source: Own compilation based on the Ukraine population census 2001.

Figure 7 illustrates the average consumption risk-sharing by oblast.

Figure 7: Synopsis - Average Consumption Risk-Sharing, 2003 to 2013



Source: Own compilation based on State Statistic Service of Ukraine data.

Figures 6 and 7 show that consumption risk-sharing is significantly higher in the regions with a large Russian minority. This means that there is a parallel development in both variables. These regions may have experienced special treatment from Russia before the outbreak of the War in Donbass.

Methodology

For our second paper we use an OLS estimation with fixed effects and additional control variables. It is important to control for unit-fixed effects that are constant over time but vary between countries or regions, as well as time-fixed effects that change over time but are common for all

countries. Not controlling for these effects would bias the results. Moreover, a spatial model is used to incorporate spillover effects from neighboring oblasts. This is relevant, because *first*, nearby consumption may affect consumption, *second*, nearby covariates may affect outcomes, and *third*, nearby residuals may affect outcomes. Our preferred model is the lagged dependent variable regression model. It reflects that the consumption level per capita of a region is affected by the consumption levels per capita in neighboring regions. We use a contiguity matrix including all direct neighbors and their neighbors.

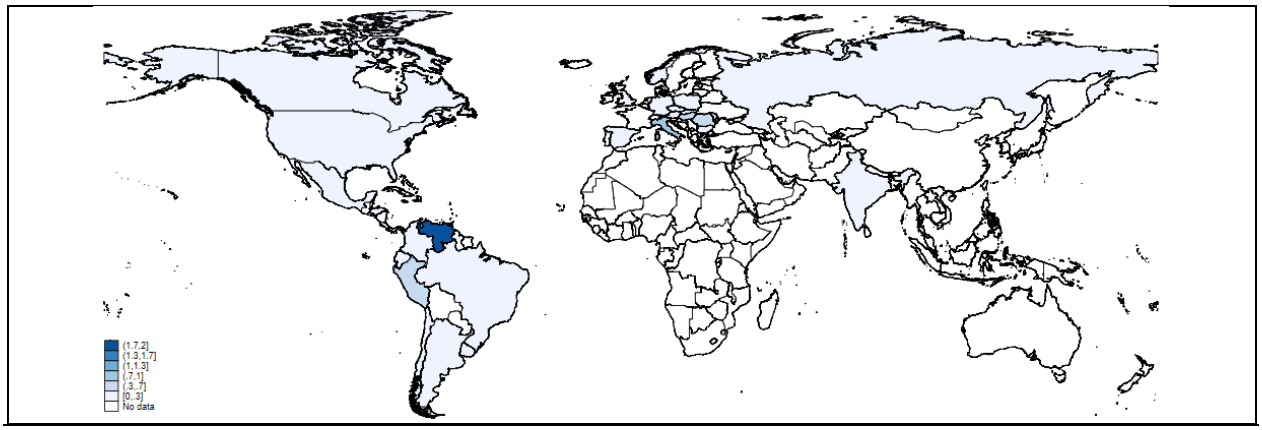
Results

The results of our OLS estimation with fixed effects shows that regional consumption risk-sharing in Ukraine is not determined by financial development, but by the Russian minority which we use as a proxy for social capital, ethnic fractionalization, migration, and remittances. The results are confirmed when using a spatial model. Moreover, the results of our spatial model indicate that consumption in the neighboring country is correlated with consumption in the home country. Surprisingly, the correlation is negative, which can be explained by a situation whereby employees commute and thus generate income in a different region from their consumption. Another explanation would be shopping in neighboring regions. Informal transfers within families and friendship networks within different neighboring regions can also explain the negative spatial correlation of consumption deviation between regions and their neighbors. Finally, when explicitly looking at the years of the War in Donbass our results change drastically. This is also due to the low number of observations (yearly data for 2014 to 2016).

4.3 Impact of Governance on Populist Rhetoric

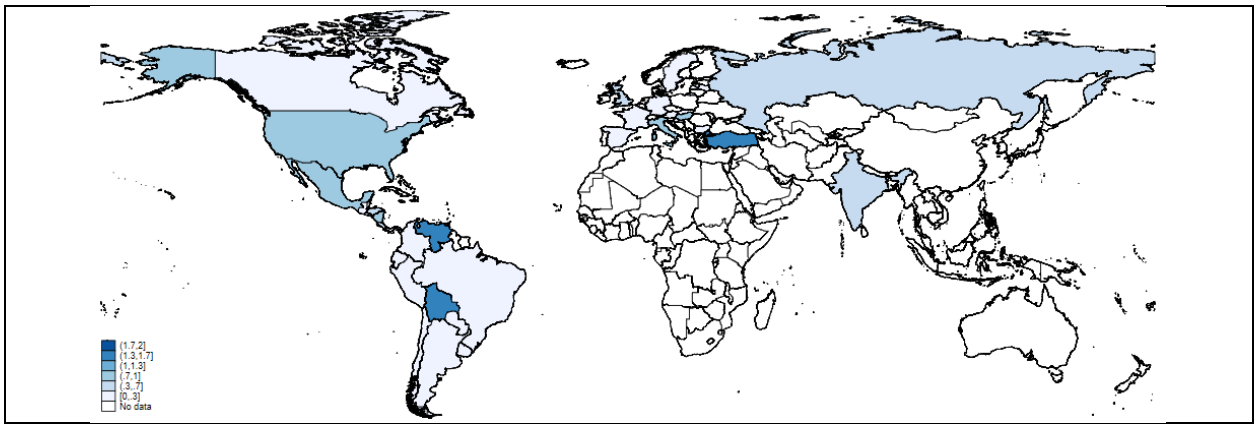
Populism is a widespread phenomenon in the twenty-first century. It is a communication strategy by politicians who suggest easy answers to complex questions. Figure 8 and Figure 9 show the populism trend around the world in 2001 and 2016. Russia under Vladimir Putin, Turkey under Recep Erdoğan, and the USA under Donald Trump is just the tip of the populist iceberg.

Figure 8: Synopsis - Average Populist Rhetoric Score by Country in 2001



Source: Own compilation based on the Global Populism data.

Figure 9: Synopsis - Average Populist Rhetoric Score by Country in 2018



Source: Own compilation based on the Global Populism data.

Populist trends can be very obstructive to economic development. It does not tackle the root of the problem, rather blames a scapegoat for self-inflicted problems. We argue that an open and transparent system reduces transaction costs when interacting with the government and thus should lead to more satisfaction within society. This should mitigate populist trends. Therefore, we ask the following research question:

- **What is the Impact of Governance on Populist Rhetoric?**

Data

In our third paper we use populist rhetoric data from the Varieties of Democracy Research Institute (V-Dem), as well as from "The Global Populism Database" by Team Populism. Moreover, we use the Worldwide Governance Indicators as well as the World Development Indicators, which are both provided by the Word Bank. The geo-data is again provided by the United Nations Office for the Coordination of Humanitarian Affairs. The sample consists of 40 developed and developing countries and covers the period between 2000 and 2018.

The dependent variable is *populist rhetoric* (V-Dem), and the *alternative populist rhetoric score* (Team Populism) respectively. The explanatory variables are the Worldwide Governance Indicators: *Voice and accountability*, *political stability and absence of violence*, *governance effectiveness*, *regulatory quality*, *rule of law*, and *control of corruption*. We control with *refugee immigration* (four-year change in asylum seekers as percentage of total population) for a possible identity shock. Moreover, we use *merchandise trade* (merchandise trade as percentage of GDP) as a proxy for international trade intensity. In addition, the *unemployment rate* (unemployment as percentage of labor force) is a proxy for the feeling of unfair treatment. Unemployed persons are marginalized by the society and are likely to feel unfairly treated by their fellow human being. Finally, we also control for *communication infrastructure* and *one-party dominance*.

Figure 10 further shows graphically the correlation between *governance indicator*s and *populist rhetoric*, when controlling for heterogeneity within the data. Thus, each country line has a different intercept and a different slope.

Figure 10: Synopsis - Scatterplot of WGI and Populist Rhetoric by Country

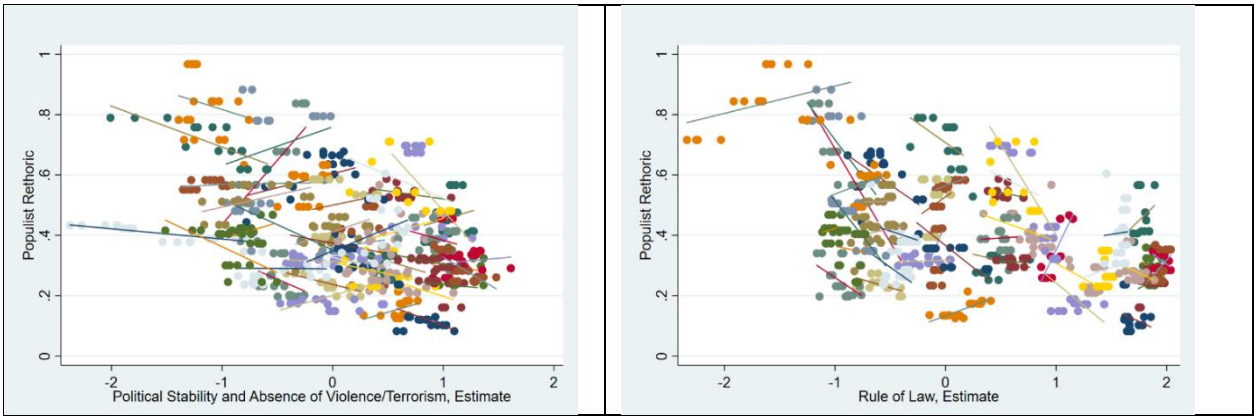


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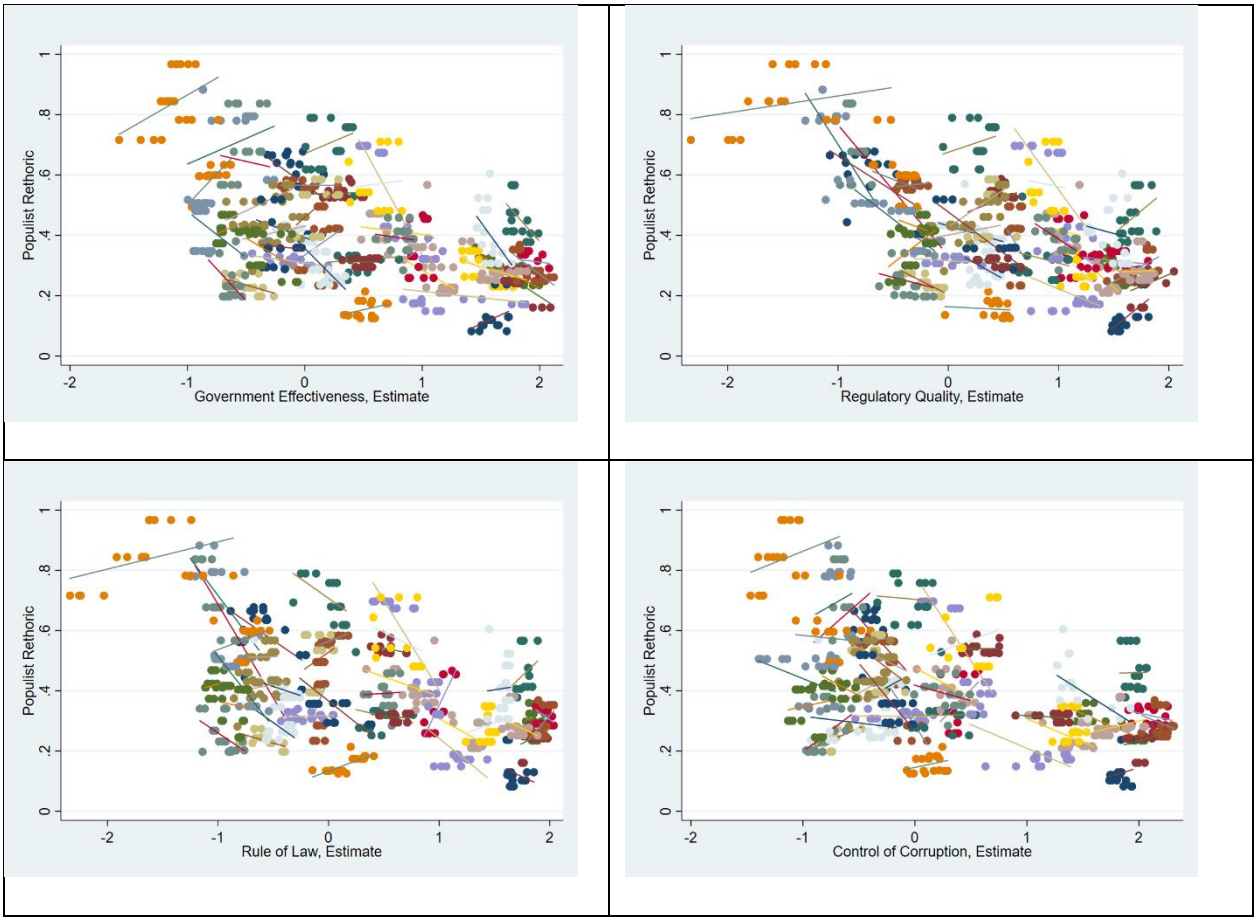
Figure 10': Synopsis - Scatterplot of WGI and Populist Rhetoric by Country



Source: Own compilation based on WGI data and V-Dem data.

The scatterplot shows the heterogeneity within the data, i.e., the institutional setting differs substantially between countries. The general trend is a negative correlation between *governance* and *populist rhetoric*.

Methodology

For our third paper we use three different methodologies: *First*, a fixed effect model, which includes country fixed and time fixed effects. *Second*, we use a linear mixed-effects model of *populist rhetoric* and *governance institutions* with random intercepts and random coefficients by level 2 (i.e., country level), to account for intra- and inter-country effects (Pillinger 2021; StataCorp. 2021a).[8] In addition, we work with two subsamples: One which includes the countries with a medium- and high-institutional quality, and one subsample which includes countries with a low-institutional quality. *Third*, we use a dynamic model, to control for dynamic effects. *Fourth*, we use a spatial model to control for spatial lags. Our preferred model is the lagged dependent

[8] We use the governance indices of a certain region in a certain year as level 1, and the country as level 2.

variable regression model. We use an inverse-distance spatial weighting matrix (StataCorp. 2021b).

Results

The fixed effects model results indicate that the coefficients of the governance indicators, namely *voice and accountability*, *political stability and absence of violence*, *governance effectiveness*, *regulatory quality*, *rule of law* and *control of corruption*, are negative and significant. The negative correlation suggests that good governance can mitigate populist rhetoric. The control variable *refugee immigration* is positively correlated with *populist rhetoric*. The control variable *merchandise trade* is statistically insignificant. This suggests that immigration can promote populist trends. Surprisingly, the coefficient of *unemployment* is negative and statistically significant. One reason may be that the society votes in economically difficult times for established parties which are, by trend, less populistic. The coefficients of *communication infrastructure* are insignificant. Finally, the coefficients of *one-party dominance* are positive and statistically significant. This indicates that a dominant party in a country increases the usage of populist rhetoric.

To control for heterogeneity within the data, a linear mixed-effects model is preferred. The results confirm that good *governance* reduces *populist rhetoric*. By contrast, *refugee immigration* and *one-party dominance* increases *populist rhetoric*. For *merchandise trade* and the *unemployment rate* we find insignificant results.

When looking at a subsample of countries with a medium and high level of institutional quality, as well as one with a low level of institutional quality we get new insights. While most governance indicators are statistically significant in the subsample of countries with a medium and high level of institutional quality, they are mainly statistically insignificant in countries with a low level of institutional quality. This implies that a certain threshold of governance quality must be met to mitigate populist rhetoric.

Our dynamic model only partly confirms previous results, namely for *governance effectiveness* and *rule of law*. However, the results show that it is important to control for dynamic effects.

Finally, the results of our spatial model confirm previous results and document a positive spatial correlation for populist rhetoric. This means that when populist rhetoric is high in the nearby countries, these populist trends spill over to the home country.

4.4 Impact of the Drug War on Regional Social Capital in Mexico

Mexico's modern history begins with the Mexican Revolution (1910-1920). Long-term dictator Porfirio Díaz was increasingly unpopular due to corruption, inequality, and repression of the opposition. Revolutionary forces were successful and established the Institutional Revolutionary Party (Spanish: *Partido Revolucionario Institucional*, PRI) which would go on to rule Mexico for the next 70 years (Díez & Nicholls 2005; Teichman 2011).

In the first half of the twentieth century drug trafficking organizations (DTOs) spread within Mexico. The PRI was entangled in the drug business (Astorga 1999). In the second half of the twentieth century, the symbiosis between the DTO and the PRI became weaker due to stronger business relationships between the USA and Mexico. Finally, in 2000 the PRI hegemony ended with an election victory for the National Action Party (Spanish: *Partido Acción Nacional*, PAN). The two subsequent presidents, Fox (2000-2006) and Calderón (2006-2012) fought the cartels. The response by the cartels to police and military actions against their business was an ever-increasing level of violence including the creation of private armies (Teichmann 2011). During Calderón's term, the drug war cost more than 60,000 lives in Mexico (Dell 2014). The violence is obvious, but at the same time the drug war created an atmosphere of distrust (González 2008). This psychological status of fear and vulnerability can be very obstructive to economic development. Therefore, we ask:

- **What is the Impact of the Drug war on Regional Social Capital in Mexico?**

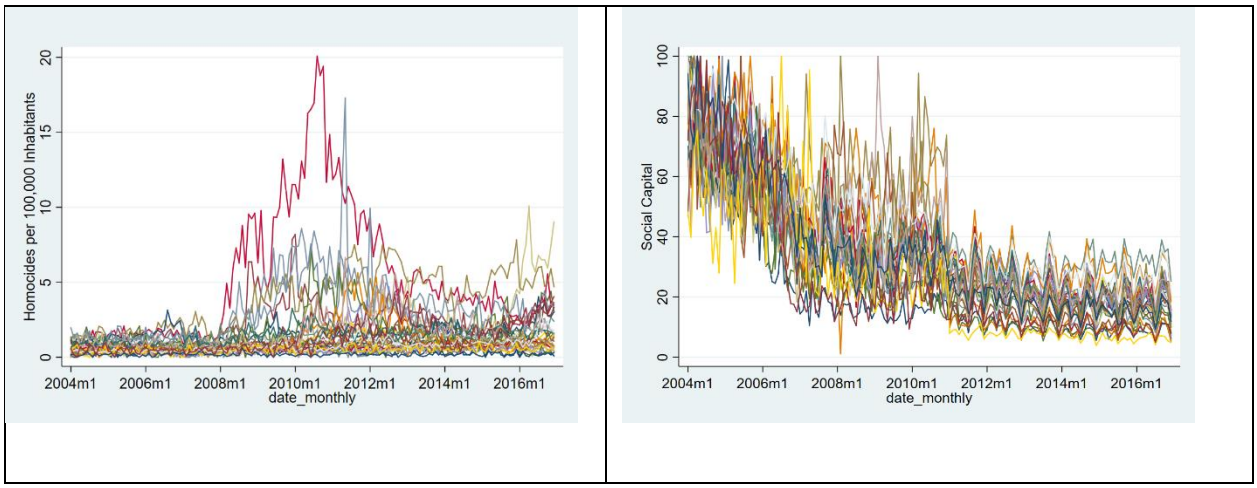
Data

In our fourth paper about Mexico we use data from Google Trends, the Instituto Nacional de Estadística y Geografía (INEGI), the Consejo Nacional de Población (CONAPO), the Secretaría de Educación Pública (SEP), and Consejo Nacional de Evaluación de la Política de Desarrollo Scoial (CONEVAL). The monthly data relates to all 32 Mexican states and covers the period between January 2004 and December 2016.

Our dependent variable is social capital, which is based on Google Trends data. We follow Guriev and Melnikov (2016), who use Google Trend data to proxy social capita in Russia since the Crimean war. As explanatory variable we use the drug related violence, proxyed with the *homicide rate*. This data is provided by INEGI. Moreover, we use *regional unemployment rate* – provided by INEGI – to control for economic development. We also include *urbanization* as urban areas experience in general a lower level of social capital. This data is provided by CONAPO. Finally, as a control variable for privatization, we use the *share of students enrolled in private schools of the total amount of students.* This data is provided by *SEP*.

Figure 11 shows the development of the homicide rate per 100,000 inhabitants for all 32 Mexican states from 2004 to 2016, while also showing the development of social capital.

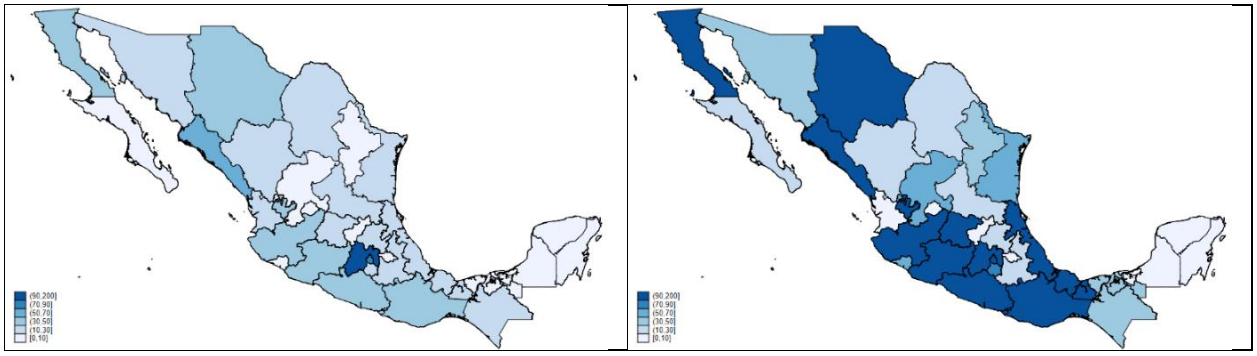
Figure 11: Synopsis - Development of Homicides and Social Capital in Mexico by State



Source: Own compilation based on INEGI data and Google Trends data.

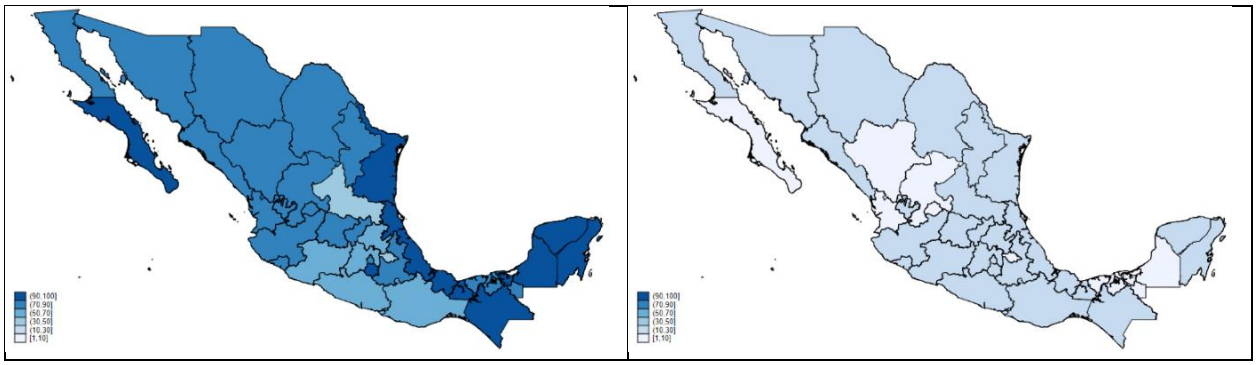
Figures 12 shows the homicide rate per 100,000 inhabitants in 2004 and 2016. Violence clearly increased. Figure 13 shows social capital in 2004 and 2016. Social capital clearly fell.

Figure 12: Synopsis - Average Homicide Rate in Mexico, 2004 and 2016



Source: Own compilation based on INEGI data.

Figure 13: Synopsis - Average Social Capital in Mexico, 2004 and 2016



Source: Own compilation based on Google Trends data.

The visual inspection of Figure 12 and 13 shows a high correlation in both variables.

Methodology

For our fourth paper we use a common correlated effects model. Moreover, we use a random slope model, as well as a spatial model.

First, we use a common correlated effects model for data with dependence between cross-sectional units (Ditzen 2018, 2021). We use cross-sectional averages of all variables. *Second*, we us a random slope model with random intercepts and random coefficients by level 2 (i.e. region level), which allows each region line to have a different intercept and a different slope.[9] This means the explanatory variable *homicide rate* has a different starting point and different effects for each region (Pillinger 2021; StataCorp. 2021a). This model allows us to control for regional heterogeneity within the data. *Third*, we use a spatial model to control for spatial lags. We use an inverse-distance spatial weighting matrix (StataCorp. 2021b). Our preferred model is the spatially lagged dependent variable regression model.

Results

The common correlated effects model clearly shows that a high *homicide rat*e decreases the social capital in Mexico. We also find a negative effect of the *regional unemployment rate*, *urbanization*, and *privatization* on the level of trust. Previous results, namely that a high level of violence destroys social capital, are confirmed when using a random slope model. The results are once more confirmed when using a spatial model. Moreover, we find a positive spatial correlation for social capital. This means when social capital is high in neighboring regions, it is also likely to be high in the home region due to spillover effects. Finally, also when using an alternative social capital variable, based on Consejo Nacional de Evaluación de la Política de Desarrollo Scoial data, the results are confirmed.

[9] We use the homicide rate of a certain region in a certain year as level 1, and the region as level 2.

5. Nexus between the Four Papers

The institutional perspective is the *first* and most important common denominator of the four papers. This view is extended with two case studies about Ukraine and Mexico – countries, which have experienced violent conflicts. While institutions that work well improve the well-being of the citizens, (civil) wars destroy the level of trust and thus hinder socioeconomic development. Moreover, we do not simply measure institutions with an aggregated indicator. Instead, we use in two papers the six worldwide governance indicators. In the case study about Ukraine, we focus on financial institutions, whereas in the case study about Mexico we focus on violence.

The *second* common characteristic of the papers is interdisciplinarity. All four dependent variables are relevant for socioeconomic development. Inward FDI flows is a pure economic variable. FDI brings capital, knowledge and technology to the home country and thereby pushes a country's economic development. Risk-sharing is a relevant socioeconomic approach to smoothen negative income shocks. The development of financial institutions is relevant for consumption risk-sharing in developed countries such as the USA. However, in developing countries such as Ukraine, unofficial channels of risk-sharing are more relevant. Populist rhetoric is a pure political variable, which can be obstructive to economic development. Populists do not tackle the root of the problem, but instead provide simple answers to complex questions. Finally, social capital is a variable classified in sociology and considered as foundation for economic development. The combination of these interdisciplinary dependent variables is a good indicator for the general well-being of countries and their society.

A *third* common characteristic is the data. In all four papers we use panel data. Panel data contains more information than pour time series data or cross-sectional data. With panel data we can control for unit fixed-effects, as well as time-fixed effects. Regarding the data structure, in two papers aggregated data on the country level was used, whereas in the two papers about Ukraine and Mexico, data on the regional level was employed. Country level data works well to examine broader trends, while regional data suits specific country case studies. The mix of studies on the country level and regional level give general trends, but also more detailed background information about certain countries – in this case Ukraine and Mexico. The insights of the two case studies are deepened with short historical summaries regarding the reasons behind the war in Donbass, and modern Mexican history.

A *fourth* common characteristic is the methodology we use. As a starting point, we use an OLS regression that controls for fixed effects. Additionally, in three out of four papers we use spatial regressions. This methodology controls for spatial lags, which is important as nearby outcomes, nearby covariates, or nearby residuals may affect outcomes. Another methodology we use in two

out of four papers is the random slope methodology. This methodology controls for the heterogeneity within the data. Countries are diverse in regard of their institutions or level of violence. Hence, it is important to control for this diversity.

To sum up, the focus on governance, institutions, and violent conflicts is one common characteristic. A second common feature is the interdisciplinary research approach. A third common characteristic is the panel data as well as the combination of studies on the country and on the regional level. Finally, the advanced methodology is a joint attribute of the analysis of the role of governance and violent conflicts in society and economics.

6. Critical Discussion

All four papers have some limitations. One relevant concern that affects three out of four papers is endogeneity, namely reverse causality.

Regarding endogeneity, in our *first paper* we argue that institutions that work well increase inward FDI flows. However, it may also be the other way round, i.e., that inward FDI shape national institutions. It is less plausible that investment is undertaken if the expropriation risk is high, unless profit margins are very high or vertical FDI is undertaken. Another challenge is the dynamic effects of FDI flows, i.e., FDI flows depend on their own lagged values. To overcome these two shortcomings, in my first study I use a system GMM estimation proposed by Arellano and Bover (1995) as well as Blundell and Bond (1998). This estimation method uses lagged dependent variables as instrument variables and includes a lagged dependent variable to control for dynamic effects.

In our *second paper* we argue that in Ukraine the channels of risk-sharing are different compared to developing countries. Thus, we control for financial development and ethnic heterogeneity. In our estimation, we include spatial lags to control for spillovers from neighboring countries. We find that consumption in the home oblast is negative correlated with consumption in the neighboring oblasts. This finding is surprising, but this pattern is consistent with a situation in which employees commute, people shop in neighboring regions, or families transfer money between regions.

Regarding endogeneity, in our *third paper* we argue that institutions are inert. However, this is an assumption that can, and should be questioned (e.g., Acemoglu et al. 2020). Moreover, institutions are very different from country to country. Regarding heterogeneity, we use a random slope model. This allows each country line to have a different intercept and a different slope. This is more realistic than assuming that a change in governance has an equal effect on each country. Finally, our measure of populist rhetoric is based on textual data (using the “Team Populism” and “V-

Dem" dataset). Populism rhetoric is just one approach to estimate the degree of populist trends. (Lewis 2019). We are convinced that this measurement serves well as a sentiment of a political situation within a country.

Regarding endogeneity, in our *fourth paper* we argue that violent conflicts serve better as an explanatory variable. In the case of Mexico, the drug war after 2006 can be considered an exogenous shock. Another challenge regarding our paper about Mexico is that the social capital index is based on Google Trends data. We are aware that it approximates real-life social capital in Mexico. We refer to previous studies (e.g., Ginsberg et al. 2009) that have proven the suitability of Google Trends data. Moreover, we highlight that our results indicate primarily general trends.

It is also relevant to discuss our explanatory variables. Therefore, we ask the following questions: (a) How does good governance lead to more FDI? (b) How does ethnic heterogeneity in Ukraine lead to a higher level of regional consumption risk sharing? (c) How does good governance mitigate populist rhetoric? (d) How does the drug war decrease the level of regional social capital in Mexico?

Regarding *government* as an explanatory variable for inward *FDI* flows: Good governance ensures democratic values, provides a stable political environment, increases public service effectiveness, promotes private sector development, protects property rights, and fights corruption. Thus, good governance reduces transaction costs and attracts investment.

Regarding *ethnic heterogeneity* as a reason for a higher level of *risk sharing* in Ukraine: The Russian minorities are better connected to Russia, speak the same language, often have worked there, or have relatives and friends in Russia. All this may lead to preferential treatment from Russia, which can thus in turn smoothen negative income shocks.

Regarding *governance* as an explanatory variable for *populist rhetoric:* Good governance through critical discussions, citizen participation, reliable policy, the quality of public services, the rule of law, and anti-corruption policies creates an atmosphere of satisfaction within the society. This satisfaction in turn further reduces transaction costs when interacting with the government, thus can mitigate populist trends.

Regarding the *homicide rate* as an explanatory variable for *social capital* in Mexico, violence reduces social interaction because going out is riskier. Due to fewer meetings with family members, friends, and colleagues mistrust increases. This leads to a general psychological change towards fear.

To sum up, in all four papers we have faced some challenges. We have solved them through a combination of a theoretical and methodological approach. Moreover, we have critically discussed the suitability of the explanatory variables.

7. General Conclusion

This thesis studies the question: *Why are developed countries rich and developing countries poor?* Answering this question of economic well-being is difficult. The reasons for economic development are ambiguous and countries are very diverse. Nevertheless, the natural experiments of North and South Korea, as well as East and West Germany, show that institutions and governance are essential for a country's economic development. Moreover, the war in Ukraine as well as the violent conflict in Mexico demonstrates the adverse effects a violent conflict has on a country.

To answer the initial question of socioeconomic development I wrote four papers. The first paper analyzes the impact of governance on inward FDI flows. The second paper analyzes the effect of financial development and ethnic heterogeneity on regional consumption risk-sharing in Ukraine. The third paper analyzes the impact of governance on populist rhetoric. Finally, the fourth paper analyzes the impact of the drug war on regional social capital in Mexico.

The results are as follows: *First*, we show that governance has a positive effect on inward FDI in developed countries. For developing countries, the mean tariff rate is more important than the institutional setting. *Second*, our results suggest that ethnic heterogeneity, as proxy for remittances, is the key determinant for regional consumption risk-sharing in Ukraine. Financial development, proxied with deposits and loans as percentage of GRP, was insignificant. *Third*, we provide evidence that good governance can mitigate populist rhetoric. However, a certain threshold of governance quality is necessary to mitigate populist trends. *Fourth*, we empirically prove that the drug war has had a negative effect on regional social capital in Mexico.

Thus, this thesis highlights that governance plays an important role in encouraging FDI activities and can impede populist trends. Moreover, this work indicates that violent conflicts have had a negative effect on regional consumption risk-sharing in Ukraine and social capital in Mexico. New insights are that institutions are not as important for developing countries as for developed countries. While good governance attracts more FDI in developed countries, this is not the case for developing countries. Moreover, financial development is less relevant for consumption risk-sharing in developing countries such as Ukraine. Furthermore, a certain threshold of institutional development is required to mitigate populist rhetoric. On top of that, (civil) wars, which are more common in developing countries, destroy the level of trust. This looks very much like a vicious circle for developing countries: Poor governance attracts to less foreign investment, deposits and loans are less effective in cases of a negative income shock, the corrupt government cannot impede populist trends, and (civil) wars additionally destroy social capital.

So, yes, developed countries are rich because their institutions work well, and developing countries are poor because of their corrupt and inefficient institutions. Hence, improving the institutional setting and ending violent conflicts is a step in the right direction towards sustainable socioeconomic development. In combination with education, this goal of ending poverty can be achieved.

It is important to take the results of this research with some circumspection as our findings mainly reflect a general trend. This is because we use proxy variables, e.g., populist rhetoric for the degree of populist trends, and we have constructed our own internet based social capital index. Nonetheless, the insights are clear – institutions that work well promote socio-economic development, and violent conflicts harm the economic and social well-being.

Hence, policy makers around the world should establish efficient working governance infrastructure and prevent any violent conflicts. They are responsible for providing institutional framework conditions that drive the well-being of the population. There are four specific policy recommendations:

(1) Policy-makers should provide good investment conditions to attract FDI.

Rule of law, regulatory quality and governance effectiveness are preconditions for FDI activities. Without strict rules and commitment to policies, the investment environment becomes uncertain and unattractive. Additionally, active FDI promotion is important to attract inward FDI. Chambers of commerce can do this, for example.

(2) **Despite the war in Ukraine policy-makers should integrate the ethnic Russian minority in Ukraine.**

Until 2014, the ethnic Russian minority in Ukraine was well connected with Russia. Remittance flows from Russia to Ukraine were a relevant source of external financing and could smoothen consumption. However, the situation has changed in Ukraine. Nevertheless, ethnic Russians are part of Ukrainian society and their opinion matters. Communication with the Russian minority in Ukraine and with Russia is a first step towards normalization of the situation. Moreover, the government should not stop rebounding remittance flows independent of their origin.

(3) Policy makers should provide governance transparency and general trust within the society to mitigate populist rhetoric.

Trust, i.e., a high level of social capital, is the basis of our economic system. At the same time, it is the foundation of our society. Without trust, the financial system collapses and

societies fall apart. Open public data, citizen-participation, grassroots democracy, and collaboration between ministries increase the level of trust. This will lead to citizen satisfaction and respect for their government. Trust in governance, institutions, and public administration makes countries less prone to populist propaganda and civil wars.

(4) Policy-makers in Mexico should invest in education, fight corruption, and inform society about the danger of working for a cartel.

Education is crucial for socioeconomic development in Mexico. Well-educated parents have more opportunities in the job market and can provide better education to their children. Better-educated children with hope and opportunities are less likely to join the cartels. Moreover, anti-drug war education campaigns at schools could reduce the number of gang members. Moreover, the government should fight corruption at all levels.

In conclusion, this thesis verifies that institutions and governance are driving determinants of socioeconomic related variables. Furthermore, it verifies the damaging potential of violence on society. Hence, the four papers contribute to the growing field of institutional economics. These insights can be useful to further investigations. Such research endeavors will reveal the comprehensive connection between the mutual effects within social and economic variables.

8. Future Research Projects

Although this work helps to understand the divergence in economic development, open questions remain. In our third paper about the impact of *governance* on *populist rhetoric* we argued that institutions are inert and thus governance institutions suit better as explanatory variables. However, Acemoglu et al. (2020) show that institutions can change. Thus, in an additional research endeavor we will look at the topic of populist trends and institutional change in more detail. This research project will be conducted together with Prof. Jarko Fidrmuc from Zeppelin University and Prof. Yamarik from California State University.

Data

In our additional paper we will use populist rhetoric data from the Varieties of Democracy Research Institute, as well as Worldwide Governance Indicators, and World Development Indicators which are both provided by the Word Bank.

The dependent variables will be the six Worldwide Governance Indicators respectively. The explanatory variable is *populist rhetoric* (V-Dem). We will control for a selection of macroeconomic variables.

Methodology

For our additional paper we will use advanced methodologies, for example, OLS with fixed effects models, instrument variable models, system GMM models, random slope models, and spatial models.

Results (preliminary)

Our first results suggest that populist trends can indeed change selected governance indicators.

Appendix of Synopsis

Table 2: Synopsis Appendix - Publications of my PhD-Studies

Paper	Abstract
Impact of Governance on FDI *Applied Economics Quarterly,* *(Published 2020)* Fabian Reck (single author)	This paper analyzes the effect of worldwide governance indicators on inward foreign direct in-vestment. The sample covers 38 developed and 79 developing countries between 2002 and 2018. The results of the system GMM regressions suggest that governance indicators are important determinants of inward FDI for developed countries. Moreover, it is shown that it is important to control for dynamic effects. In comparison, for developing countries, another country characteristics – the mean tariff rate – is more important than the institutional setting.
Regional Risk-Sharing in Ukraine *Empirica,* *(Published 2021)* Jarko Fidrmuc (first author), Serhiy Moroz, Fabian Reck	This paper analyzes the impact of ethnic heterogeneity and military conflict on the degree of regional consumption risk-sharing in Ukraine. Ethnicity and violent conflicts can influence risk-sharing e.g. through social capital, ethnic fractionalization, migration, and remittances. The sample consists of 25 Ukrainian oblasts and covers the highly volatile period from 2003 to 2016. Our results suggest that the degree of consumption risk-sharing is comparably high, between 70 and 80% on average. Moreover, consumption risk-sharing is significantly higher in the regions with a large Russian minority, which are enjoying special treatment from Russia. By contrast, the degree of financial development, as proxied by deposit and loan share in GRP, does not significantly affect the regional degree of consumption risk-sharing. Furthermore, we apply spatial models to control for spatial dependence across regions. Results are confirmed and it is shown that spatial correlation is important. Finally, we show that the recent geopolitical conflict in east Ukraine changed the regional degree of consumption risk-sharing.
Regional Risk-Sharing in Ukraine *The Bank of Finland Institute for Economies in Transition Discussion Papers 20/2020,* *(Pre-Publication 2020)* Jarko Fidrmuc (first author), Serhiy Moroz, Fabian Reck	See previous abstract.

(*Continued on the next page*)

Table 2‘: Synopsis Appendix - Publications of my PhD-Studies

Paper	Abstract
Impact of Governance on Populist Rhetoric *Economic Systems,* *(Accepted for resubmission 2023)* Fabian Reck (first author), Jarko Fidrmuc, Frédéric Gruninger	The phenomenon of populism is widespread in the 21st century. In this paper, we analyze the correlation between the World Bank's six worldwide governance indicators and populist rhetoric. The panel data includes 40 developing and developed countries and covers the period from 2000 to 2018. The results suggest that good governance may help to reduce populist rhetoric. However, we show that a certain threshold of governance quality must be met to mitigate populist rhetoric. By contrast, refugee immigration and one-party dominance increases populist rhetoric. Despite frequent claims, we do not find robust evidence that merchandise trade or a high unemployment rate would strengthen populist rhetoric.
Impact of the Drug War on Regional Social Capital in Mexico *Journal of International Development* *(Accepted for resubmission 2023)* Julian Vögele (first author), Fabian Reck Jarko Fidrmuc,	The onset of the war on drugs in Mexico at the beginning of 21st century had far reaching effects on its citizens, including most obviously, an unprecedented increase in the homicide rate. We analyze the correlation between violence on social capital in the 32 federal states of Mexico from January 2004 to December 2016. Given the lack of data in the conflict regions of Mexico, we apply the indirect approach proposed by Guriev and Melnikov (2016), which uses internet search engine data to proxy social capital. Our results show a negative relationship between violence and social capital in Mexico. Moreover, we document a positive spatial correlation for social capital. Overall, we present an example of how the analysis of internet-based data can contribute to the understanding of socioeconomic developments in conflict regions with unreliable standard data. .

Source: Own compilation.

Table 3: Synopsis Appendix - Publications with Guest Researcher and Alumni from ZU

Paper	Abstract
M&As and Price Manipulation in China *Ekonomický časopis,* *(Published 2021)* Chen, Cuiping (first author), Jarko Fidrmuc, Fabian Reck	In recent years, M&As have become popular among Chinese companies, with many of them receiving a high premium. This paper empirically analyzes the motivation of high-premium M&As from the perspective of price manipulations. The sample consists of 1,013 Chinese companies, listed on the Shanghai and Shenzhen stock exchange, and covers the period from 2013 to 2018. Our results indicate that benefit seeking of major shareholders on the costs of minor investors is a key determinant for the merger of companies. In comparison, economic synergy effects are not the predominant factor of M&As. Therefore, legal reforms by the Chinese Market Supervisory Department are necessary to protect smaller investors.
Automation, Digitalization, and Income Inequality in Europe *Czech Journal of Economics and Finance,* *(Published 2021)* Pauline Fiedler (first author), Jarko Fidrmuc, Fabian Reck	We analyze the impact of industrial robots as well as investment in computing equipment and digital technologies on different indicators of income distributions. Our data covers selected West European EU economies from 2004 to 2017. We shed light on the underlying dynamics of technological advances on inequality. The results suggest that robot density is associated positively with income inequality, while no robust evidence is found for the computing equipment and digital technologies. In particular, the income shares of the bottom 20 and 50 percent decreases with automation, while the income shares of the top 10 and 1 percent increases, which supports the job and wage polarization hypothesis. This is especially important for policy formulations after the pandemic, because current rapid automation efforts can potentially have significant long-term implications for the labor market.
The End of the Sharing Economy? Impact of COVID-19 on Airbnb in Germany *The Economic Research Guardian,* *(Published 2021)* Jennifer Gossen (first author), Fabian Reck	This paper analyzes the effect the COVID-19 pandemic is having on the sharing economy. We focus on hosts' behavior in the German shared housing market and examine hosts' adaption to the pandemic state. Using monthly data from January 2019 until December 2020 for the city of Berlin, we conduct a probit model regression analysis and investigate the influence of several Airbnb-listing-specific factors and unemployment on the probability of renting the Airbnb accommodation. Through this big data analysis, we find that hosts switch from short-term to long-term options and rent relatively more entire apartments than shared ones during the COVID-19 pandemic compared to the pre-pandemic state.

(*Continued on the next page*)

Table 3': Synopsis Appendix -Publications with Guest Researcher and Alumni from ZU

Paper	Abstract
The Sharing Economy and Housing Markets in Selected European Cities. *Journal of Housing Economics, (Published 2023)* Philipp Reichle (first author), Jarko Fidrmuc, Fabian Reck	A heated debate has emerged drawing a connection between housing affordability and home-sharing platforms such as Airbnb. Despite first regulatory efforts by municipalities, the impact on rents and house prices has been examined insufficiently in scientific literature, especially with regards to Europe. Therefore, this paper addresses this gap by analyzing data on Airbnb listings for 25 European cities between 2010 and 2019. Using fixed effects and dynamic panel regressions, we show that home-sharing has significantly contributed to a rise in rents and house prices in European cities. While these effects are mainly concentrated in city centers, we also document effects in other urban districts. Finally, recent home-sharing regulations are not associated significantly with housing affordability.

Source: Own compilation.

II. Paper 1: Impact of Governance on FDI[10]

1. Introduction

Foreign direct investment (FDI)[11] represents a significant channel of capital, knowledge, and technology transfer. It is a fundamental element for economic integration and therefore crucial for a country's economic development. This paper argues that governance infrastructure is a key determinant of inward FDI. Having well-functioning institutions in the host country signals less investment risk to foreign investors.

The vast and still-growing literature on the subject agrees that, in general, governance is important for inward FDI. However, there is less understanding which components of governance are the most important for FDI inflows. Moreover, it is still in debate whether governance is equally as important for developed and developing economies.

A challenge regarding empirical studies of international investment is the dynamic properties of FDI, i.e., the autocorrelation of FDI flows. For example, many FDI-projects go on for many years, which is why FDI flows depend on their own lagged values. Another, well-known concern is that some FDI determinants may be endogenous, i.e., the error term is correlated with the dependent variable. For example, FDI may be attracted to a country that has a higher GDP but at the same time a high GDP may be caused by the presence of FDI (Dellis et al. 2017).

This paper applies a system generalized method of moments (GMM) estimation proposed by Arellano and Bover (1995) as well as Blundell and Bond (1998). This estimation method controls for possible endogeneity by using lagged dependent variables as instrument variables. Further, a lagged dependent variable is added to control for dynamic effects.

The sample consists of 38 developed and 79 developing countries covering the period 2002 to 2018. The value added by this paper is three-fold. First, it contributes to the understanding of disparity in inward FDI by analyzing the effect of worldwide governance indicators on FDI inflows. Second, it uses two sub-samples to see if the results differ between developed and developing countries. Third, it adds to a methodical gap by using a comprehensive dynamic regression analysis.

The results of the GMM estimation suggest that *Voice and Accountability*, *Political Stability and Absence of Violence*, *Governance Effectiveness*, *Regulatory Quality*, *Rule of Law* and *Control of Corruption*, as well as the control variables *GDP Growth* and *Openness*, are important determinants of inward FDI in developed countries. Moreover, the results show that it is relevant to control for

[10] See Reck (2020).

[11] FDI is defined as an investment, involving a long-term relationship with a foreign company with a significant influence of its management, i.e., 10% or more of its voting power (OECD 2016).

dynamic effects. For developing economies, another country characteristic – the mean *Tariff rate* – is more important than the institutional setting. The insignificant coefficients of the governance indicators in the sub-sample of developing countries may be caused by the fact that a certain threshold of institutional quality must be achieved to attract inward FDI. Most governments in developing countries may not hit this threshold. Another reason may be the difficulties in measuring institutional quality in these countries. Furthermore, developing countries may have developed alternative mechanisms of protection, for example, international agreements. Finally, developing countries may attract FDI in sectors less sensitive to institutional quality.

The rest of the paper is structured as follows. Section 2 gives an overview of the existing FDI literature. Section 3 introduces the dataset, presents the empirical strategy, and describes the panel regressions results. Section 4 concludes.

2. Literature Review

Scientific scholars agree that institutions or governance, per se, has an impact on inward FDI. By 1991, North (1991) had already raised awareness of the role of institutions in establishing investment incentives. Acemoglu et al. (2005) argue that institutions are a fundamental cause of long-term growth that has been proven with the natural experiment of North and South Korea.

Various researchers document empirical evidence confirming the correlation between institutions and economic development or FDI inflows. For example, Borensztein et al. (1998) find for a sample of developing countries that FDI combined with a minimum threshold stock of human capital as well as institutional quality – rule of law and bureaucratic quality – is important for growth. Focusing on FDI inflows, Globerman and Shapiro. (2002) show that, for developed and developing countries, governance infrastructure is an important determinant of inward and outward FDI flows. Their results suggest that a general governance indicator is more important than its individual components. Bénassy-Quéré et. al. (2007) use bilateral data to examine the effect of institutional distance between the host and the source country on FDI. They find that institutions matter independently of GDP per capita for developed and developing countries. Bureaucracy, corruption, and the information and banking sectors as well as legal institutions are important determinants of inward FDI. The findings of Fathi et al. (2010) indicate that, for developing and developed countries, institutional quality exerts a significant role in determining FDI inflows. Property rights security appears to be the most relevant institutional aspect for FDI. Buchanan et al. (2012) confirm that institutional quality has a positive and significant effect on FDI for a sample of 164 countries. However, following Globerman et al. (2002), they use an aggregate measure of governance. Recent literature, for example Peres et al. (2018), suggests that institutional quality only has an impact on

FDI flows in developed countries. It is argued that, in developing countries, governance fails to attract inward FDI flows due to poor control of corruption and poor regulatory quality.

There are three main shortcomings of the previously discussed literature: First, in various papers including Globerman et al. (2002) and Buchanan et al. (2012), among others, an aggregate measure of institutional quality is used. Second, cross-country regressions may be subject to endogeneity problems. Third, it may be important to control for the dynamic property of FDI.

To overcome these above-mentioned shortcomings different approaches have been used. First, Fidrmuc et al. (2017) analyze different institutional indices and their importance for various factors of economic development. This is a relevant contribution to literature on the subject to identify the most important components of governance. The authors find high institutional quality related to property rights and trade freedom. Second, to overcome endogeneity problems in cross-country regressions, instrument variable estimates can be used. However, it is difficult to find a good instrument. Hence, several authors use the methodology of system GMM, which uses the lagged dependent variable as the instrument. Moreover, system GMM controls for dynamic effects of the dependent variable. A system GMM approach has been used by the following authors. Ullah and Khan (2017) study the effect of governance and economic freedom on three Asian country-samples. They find that institutional variables vary regarding FDI in the South Asian Association for Regional Cooperation, Central Asia, and the Association of Southeast Asian Nations. Aziz (2018) finds for 16 Arab economies that institutional quality – ease of doing business, economic freedom, and international country risk – has a positive and significant impact on FDI inflows. Younsi et al. (2019) use a static and dynamic panel gravity model approach for a sample of emerging countries. Their results suggest that political stability, government effectiveness and regulatory quality have positive and significant effects on FDI attractiveness. However, their findings for voice and accountability, rule of law, and control of corruption – where they find negative and significant effects on inward FDI stock – are counterintuitive. Sabir et al. (2019) estimate the effect of institutional quality on FDI inflows for several subsamples of developed and developing countries. The authors conclude that institutional quality is a more important determinant of FDI in developed countries than in developing countries.

In summary, the findings concerning the impact of governance on inward FDI are mixed. Researchers use different governance indicators and even aggregated measures of FDI. Moreover, the samples differ substantially. However, previous findings confirm the positive and significant effect of good institutions on FDI inflows. Therefore, the author expects positive and significant effects of the governance indicators on inward FDI.

3. Empirical Analysis

3.1 Data Description

The empirical analysis is performed for 38 developed and 79 developing countries covering the period 2002 to 2018.[12] This period has been selected because of the availability of data. Worldwide Governance Indicators (WGI) provided by the World Bank are available from 1996 to 2018, but, only biannually between 1996 and 2002. Therefore, the estimation starts in 2002. The WGI dataset is derived from micro data including households and firms, commercial business information providers, nongovernmental organizations, and public sector organizations. The WGI range between approximately –2.5 and +2.5. They have been chosen because this paper attempts to disentangle the broad and general definition of governance and institutions. The following six indicators measure certain aspects of governance: *Voice and Accountability* and *Political Stability and Absence of Violence*, measure the way governments are selected, monitored, and replaced. The second two indicators; *Governance Effectiveness* and *Regulatory Quality*, measure the ability of the government to formulate and implement policies; The last two indicators, *Rule of Law* and *Control of Corruption*, measure the respect of citizens and the state for institutions that resolve their conflicts (Kaufmann et al. 2010, p. 223).

All other macroeconomic variables come from the World Bank's World Development Indicators (WDI), a compilation of high-quality and internationally comparable data about global development. The descriptive statistics are shown in Table 4.

[12] Developed countries are defined as all OECD countries plus Hong Kong and Singapore. Developing countries are all countries not specified as above. For a detailed list of all variables as well as the sample see Table 6 and Table 7 in the appendix of paper 1.

Table 4: Paper 1 - Data Description, 2002 to 2008

	Developed countries					Developing countries				
Variables	**N**	**Mean**	**St. Dev.**	**Min**	**Max**	**N**	**Mean**	**St. Dev.**	**Min**	**Max**
FDI Inflows (m. US$)	604	36,500	70,400	2,000	734,000	1289	5,880	22,000	0.150	291,000
Voice and Accountability	604	1.083	0.468	-0.833	1.801	1289	-0.426	0.805	-2.233	1.345
Political Stability and Absence of Violence	604	0.708	0.647	-2.009	1.755	1289	-0.456	0.917	-2.810	1.599
Governance Effectiveness	604	1.327	0.561	-0.153	2.437	1289	-0.252	0.683	-2.484	1.564
Regulatory Quality	604	1.309	0.458	-0.047	2.261	1289	-0.259	0.746	-2.344	1.781
Rule of Law	604	1.273	0.606	-0.674	2.100	1289	-0.400	0.706	-2.339	1.630
Control of Corruption	604	1.264	0.798	-0.928	2.465	1289	-0.406	0.681	-1.715	1.567
GDP Growth	604	2.676	3.298	-14.814	25.163	1289	4.621	4.249	-17.669	27.962
Tariff rate (weighted mean, all products %)	599	2.323	1.720	0	15.440	1033	7.088	4.900	0	30.730
Openness (Trade % of GDP)	604	83.992	66.120	17.312	419.962	1279	62.028	29.872	7.806	192.123

Source: Own computation based on WGI and WDI data.

3.2 Empirical Strategy

In this paper a system GMM estimator is used. One advantage of this estimator is that it provides efficient results by applying a relatively minimal set of statistical assumptions (Bun & Sarafidis 2013). A system GMM estimator is designed for dynamic panels with the following properties: First, few periods and a large cross-section. Second, a linear functional relationship. Third, a single dynamic depended variable, which depends upon its own realizations in the past. Forth, independent variables that are not strictly exogenous. Fifth, fixed individual effects. Sixth, heteroscedasticity and autocorrelation within the individuals (Roodman 2007). All these characteristics fit the dataset that is used in this paper, i.e., system GMM is the appropriate method. Econometrically, the GMM estimation is expressed as follows.

$$Log\ FDIY_{it} = \rho_1 Log\ FDIY_{it-1} + \sum_{k=1}^{K} \gamma_k\, Gov_{itk} + \beta_3\, \Delta GDP + \beta_4 Tariff + \beta_5 Open + \varepsilon_{it} \quad (1)$$

The dependent variable is the *inward FDI as a percentage of GDP*. One *lag of the dependent variable* is included, too. The determinants of interest are the six governance indicators: *Voice and Accountability*, *Political Stability and Absence of Violence*, G*overnance Effectiveness, Regulatory Quality*, *Rule of Law,* and *Control of Corruption.*

As control variables, the following variables are used: *GDP Growth* to control for individual business cycles; *Tariff* (weighted mean tariff rate to all products in percent) to control for trade barriers; and *Openness* (merchandise trade in percent of GDP) to control for the degree of openness to trade. Finally, the error term, ε_{it}, represents all disturbances.

For the system GMM estimation the first and second lagged dependent variables are used as instrument variables. Moreover, the robust option controls for heteroscedasticity of residuals.

3.3 Results

The results of the OLS-regression model with country fixed effects show that the coefficients of *Governance infrastructure* are mainly insignificant. This is true for the sample with developed countries as well as the sample with developing countries. The coefficients of the *lagged dependent variable*, as well as the coefficients of the control variable *GDP Growth* are positive and statistically significant for both sub-samples. The control variable *Tariff* shows negative and statistically significant results only for the sub-sample of developing countries. The coefficients of the control variable *Openness* are positive and statistically significant only for the sub-sample of developing countries.[13]

However, as noted above, the OLS regression results may be biased. To control for endogeneity, a system GMM model is used. The system GMM results are presented in Table 5. Regarding the sub-sample of developed countries, all six indicators of governance infrastructure are positive and statistically significant (at least at 10% level). Also, the coefficients of the *lagged FDI variable* and the coefficients of the control variables *GDP Growth* and *Openness* are positive and statistically significant. In comparison, in the sub-sample of developing countries, all six indicators of governance are statistically insignificant. The coefficients of *lagged FDI variable*, as well as the coefficients of *GDP Growth* are positive and statistically significant, too. The coefficients of *Tariff* are negative and statistically significant. Interesting to note is that the effect of the *lagged FDI variable* on FDI is weaker in the sub-sample of developing countries. The effect of the growth rate on FDI is stronger for the sub-sample of developing countries.

The Arellano-Bond test of autocorrelation of residuals confirms that the system GMM results for the subsample of developed countries do not suffer from autocorrelation of the error terms. The lags of the dependent variable are valid instruments according to the Hansen test, which tests for over-identification.

As the results show, governance infrastructure plays a significant role in determining inward FDI in developed countries: *Voice and Accountability*, i.e., democratic values, secured human rights, freedom of the press and freedom of association are important for foreign investors. *Political Stability* and *Absence of Violence* obviously is relevant, too. *Governance Effectiveness*, i.e., the quality of public administration, is another crucial factor for multinational firms that plan to invest in a foreign country. *Regulatory Quality*, i.e., the ability of the government to implement sound policies that promote private sector development, is important for foreign investors as well. *Rule of Law*, i.e., confidence in contract enforcement, property rights, the police, and the courts, is also fundamental for inward FDI. Finally, *Control of Corruption* is also important for foreign investors.

[13] See the results of the fixed-effects model in Table 8 in the appendix of paper 1.

Moreover, the individual business cycles, measured by the proxy *GDP Growth* is relevant for inward FDI. *Openness* towards trade plays a relevant role for inward FDI only in developed countries. The rate of *Tariff* plays an important role for FDI inflows only in developing countries.

Table 5: Paper 1 - System GMM Model, Determinants of FDI, 2002 to 2008

	Developed Countries						**Developing Countries**					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	(12)
Log FDI (%GDP)$_{t-1}$	0.365***	0.375***	0.321***	0.304***	0.322***	0.326***	0.260***	0.260***	0.250***	0.259***	0.261***	0.254***
	(3.74)	(3.78)	(3.12)	(3.10)	(3.20)	(3.18)	(3.49)	(3.43)	(3.14)	(3.39)	(3.42)	(3.20)
Voice &	0.777**						0.327					
Accountability	(2.10)						(1.17)					
Political Stability		0.501*						-0.029				
		(1.84)						(-0.09)				
Govern.			0.773***						-0.326			
Effectiveness			(2.90)						(-0.73)			
Regulatory Quality				1.179***						0.098		
				(3.45)						(0.29)		
Rule of Law					0.788***						-0.098	
					(2.95)						(-0.28)	
Control of						0.559***						-0.355
Corruption						(2.77)						(-0.81)
GDP Growth	0.063***	0.063***	0.068***	0.065***	0.068***	0.065***	0.084***	0.079***	0.072***	0.082***	0.078***	0.073***
	(3.13)	(3.22)	(3.40)	(3.45)	(3.49)	(3.29)	(3.28)	(3.09)	(2.98)	(3.35)	(3.13)	(2.97)
Tariff rate	0.069	0.054	0.059	0.044	0.074	0.061	-0.074*	-0.097***	-0.110***	-0.091**	-0.099***	-0.107***
(all products %)	(0.85)	(0.67)	(0.65)	(0.50)	(0.86)	(0.70)	(-1.91)	(-2.60)	(-3.09)	(-2.44)	(-2.77)	(-3.03)
Openness	0.012***	0.008*	0.010**	0.009*	0.009**	0.009**	0.007	0.007	0.010	0.006	0.008	0.009
(Trade % of GDP)	(2.87)	(1.76)	(2.00)	(1.88)	(2.03)	(1.99)	(1.05)	(0.95)	(1.34)	(0.90)	(1.05)	(1.19)
No. of countries	38	38	38	38	38	38	79	79	79	79	79	79
No. of observations	532	532	532	532	532	532	945	945	945	945	945	945
AR (1) (*p*-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR (2) (*p*-value)	0.109	0.103	0.109	0.147	0.113	0.123	0.028	0.033	0.033	0.033	0.033	0.035
Hansen test (*p*-value)	0.613	0.723	0.586	0.636	0.691	0.752	0.191	0.127	0.138	0.160	0.136	0.164

Note: *t* statistics in parentheses. ***, **, * Significant at 1%, 5% and 10% level, respectively.
Source: Own computation.

4. Conclusions

FDI transfers capital, knowledge, and technology and is relevant for a country's economic development. The data shows that developed countries attract significantly more FDI than developing countries. Moreover, the governance infrastructure in industrialized countries is better than in countries of the global south.

By analyzing the impact of governance on inward FDI for developed and developing countries, this paper contributes to the debate of disparity in inward FDI. For estimations, a system GMM approach, which controls for endogeneity and the dynamic properties of FDI, was used.

The results of the system GMM regressions suggest the following policy implications: First, the WGI are important for attracting FDI inflows in developed countries. Second, dynamic effects are relevant. Third, it is important to distinguish between developed and developing countries. For developing countries another country characteristic - the mean tariff rate - is more important than the institutional setting. Hence, these findings contradict the results found by Globerman et al. (2002), Bénassy-Quéré et al. (2007) and Fathi et al. (2010), but they are in line with recent findings by Peres et al. (2018) and Sabir et al. (2019). An explanation for the insignificant coefficients may be the lower institutional quality in developing countries, the difficulty in measuring institutional quality in these countries, alternative mechanisms of protection, or developing countries may attract FDI in sectors less sensitive to institutional quality.

A limitation to the study at hand is aggregation bias – differences between the regression coefficient obtained at the aggregate level and the coefficients of interest at the individual level. Especially for the large subsample of developing countries cross-level inference is critical, as countries are very heterogeneous.

Appendix of Paper 1

Table 6: Paper 1 Appendix - Definition of Analyzed Variables

Variable	Definition	Source
Foreign Direct Investment (% of GDP)	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. The FDI inflows are divided by GDP.	World Development Indicators
Voice and accountability index (approx. between -2.5 and+2,5)	Capturing perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and free media.	Worldwide Governance Indicators
Political stability and absence of violence / terrorism index (approx. between -2.5 and+2,5)	Capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.	Worldwide Governance Indicators
Governance effectiveness index (approx. between -2.5 and+2,5)	Capturing perceptions of the quality of public services, the quality of civil services and the degree of its independence from political pressures, the quality of policy formulations and implementations, and the credibility of the government's commitment to such policies.	Worldwide Governance Indicators
Regulatory quality index (approx. between -2.5 and+2,5)	Capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	Worldwide Governance Indicators
Rule of law index (approx. between -2.5 and+2,5)	Capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Worldwide Governance Indicators

(*Continued on the next page*)

Table 6': Paper 1 Appendix - Definition of Analyzed Variables

Control of corruption index (approx. between -2.5 and +2,5)	Capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as „capture" of the state by elites and private interests.	Worldwide Governance Indicators
Gross domestic product growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	World Development Indicators
Tariff (%)	Simple mean most favored nation tariff rate is the unweighted average of most favored nation rates for all products subject to Tariff calculated for all traded goods.	World Development Indicators
Openness	Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars.	World Development Indicators

Source: Own compilation.

Table 7: Paper 1 Appendix - List of Countries

Developed countries	Developing Countries		
Australia	Afghanistan	Kazakhstan	Uruguay
Austria	Algeria	Kenya	Uzbekistan
Belgium	Angola	Kuwait	Venezuela, RB
Canada	Argentina	Lebanon	Vietnam
Chile	Azerbaijan	Libya	Yemen, Rep.
Czech Republic	Bahamas, The	Macao SAR, China	Zimbabwe
Denmark	Bahrain	Malaysia	
Estonia	Bangladesh	Malta	
Finland	Belarus	Mauritius	
France	Bolivia	Morocco	
Germany	Bosnia and Herzegovina	Mozambique	
Greece	Botswana	Myanmar	
Hong Kong SAR, China	Brazil	Nepal	
Hungary	Brunei Darussalam	Nicaragua	
Iceland	Bulgaria	Nigeria	
Ireland	Cameroon	Oman	
Israel	China	Pakistan	
Italy	Colombia	Panama	
Japan	Congo, Dem. Rep.	Paraguay	
Korea, Rep.	Costa Rica	Peru	
Latvia	Croatia	Philippines	
Lithuania	Cyprus	Qatar	
Luxembourg	Côte d'Ivoire	Russian Federation	
Mexico	Dominican Republic	Saudi Arabia	
Netherlands	Ecuador	Senegal	
New Zealand	Egypt, Arab Rep.	Serbia	
Norway	El Salvador	South Africa	
Poland	Ethiopia	South Sudan	
Portugal	Gabon	Sri Lanka	
Singapore	Ghana	Sudan	
Slovak Republic	Guatemala	Syrian Arab Republic	
Slovenia	Honduras	Tanzania	
Spain	India	Thailand	
Sweden	Indonesia	Trinidad and Tobago	
Switzerland	Iran, Islamic Rep.	Tunisia	
Turkey	Iraq	Uganda	
United Kingdom	Jamaica	Ukraine	
United States	Jordan	United Arab Emirates	

Source: Own compilation.

Table 8: Paper 1 Appendix - Fixed Effects Model, Determinants of FDI, 2002 to 2008

	Developed Countries						Developing Countries					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Log FDI (%GDP)	0.197***	0.201***	0.204***	0.206***	0.202***	0.204***	0.377***	0.377***	0.377***	0.371***	0.376***	0.375***
	(3.53)	(3.44)	(3.44)	(3.46)	(3.55)	(3.48)	(6.99)	(7.01)	(6.96)	(6.92)	(6.96)	(6.85)
Voice &	-0.638*						0.108					
Accountability	(-1.94)						(0.62)					
Political Stability		-0.139						-0.046				
		(-0.73)						(-0.65)				
Govern.			0.028						0.004			
Effectiveness			(0.10)						(0.02)			
Regulatory Quality				0.274						0.420***		
				(0.87)						(2.64)		
Rule of Law					-0.160						0.269	
					(-0.56)						(1.25)	
Control of						-0.038						-0.107
Corruption						(-0.15)						(-0.61)
GDP Growth	0.065***	0.065***	0.064***	0.063***	0.064***	0.065***	0.037***	0.037***	0.037***	0.035***	0.037***	0.037***
	(3.77)	(3.76)	(3.72)	(3.73)	(3.70)	(3.78)	(4.86)	(4.95)	(4.89)	(4.91)	(4.93)	(4.86)
Tariff rate	0.028	0.024	0.020	0.022	0.021	0.021	-0.018**	-0.018**	-0.019**	-0.019**	-0.019**	-0.019**
(all products %)	(1.15)	(1.00)	(0.86)	(0.89)	(0.86)	(0.88)	(-2.04)	(-2.12)	(-2.13)	(-2.22)	(-2.13)	(-2.16)
Openness	0.001	0.001	0.001	0.002	0.001	0.001	0.007***	0.007***	0.007***	0.008***	0.008***	0.007***
(Trade % of GDP)	(0.30)	(0.46)	(0.47)	(0.61)	(0.51)	(0.49)	(3.27)	(3.05)	(3.13)	(3.41)	(3.21)	(3.05)
No. of countries	38	38	38	38	38	38	79	79	79	79	79	79
No. of observations	532	532	532	532	532	532	945	945	945	945	945	945
R^2	0.244	0.416	0.480	0.513	0.406	0.455	0.491	0.469	0.473	0.440	0.454	0.462

Note: *t* statistics in parentheses. ***, **, * Significant at 1%, 5% and 10% level, respectively.
Source: Own computation.

III. Paper 2: Regional Risk-Sharing in Ukraine[14]

1. Introduction

Consumption risk-sharing is a highly debated topic in the field of international finance and macroeconomics. It is defined as a decoupling of aggregate consumption from aggregate income**.** Channels of consumption risk-sharing are tax transfers, loans, saving and deposits (Asdrubali et al. 1996) as well as remittances (Balli & Rana 2015). A high degree of risk-sharing means that income shocks are smoothed between the regions, which reduces a need for fiscal policy measures. This underlines the high relevance of the analyzed issue for economic policy. Remittances can represent an especially important channel of risk-sharing for developing and emerging economies because their financial institutions are less developed than in industrialized countries. Risk-sharing analysis for emerging economies is important because previous literature is focused on OECD countries.

Research in the field of consumption risk-sharing for Ukraine is especially interesting because of its heterogeneous ethnic composition and the war in Donbass in the east of the country. Based on these country characteristics, the degree of consumption risk-sharing as well as the channels that smooth consumption risk-sharing may differ compared to industrialized countries. For example, Fidrmuc and Degler (2019) show that for Russian regions, consumption risk-sharing is high, and that spatial correlation is important between regions. The availability of loans increases consumption risk-sharing. Bank credits increase risk-sharing only if the main economic centers of Moscow and Saint Petersburg are included.

We use data for 25 Ukrainian oblasts[15] and cover the highly volatile period from 2003 to 2016. The value added by this paper to literature on the subject is three-fold. *First*, it analyzes consumption risk-sharing in an ethnically heterogeneous society and under the circumstances of a military conflict between ethnic groups. *Second*, it applies a panel dataset, which has not been used in the context of consumption risk-sharing. *Third*, we use ethnic structure as a proxy for social capital, ethnic fractionalization, migration, and remittances as key channels of risk-sharing in Ukraine.

Ethnicity can affect the degree of consumption risk-sharing through several channels. Lower trust and social capital levels in regions with ethnic minorities (Gundacker & Fidrmuc 2017) can affect consumption risk-sharing, while social capital changes especially in periods of conflict (Guriev & Melnikov 2016). Moreover, ethnic fractionalization may lower cooperation across regions, and this also affects risk-sharing (Alesina & La Ferrara 2005). Furthermore, ethnic minorities may be

[14] See Fidrmuc, Moroz, and Reck. (2020, 2021). Apart from the publication in *Empirica* (2021) we have a pre-publication in *The Bank of Finland Institute for Economies in Transition Discussion Papers* (2020).

[15] The Kyiv region and city as well as the Autonomous Republic of Crimea and Sevastopol have been combined to one oblast.

engaged in trade. Rauch and Trindade (2002) find that ethnic minorities foster trade links between their country of residence and the ancestral country. Additionally, migration and remittances may be higher because ethnic minorities can possess language and social skills, or the national roots of their ancestors can make them more easily eligible for long- or short-term immigration than most of the population (Balli & Rana 2015). Many countries (including Germany, Isreal, or Hungary) support immigration from the diasporas. Russia, for instance, applies both compatriot programs as well as simplified citizenship procedures for immigrants with an ethnic Russian background (Karachurina 2013). Finally, other factors can include discrimination of members of ethnic groups, for example, regional-specific factors like location, distance, and sectoral structure.

Our results show that average consumption risk-sharing is comparably high, reaching about 70-80%. Within regions with a large Russian population consumption, risk-sharing is significantly higher. By contrast, the degree of financial development, as proxied by deposit and loan share in GRP, does not significantly affect the regional degree of consumption risk-sharing. The War in Donbass had multiple consequences on the affected regional economies. On the one hand, it induced significant income and consumption shocks. On the other hand, several channels of risk-sharing were weakened. For example, financial institutions were unable to operate, and family and friendship networks were broken. Consequently, remittances from and labor opportunities in the neighboring regions in Russia were interrupted. In sum, this has resulted in a lower degree of risk-sharing in Ukraine. Thus, we document another channel, how the conflict in east Ukraine adversely affects the well-being of the directly involved regions as well as the country.

The rest of the paper is structured as follows. Section 2 reviews permanent income theory and macro-economic theory as the theoretical foundation of risk-sharing and gives an overview of the existing literature on consumption risk-sharing. Section 3 briefly summarizes the recent history in Ukraine. Section 4 introduces our dataset and presents our empirical strategy. Section 5 presents our panel regressions results and discusses them. Section 6 summarizes and concludes.

2. Literature Review

The permanent income hypothesis states that an individual's consumption is consistent with their expected long-term income (Friedman 1957). This means that only changes in permanent income affect consumption patterns. Further, macroeconomic theory states that in a complete market (i.e. assuming convex preferences, perfect competition, and independent demand) consumption is highly correlated across regions. Therefore, consumption should be equalized in different countries or regions after an income shock (Lewis 1999). Thus, we would expect a high degree of consumption risk-sharing across countries and regions.

However, empirical data disproves the theory. For example, Backus et al. (1992) show that, across countries, income is generally more highly correlated than consumption. Furthermore, Sørensen and Yosha (1998) find for 14 OECD countries that transitory income-shocks are more likely to be smoothed (40%) than long-lasting income-shocks (25%). Becker and Hoffmann (2006) even show that 27 OECD countries do not share any idiosyncratic consumption risk, neither in the short run nor the long run. One reason for this striking discrepancy between theory and empirics may be found in the strong assumptions of a perfect market. Obstfeld and Rogoff (2001) argue that iceberg transport costs hinder perfect consumption risk-sharing.

Demyanky et al. (2008) find that a common currency raises the degree of risk-sharing. European Monetary Union members (EMU) increased their level of consumption risk-sharing from 42 to 53% after the introduction of the euro. Moreover, Kose et al. (2009) show that financial integration improved risk-sharing in 21 industrial countries, but not in 48 developing countries. In this regard, Bai and Zhang (2012) argue that bounded financial market integration due to incomplete contracts and limited enforceability of debt repayment hampers perfect consumption risk-sharing.

Furthermore, previous literature has shown that consumption risk-sharing tends to be higher within national states than between counties. For example, Asdrubali et al. (1996) find that, for the period from 1963 to 1990, for the 50 US states, risk-sharing stood at about 75%. The channels of risk-sharing are as follows: 39% of consumption is smoothed ex-ante via capital markets (cross-ownership of assets), 23% ex-post via the credit market (loans) and 13% institutionalized via the federal government (tax transfers). The remaining 25% of consumption risk-sharing remains unsmoothed. Their findings are confirmed by Crucini (1999) who shows that that for the period 1970 to 1991 the degree of consumption risk-sharing was high for the 50 US states and the 10 Canadian provinces (about 90%). These findings are also in line with Becker and Hoffmann (2006), whose results show that between 30 and 50% of idiosyncratic consumption risk was shared for the 50 US regions between 1960 and 1996.

In a nutshell, previous literature agrees that consumption risk-sharing is significantly higher between regions than between countries, unless they share a common currency. Financial integration is shown to be important only for industrialized countries and not for developing countries. The determinants of risk-sharing in developing countries might be different and need to be examined more profoundly. This paper intends to address this research gap by analyzing conventional and unconventional channels of risk-sharing in Ukraine. We use the ethnic minorities, as a proxy for social capital, ethnic fractionalization, migration, and remittances, to analyze its impact on the degree of risk-sharing. Moreover, this paper will reveal the impact of a violent conflict on the degree of risk-sharing.

3. A Brief Historical Background of Ukraine

Ukraine is a multinational country because of its historical development. Ethnic and cultural differences have a significant impact on the nature of processes in Ukrainian regions in regard of demographic, social, and economic aspects. That is why we pay significant attention to these differences in our paper. Many Ukrainian oblasts have a large Russian minority. On average, about 13% of Ukraine's population are ethnic Russians, while an even larger share of the population reports Russian as the native language.[16] Ethnic heterogeneity across regions is substantial and there are no regions with a fully homogeneous population. The share of Ukrainian nationality is at least 24% and never more than 98%. Behind Russians, the Tatar minority accounts for 10% of the population in Crimea, and other ethnic groups (especially Romanians and Hungarians) account for up to 20% of the population in two regions (Ukrainian Population Census 2001).

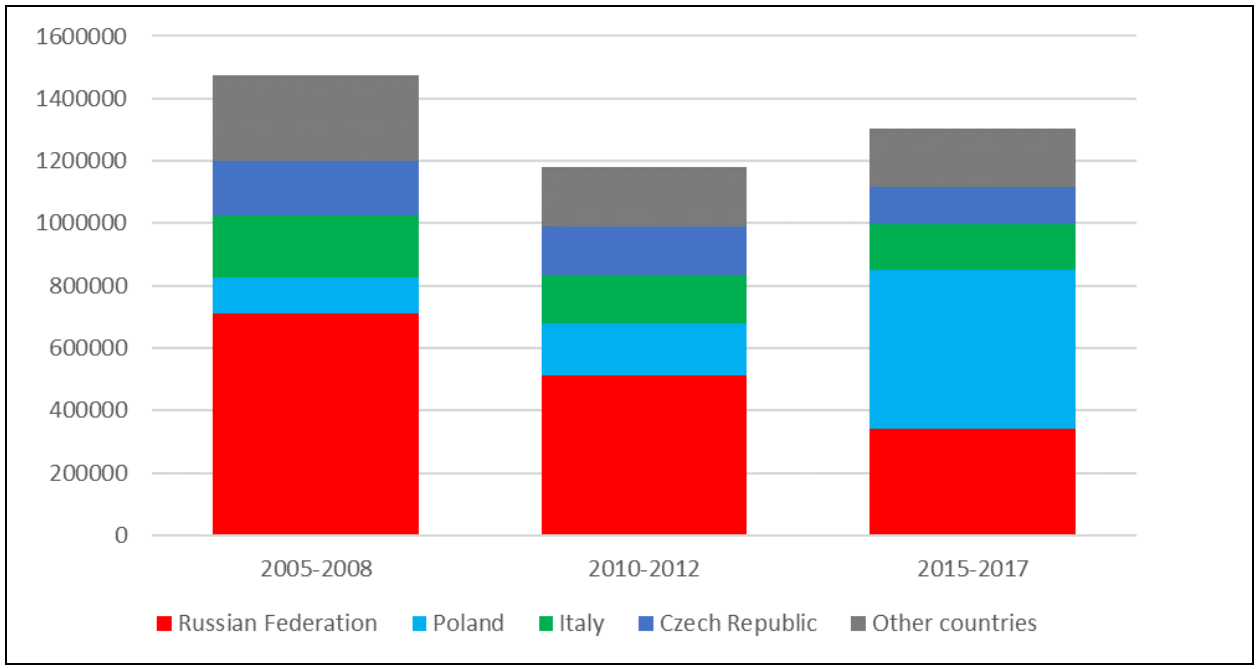
The historical and political roots as well as the economic implications of the current conflict are strong and complex. The recent outbreak started in November 2013, after the former president of Ukraine, Victor Yanukovych, refused to sign the Ukraine-European Union Association Agreement. This induced massive protests in Kyiv which spread across the country. However, this also strengthened the separation-movements in the Donetsk and Luhansk oblasts, which are pro-Russian orientated (Korovkin & Makarin 2019). Since the beginning of the conflict, Russia has strongly supported the pro-Russian rebels in the Donetsk and Luhansk oblasts (Treisman 2018). Moreover, Russia annexed the Autonomous Republic of Crimea in February 2014. The separatists declared independence of Donetsk and Luhansk from Ukraine in April 2014 and held a disputed referendum on separation from Ukraine in May 2014, which started the so-called War in Donbass. The legitimacy of these steps was never recognized by the Ukrainian Government, the EU, the USA, and the UN. Moreover, numerous countries have imposed sanctions on Russia in response to the annexation of Crimea and the conflict in east Ukraine (Dreger et al. 2016; Bělín & Hanousek 2019). Currently, the separatists control approximately a third of the territory of the Donetsk and Luhansk oblasts (including the cities of Donetsk and Luhansk), which represents the so-called zone where the "anti-terrorist" operation is conducted.

The War in Donbass has destabilized the whole country since Ukraine's industrial center, with heavy industries such as coal mining and metallurgy, is located in the eastern part of the country. The armed conflict not only destroyed highways, railways, airports and other transport infrastructure in the conflict area (Pham et al. 2018) but also directly decreased the financial well-being of civilians (Osiichuk & Shepotylo 2019). The conflict also imposed new administrative and

[16] The data comes from the most recent Ukrainian population census in 2001, which is approximately the beginning of our data set (2003).

political barriers for transport and migration to or from Russia. As a result, migration from Ukraine to Russia decreased significantly (see Figure 14).

Figure 14: Paper 2 - Main Countries of Destination of Ukrainian Labor Migrants



Source: Own compilation based on the data of Ukrainian Center for Social Reforms, State Statistics Committee of Ukraine (2009), ILO, State Statistics Service of Ukraine, Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine (2013), State Statistics Service of Ukraine (2017).

4. Empirical Analysis

4.1 Data Description

The sample consists of 25 Ukrainian oblasts (see Table 15 in the appendix of paper 2). The annual data covers the period 2003 to 2016.4F.[17] The data is retrieved from the State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census. The geodata is provided by the United Nations Office for the Coordination of Humanitarian Affairs.

The main information source is the State Statistics Service of Ukraine. *First*, using its website, statistical databases, and publications, we collected annual regional data on indicators, such as gross regional product, consumer price index, permanent population and final consumption expenditures.[18] *Second*, we include annual regional data of the National Bank of Ukraine on deposits of the corporate sector and households, as well as loans provided by depository corporations to the corporate sector and households as shares of GRP. *Third*, we use the population data of the 2001 Ukraine Population Census, which includes detailed information about the regional distribution of the population by nationality. *Finally*, we obtained the shapefile (i.e. geographical coordinates and regional maps) of Ukraine from the OCHA. The descriptive statistics of the main variables are summarized in Table 9.

Table 9: Paper 2 - Data Description, 2003 to 2016

Variable	N.	Mean	Std. Dev.	Min	Max
Ukrainian (%)	350	81.896	16.964	24.015	97.806
Russian (%)	350	13.185	14.373	1.247	60.403
Tatars (%)	350	0.533	2.100	0.007	10.782
Other (%)	350	4.385	5.260	0.656	20.885
GRP per capita (UAH)	347	20556.745	17326.729	2739.241	149786.641
Consumption per capita (UAH)	347	14784.034	10946.188	2086.704	69672.617
Deposits (% of GRP)	347	25.921	10.663	10.780	77.275
Loans (% of GRP)	347	32.151	23.800	6.130	167.316

Source: Own computation based on State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census.

[17] We used data for the following oblasts: Autonomous Republic of Crimea & Sevastopol, Cherkasy, Chernihiv, Chernivtsi, Dnipropetrovsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytskiy, Kirovohrad, Kyiv region & city, Luhansk, Lviv, Mykolayiv, Odessa, Poltava, Rivne, Sumy, Ternopil, Vinnytsya, Volyn, Zakarpattya, Zaporizhzhya, and Zhytomyr. Data for 2014-2016 was not available for the occupied territories of the Autonomous Republic of Crimea & Sevastopol, and the regions where the "anti-terrorist" operation had been conducted, which implies that data for Donetsk and Luhansk.

[18] The data is available on a regional level. Using the consumer price index and the permanent population we calculated the real gross regional product per capita as well as the real final consumption expenditures per capita.

4.2 Empirical Strategy

Combining the permanent income hypothesis with macroeconomic theory of consumption correlation across countries and regions leads us to the risk-sharing hypothesis. The risk-sharing hypothesis states that regional consumption per capita is not related to region-specific income shocks. Hence, a change in national income should evenly affect consumption in all regions. The risk-sharing hypothesis can be expressed as follows:

$$C_{it} - \bar{C}_{it} = \beta\ (Y_{it} - \bar{Y}_{it}) + \varepsilon_{it} \quad (1)$$

The variables *C* and *Y* represent consumption per capita and income per capita of region *i* at time *t*, respectively. The variables $\bar{C}$ and $\bar{Y}$ are the arithmetic averages of consumption per capita and income per capita over all regions, excluding the region of investigation. The idiosyncratic shocks are denoted by ε. The coefficient β measures the degree of risk-sharing and can be interpreted as follows:

$\beta = 0$, which implies perfect risk-sharing

$1 - \beta > 0$, which defines the degree of risk-sharing

4.2.1 Fixed effects model

Following the earlier literature (Asdrubali et al. 1996, Sørensen & Yosha, 1998), the degree of risk-sharing can be estimated in a linear ordinary least squared regression model, which can include fixed effects and additional control variable.[19] We can express the equation as follows:

$$\tilde{C}_{it} = \alpha_i + \theta_t + \beta\,\tilde{Y}_{it} + \sum_{k=1}^{K} \gamma_k\ x_{itk}\tilde{Y}_{it} + \varepsilon_{it} \quad (2)$$

The variable $\tilde{C}$ denotes the difference between consumption per capita of a certain oblast at a certain time, and the average consumption per capita over all regions at that time without the one under consideration, with both values in logarithms. $\tilde{Y}$ is computed alike for income. The parameters α and θ denote region and time fixed effects, respectively. The coefficient β measures the extent to which output deviation per capita without the oblast of investigation, explains consumption deviation per capita from the country average, i.e. it measures the degree of risk-sharing. The interaction term $x\tilde{Y}$ denotes *k* additional control variables which can affect the degree of risk-sharing with a parameter γ_k. The error term ε_{it} represents all disturbances.

[19] The Hausman test rejects the null hypothesis that the random effect model is unbiased. Correspondingly, we estimate fixed effect models.

The previous literature for developed and emerging economies showed that the degree of financial development is an important factor for international risk-sharing. However, less evidence for this channel was found for developing economies (Kose et al. 2009). To control for this potential channel of consumption risk-sharing, we include regional specific financial development, proxied by deposits and loans share of GRP.

Social capital, ethnic fractionalization, migration, and remittances can represent another channel of risk-sharing (Balli & Rana 2015). To proxy for this channel, we consider the regional share of the Russian and Tatar minorities (other minorities are used as the base category) in Ukrainian regions. Given the large size of the Ukrainian workforce abroad, particularly in Russia, remittances are likely to play a key role for regional risk-sharing. Especially the Russian minority is expected to have family ties to Russia, which would result in a high degree of risk-sharing. In comparison, the Tatars are less connected and hence regions with this minority should show a lower degree of risk-sharing.

4.2.2 Spatial lag model

Moreover, a spatial econometric model is used to incorporate spillover effects from neighboring regions. This approach reflects that, first, nearby outcomes may affect outcomes, second, nearby covariates may affect outcomes, and third, nearby residuals may affect outcomes.[20]

In other words, the income and consumption developments may be correlated between neighboring regions. For example, positive or negative income growth can spill over into neighboring regions. People can commute to growing regions, which can strengthen consumption in their home regions. Therefore, it is important to control for spatial correlation. Our preferred model is the lagged dependent variable regression model. It reflects that the consumption level per capita of a region is affected by the consumption levels per capita in neighboring regions. See the following equation.

$$\tilde{C}_{it} = \alpha_i + \theta_t + W\,\tilde{C}_{it} + \beta\,\tilde{Y}_{it} + \sum_{k=1}^{K} \gamma_k \; x_{itk}\tilde{Y}_{it} + \varepsilon_{it} \qquad (3)$$

We use a contiguity matrix including all direct neighbors and their neighbors (first-order and second-order neighbors) which are equally weighted. All other variables are defined as above.

The spatial lag model implements the quasi-maximum likelihood (QML) estimator proposed by Lee and Yu (2010). The estimation modifies the approach originally developed by Baltagi et al. (2003, 2013) and Kapoor et al. (2007), who consider spatial models with random effects. Lee and

[20] We use command "spxtregress" with fixed effects in Stata 16. Because the results of the Hausman test for panel estimations recommend the application of fixed effect models, we use the same approach also in the spatial analysis. In addition to the spatial lag model, we conduct a spatial lagged dependent variable regression model, a spatial lagged independent variable regression model, a spatial lagged error term regression model, as well as a regression combining all three methods (Table 18 in the appendix of paper 2) as a part of our robustness analysis.

Yu (2010) show that fixed effect spatial models are robust to different specifications while they are computationally simpler than the ML approach for the estimation of the generalized random effects model in Baltagi et al. (2013).

4.3 Results

4.3.1 Fixed effects regression results, 2003-2013

In the first step, we estimate risk-sharing between Ukrainian regions before the War in Donbass (see Table 10). In the specification (1), we can see that regional income shocks do not significantly affect the consumption pattern. Moreover, the traditional channel of risk-sharing through the financial sector, that is the degree of financial development, as proxied by deposits and loans share of GRP, does not affect significantly the regional degree of risk-sharing in Ukraine in specification (2) and (3) either[21]. This would imply a perfect degree of risk-sharing, which is a surprising result for Ukraine, given, for example, the size of consumption fluctuations between the regions. Alternatively, this result can reflect the omitted variable bias as factors that are important in Ukraine but not covered by the standard control variables. Therefore, we include ethnic structure which proxies a broad variety of factors: differences in social capital (Gundacker & Fidrmuc 2017, Guriev & Melnikov 2016), ethnic fractionalization (Alesina & La Ferrara 2005), and migration and remittances (Balli & Rana 2015).

In specification (4) we can see that the interaction variable of the Russian minority and the regional income deviations per capita is negative (confirming that ethnic structure lowers the transmission of income shocks to consumption) and highly significant. Moreover, the regional income deviations per capita also become highly significant in the augmented specifications (5) to (7). Adding the Tatar ethnicity decreases regional risk-sharing significantly. By contrast, all financial variables remain insignificant in the remaining columns. The degree of risk-sharing within the whole of Ukraine is shown to be about 70-80% before 2014.[22]

4.3.2 Spatial regression results, 2003-2013

In the next step, we consider spatial correlation between Ukrainian regions (see Table 11). In our preferred spatial model, we include the spatially lagged dependent variable defined as direct as well as secondary neighbors. Table 11 confirms fully the previous results: income shocks are insignificant in the base specification (1) but positive and significant in the extended specification (4). The interactions of income deviations per capita and ethnic structure are again highly significant

[21] The institutional quality can influence the effectivity of the financial sector (Fidrmuc et al. 2017, Deltuvaité et al. 2019).

[22] Calculation for specification (7) is as follows: $1 - \beta_{\tilde{Y}} - (\beta_{\tilde{Y}rus} \times \overline{rus}) - (\beta_{\tilde{Y}tat} \times \overline{tat})$ = 1 – 0.676 – (–0.038) ×13.190) – (0.198×0.533) ≈ 0.725.

but all other interaction variables remain mainly insignificant. The degree of risk-sharing for the whole of Ukraine is almost identical when using a spatial regression.

The spatial lag model reflects that consumption is affected by the consumption in neighboring regions. We find a negative correlation. This pattern may seem to be unexpected at first glance. It contradicts positive spatial autocorrelation which is confirmed for income levels (consumption levels show no significant spatial autocorrelation, as predicted by consumption smoothing hypothesis). Nevertheless, this pattern is consistent with a situation where employees commute and thus generate income in a different region from their consumption. Shopping in the neighboring regions can also lead to this pattern. It can be also explained by informal transfers within families and friendship networks within different neighboring regions. In Table 11 it can be also interesting to note that the coefficients of the spatial lags are often higher than 1 in absolute value, which may be related to the definition of dependent variable as consumption deviation per capita from the national average.

According to our preferred specifications (4-7) in Tables 10 and Table 11, the degree of risk-sharing within the whole of Ukraine was about 70-82% before 2014, independent of the estimation method. For individual regions, the degree of risk-sharing was highly heterogeneous given the different share of minorities (see Figure 15 to Figure 18 in the appendix of paper 2).

4.3.3 Robustness analysis

The results are highly robust regarding several robustness checks for the pre-war estimation period 2003 to 2013. These results remain almost unchanged when excluding the main economic centers of the Kyiv region & city (see Table 12). The degree of risk-sharing changes only by six percentage points in the preferred specification (5) in Table 10.

The results change dramatically when looking only at the years of the War in Donbass between 2014 and 2016 (see Table 13). However, we have to keep in mind that the number of observations is low for this sample (three observations per region, 72 observations in total). Moreover, data is no longer available for Crimea. We also drop the last specification comparing the Russian and Tatar minorities, because the Tatar minority is concentrated in Crimea, which was annexed by Russia in 2014. The conditions of the War in Donbass result in highly nonstandard results. The coefficient of income deviation per capita is significant and larger than one in specifications (1) to (3), meaning that consumption deviations are even larger than the underlying income shocks. In specifications (4) to (6), this coefficient becomes insignificant, while its interaction term with the Russian minority becomes significantly positive. This would also imply negative risk-sharing, which is inconsistent with macroeconomic theory. In addition to standard estimation problems due to the low number of observations, this shocking feature can be explained by several factors. First, income data may be

heavily underestimated. Second, the population decreases consumption even more than the income shocks in order to save money for expected future income declines. Third, supply shortages can restrict consumption development. Finally, a part of the population has been evacuated or left the regions for security reasons. Furthermore, we can see that the coefficient of the interaction term with Russian minority has changed its sign. This is not surprising because the regions in east-ern Ukraine with the highest Russian minority were mostly affected by the War in Donbass. There are also problems with unreliable data because parts of the regions are controlled by the separatists.

Ethnic interaction terms keep the negative signs if consumption risk-sharing per capita is estimated in first differences (see Table 17 in the appendix of paper 2), while the overall regression statistics worsen. The weak performance of the estimation in first differences may imply that mainly long-term income shocks are shared.

The results are also similar if alternative spatial regression models are used (see Table 18 in the appendix of paper 2). Finally, we calculated the Shannon index to take a deeper look at heterogeneity (see Table 19 in the appendix of paper 2). The results are like our preferred estimations.

Overall, the results are in line with Fidrmuc and Degler (2019) who found that between 70 and 90% of idiosyncratic income risk is smoothed across Russian regions. Moreover, spatial correlation was also shown to be important between Ukrainian regions. The results are also in line with Kose et al. (2019) who show that financial integration improves risk-sharing outcomes only in developed countries but not in developing countries such as Ukraine.

Table 10: Paper 2 - FE Model, Risk-Sharing within Ukraine, 2003 to 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\tilde{Y}_{it}$	0.089	0.148	0.078	0.640***	0.636***	0.675***	0.676***
	(0.116)	(0.128)	(0.122)	(0.154)	(0.144)	(0.147)	(0.159)
$\tilde{Y}_{it} \times rus$				-0.034***	-0.032***	-0.037***	-0.038***
				(0.007)	(0.006)	(0.006)	(0.007)
$\tilde{Y}_{it} \times tat$						0.192***	0.198***
						(0.030)	(0.032)
$\tilde{Y}_{it} \times deposits$ [a]		-0.103			0.008	-0.011	
		(0.160)			(0.153)	(0.154)	
$\tilde{Y}_{it} \times loans$ [a]			0.004		0.005	0.009	
			(0.071)		(0.054)	(0.053)	
$deposits$ [a]		0.206			0.234	0.233	
		(0.288)			(0.255)	(0.253)	
$loans$ [a]			-0.088		-0.109	-0.107	
			(0.079)		(0.079)	(0.080)	
No of obs.	275	275	275	275	275	275	275
No of regions	25	25	25	25	25	25	25
R^2_o	0.575	0.664	0.144	0.387	0.426	0.427	0.389
Risk-Sharing	insig.	insig.	insig.	0.805	0.788	0.706	0.725

Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. [a] - percentage of GRP.
Source: Own computation.

Table 11: Paper 2 - Spatial Model[23], Risk-Sharing within Ukraine, 2003 to 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\tilde{Y}_{it}$	0.092	0.171**	0.123*	0.575***	0.592***	0.629***	0.608***
	(0.063)	(0.074)	(0.068)	(0.110)	(0.113)	(0.114)	(0.110)
$\tilde{Y}_{it} \times rus$				-0.030***	-0.028***	-0.032***	-0.034***
				(0.006)	(0.006)	(0.006)	(0.006)
$\tilde{Y}_{it} \times tat$						0.177*	0.181*
						(0.093)	(0.094)
$\tilde{Y}_{it} \times deposits$ [a]		-0.194			-0.046	-0.064	
		(0.122)			(0.156)	(0.155)	
$\tilde{Y}_{it} \times loans$ [a]			-0.045		-0.017	-0.014	
			(0.040)		(0.055)	(0.055)	
$deposits$ [a]		0.201			0.229*	0.228*	
		(0.126)			(0.126)	(0.125)	
$loans$ [a]			-0.012		-0.091*	-0.089*	
			(0.027)		(0.048)	(0.048)	
$W \times \tilde{C}_{it}$	-1.136***	-1.188***	-0.936***	-1.030***	-1.093***	-1.090***	-1.024***
	(0.225)	(0.227)	(0.216)	(0.222)	(0.223)	(0.222)	(0.221)
No of obs.	275	275	275	275	275	275	275
No of regions	25	25	25	25	25	25	25
Risk-Sharing	insig.	0.829	0.877	0.815	0.774	0.700	0.742

Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. [a] - percentage of GRP.
Source: Own computation.

[23] Spatial Lagged Dependent Variable Model

Table 12: Paper 2 - FE Model without Kyiv, Risk-Sharing within Uk., 2003 to 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\tilde{Y}_{it}$	0.090	0.155	0.125	0.595***	0.695***	0.747***	0.630***
	(0.113)	(0.170)	(0.145)	(0.147)	(0.173)	(0.180)	(0.152)
$\tilde{Y}_{it} \times rus$				-0.031***	-0.032***	-0.037***	-0.035***
				(0.006)	(0.005)	(0.006)	(0.007)
$\tilde{Y}_{it} \times tat$						0.210***	0.195***
						(0.027)	(0.032)
$\tilde{Y}_{it} \times deposits$ [a]		-0.258			-0.432	-0.510	
		(0.671)			(0.459)	(0.454)	
$\tilde{Y}_{it} \times loans$ [a]			-0.108		-0.020	-0.008	
			(0.185)		(0.142)	(0.140)	
$deposits$ [a]		0.064			-0.053	-0.073	
		(0.370)			(0.327)	(0.325)	
$loans$ [a]			-0.053		-0.052	-0.048	
			(0.063)		(0.061)	(0.061)	
No of obs.	264	264	264	264	264	264	264
No of regions	24	24	24	24	24	24	24
R^2_o	0.274	0.306	0.157	0.138	0.0849	0.0286	0.0779
Risk-Sharing	insig.	insig.	insig.	0.811	0.725	0.631	0.733

Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. [a] - percentage of GRP.
Source: Own computation.

Table 13: Paper 2 - FE Model for Wartime, Risk-Sharing within Ukraine, 2014 to 2016

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\tilde{Y}_{it}$	1.402***	1.627***	1.447***	-0.124	-0.291	-0.301	-0.135
	(0.266)	(0.274)	(0.275)	(0.164)	(0.245)	(0.244)	(0.180)
$\tilde{Y}_{it} \times rus$				0.052***	0.051***	0.033**	0.031
				(0.008)	(0.008)	(0.014)	(0.019)
$\tilde{Y}_{it} \times tat$						1.972	2.300
						(1.641)	(2.043)
$\tilde{Y}_{it} \times deposits$ [a]		-0.734*			2.111	1.975*	
		(0.420)			(1.312)	(1.133)	
$\tilde{Y}_{it} \times loans$ [a]			-0.154		-0.962*	-0.907*	
			(0.112)		(0.507)	(0.442)	
$deposits$		1.605**			0.259	0.161	
		(0.677)			(0.419)	(0.454)	
$loans$ [a]			0.343		0.130	0.136	
			(0.204)		(0.117)	(0.126)	
No of obs.	72	72	72	72	72	72	72
No of regions	24	24	24	24	24	24	24
R^2_o	0.591	0.609	0.575	0.837	0.883	0.856	0.801
Risk-Sharing	-0.402	-0.627	-0.447	0.320	1.290	-0.506	insig.

Note*:* Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. a - percentage of GRP.
Source*:* Own computation.

5. Conclusions

Our results suggest that consumption risk-sharing in Ukraine differs significantly from developed economies. On the one hand, traditional factors of risk-sharing, i.e. the degree of financial developments, seem to be largely inefficient. On the other hand, social capital, ethnic fractionalization, migration, and remittances (estimated with our proxy Russian minority) represent a significant channel of risk-sharing.

On average, risk-sharing reached a comparably high level of 70-80%. Moreover, spatial correlation also plays an important role in risk-sharing. We observe a negative spatial correlation of consumption deviations between regions and their neighbors. This can be consistent with a situation where commuters generate income in one region and consume in other regions, or with informal transfers of income within family and friendship networks. This implies that risk-sharing within family and friendship networks play an important role in Ukraine as well.

In addition, our results show that the War in Donbass drastically changed the degree of regional consumption risk-sharing, remittances play no role anymore. We can see that consumption response to income shocks is overshooting, possibly because of unreliable statistics, supply shortages, saving behavior, etc. This reveals several channels in terms of how the conflict in east Ukraine can have important adverse implications for the welfare of the Ukrainian population.

Appendix of Paper 2

Table 14: Paper 2 Appendix - Definition of Analyzed Variables

Variable	Definition	Source
Consumer price indices	Consumer price indices measures changes in the price level of market basket of consumer goods and services purchased by households.	State Statistics Service of Ukraine
Deposits	Deposits of the corporate sector and households, by region mln. UAH	National Bank of Ukraine
Final consumption expenditures of households	In actual prices, mln. UAH	State Statistics Service of Ukraine
Gross regional product	In actual prices, mln. UAH	State Statistics Sevice of Ukraine
Permanent population	Permanent population in Ukraine - total (at the beginning of the year)	Ukrainian Population Census 2001
Loan	Loans provided by depository corporations (with exclusion of the National Bank of Ukraine) to the corporate sector and households, by region mln. UAH	National Bank of Ukraine
Ukraine, Russian, other speaker	Percentage of Ukraine speaker	Ukrainian Population Census 2001

Source: Own compilation.

Table 15: Paper 2 Appendix - List of Ukrainian Oblasts

Region
Cherkasy
Chernihiv
Chernivtsi
Crimea and Sevastopol
Dnipropetrovsk
Donetsk
Ivano-Frankivsk
Kharkiv
Kherson
Khmelnytskiy
Kirovohrad
Kyiv region & city
Luhansk
Lviv
Mykolayiv
Odesa
Poltava
Rivne
Sumy
Ternopil
Vinnytsya
Volyn
Zakarpattya
Zaporizhzhya
Zhytomyr

Source: Own compilation.

Table 16: Paper 2 Appendix - Migration in Selected Countries, Thousand Persons

Country	duration of stay abroad				
	until 1 month	**1-3 months**	**3-6 months**	**6-12 months**	**more than 12 months**
		2005-2008			
Russian Federation	76.7	330.3	125.0	120.8	57.5
Poland	20.8	65.5	20.5	7.1	4.2
Italy	3.2	19.8	15.7	81.9	77.7
Czech Republic	27.3	51.8	57.1	22.6	16.3
Other countries	25.5	81.7	41.5	42.2	83.4
Total	153.5	549.1	259.8	274.6	239.1
		2010-2012			
Russian Federation	61.3	256.0	99.6	49.6	44.5
Poland	52.7	76.6	31.7	3.5	3.9
Italy		2.8	37.4	46.8	69.0
Czech Republic	6.0	19.3	83.2	30.8	13.7
Other countries	25.3	18.7	23.4	52.4	73.4
Total	145.3	373.4	275.3	183.1	204.5
		2015-2017			
Russian Federation	16.4	206.1	76.4	35.6	7.9
Italy	2.8	9.1	23.2	49.7	61.9
Poland	112.9	238.1	120.5	17.7	17.3
Czech Republic	8.0	65.7	34.3	11.1	3.4
Other countries	31.9	47.9	37.5	26.7	41.2
Total	172.0	566.9	291.9	140.8	131.7

Source: Own computation based on the data of Ukrainian Center for Social Reforms, State Statistics Committee of Ukraine (2009), ILO, State Statistics Service of Ukraine, Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine (2013), State Statistics Service of Ukraine (2017).

Table 17: Paper 2 Appendix - FD Model, Risk-Sharing within Ukraine, 2003 to 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\tilde{Y}_{it}$	0.036	-0.239	-0.119	0.116	-0.180	-0.183	0.115
	(0.071)	(0.145)	(0.101)	(0.121)	(0.179)	(0.182)	(0.128)
$\tilde{Y}_{it} \times rus$				-0.005	-0.004	-0.004	-0.005
				(0.005)	(0.003)	(0.004)	(0.006)
$\tilde{Y}_{it} \times tat$						-0.007	-0.003
						(0.023)	(0.029)
$\tilde{Y}_{it} \times deposits$ [a]		0.960**			0.986	0.992	
		(0.410)			(0.744)	(0.745)	
$\tilde{Y}_{it} \times loans$ [a]			0.350*		-0.026	-0.029	
			(0.175)		(0.282)	(0.282)	
$deposits$		-0.130			-0.065	-0.065	
		(0.099)			(0.111)	(0.111)	
$loans$ [a]			-0.078		-0.070	-0.070	
			(0.059)		(0.060)	(0.061)	
No of obs.	250	250	250	250	250	250	250
No of regions	25	25	25	25	25	25	25
R^2_o	0.0122	0.0255	0.0313	0.0253	0.0335	0.0334	0.0252
Risk-Sharing	insig.	insig.	insig.	insig.	insig.	insig.	insig.

Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. a - percentage of GRP.
Source: Own computation.

Table 18: Paper 2 Appendix - Spatial Methods, Risk-Sharing within Ukraine, 2003 to 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Method	SLDV	SLDV	SLIV	SLIV	SLIV	SLIV	SLE	SLE	Comb	Comb
$\tilde{Y}_{it}$	0.674***	0.602***	0.724***	0.660***	0.712***	0.661***	0.657***	0.573***	0.684***	0.640***
	-5.9	-5.44	-5.87	-5.5	-5.78	-5.55	-5.54	-4.88	-5.81	-5.53
$\tilde{Y}_{it} \times rus$	-0.0335***	-0.0331***	-0.0386***	-0.0382***	-0.0389***	-0.0386***	-0.0307***	-0.0295***	-0.0338***	-0.0337***
	(-5.62)	(-5.59)	(-5.94)	(-5.92)	(-6.08)	(-6.09)	(-4.96)	(-4.72)	(-5.66)	(-5.62)
$\tilde{Y}_{it} \times deposits$ [a]	0.187**	0.176*	0.201**	0.193*	0.203**	0.196*	0.160*	0.145	0.180**	0.168*
	-2	-1.89	-1.99	-1.92	-2.01	-1.94	-1.71	-1.56	-1.99	-1.88
$\tilde{Y}_{it} \times loans$ [a]	-0.210*		-0.125		-0.113		-0.276**		-0.223**	
	(-1.81)		(-1.00)		(-0.90)		(-2.38)		(-1.99)	
$deposits$ [a]		-0.0262		0.0053		-0.00583		-0.0673		-0.0871**
		(-0.59)		-0.11		(-0.12)		(-1.63)		(-2.20)
$loans$ [a]	0.139		0.135		0.129		0.167		0.16	
	-1.16		-1.03		-0.99		-1.36		-1.34	
$W \times \tilde{\tilde{C}}_{it}$	-1.088***	-1.079***							-1.045***	-1.034***
	(-4.88)	(-4.85)							(-3.10)	(-3.17)
$W \times \tilde{Y}_{it}$			0.102	0.0363						
			-0.43	-0.15					0.0619***	0.0645***
$W \times \tilde{Y}_{it} \times rus$ [a]					0.016	0.0131			-3.71	-3.91
					-1.35	-1.06				
$W \times \varepsilon_{it}$							-1.036***	-1.033***	-0.253	-0.2
							(-4.38)	(-4.28)	(-0.81)	(-0.66)
No of obs.	275	275	275	275	275	275	275	275	275	275
No of regions	25	25	25	25	25	25	25	25	25	25
Risk-Sharing	0.668	0.741	0.677	0.74	0.692	0.744	0.662	0.738	0.666	0.714

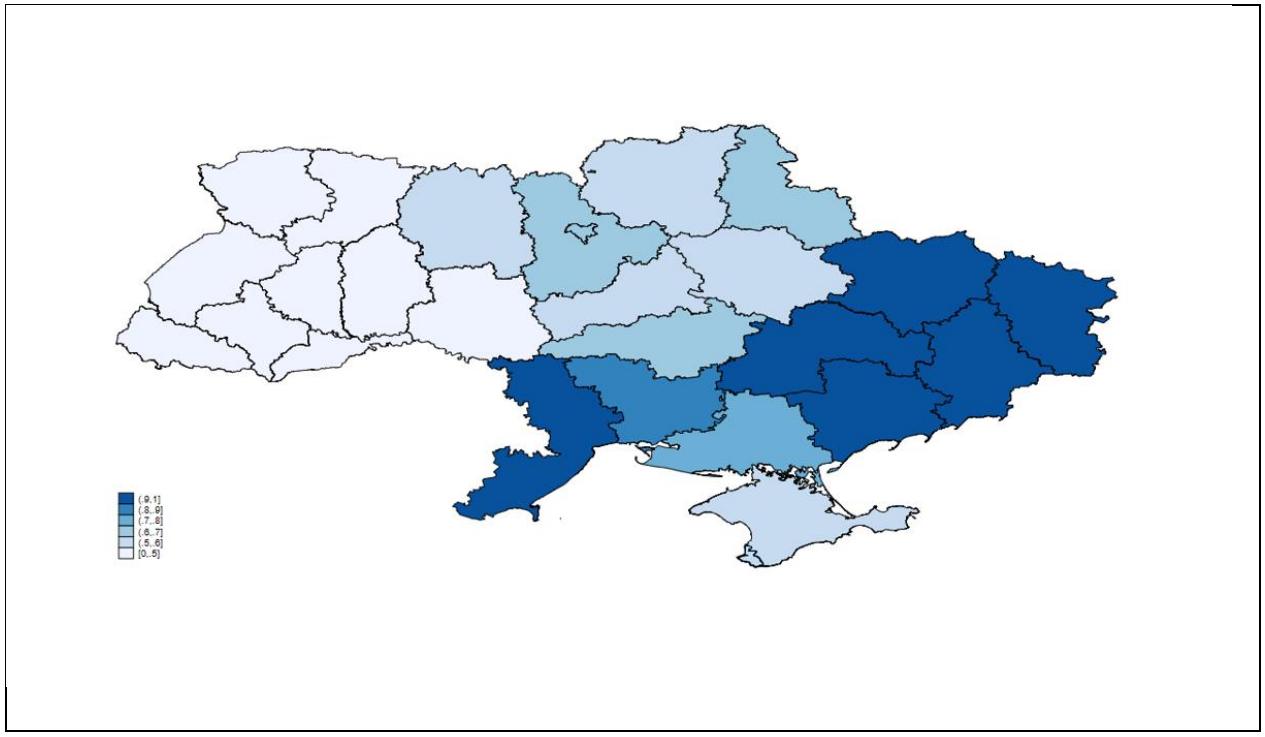
Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported.

[a] - percentage of GRP.

SLDV - spatial lagged dependent variable model, SLIV - spatial lagged independent variable model, SLE - spatial lagged error model, comb – combination of different spatial terms.

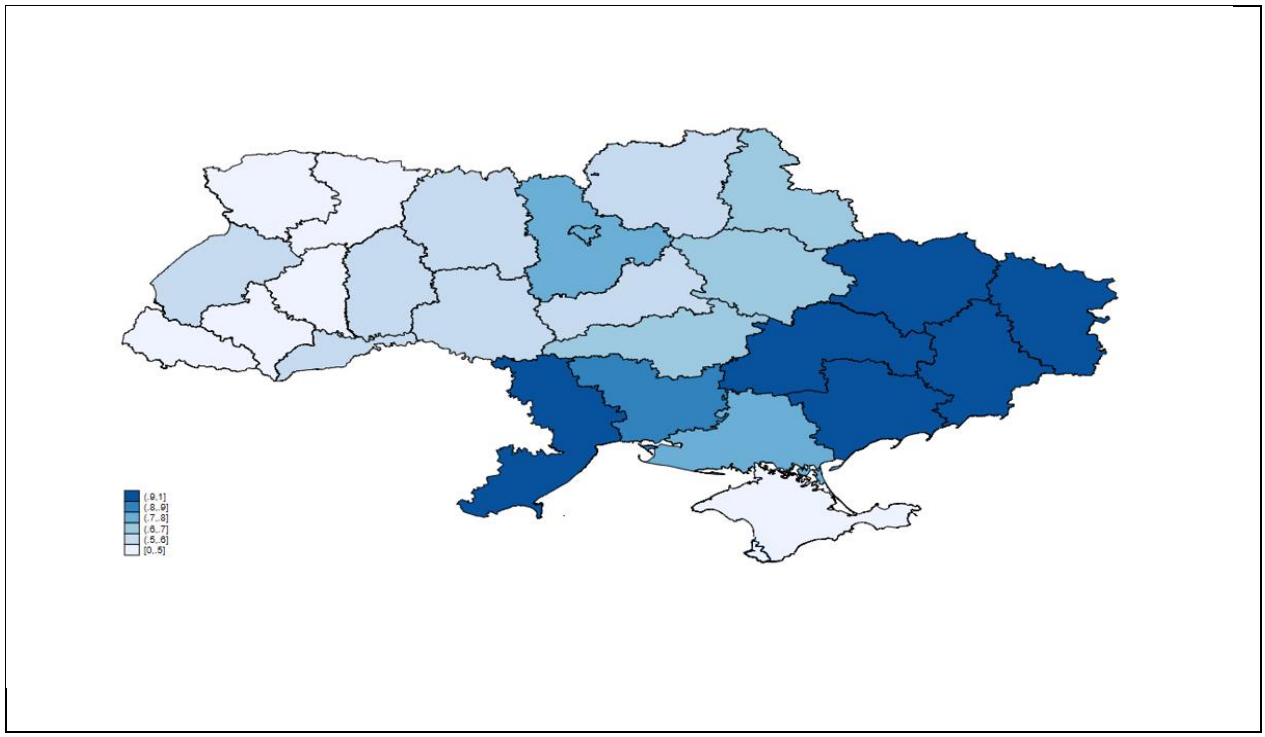
Source: Own computation.

Figure 15: Paper 2 Appendix - FE Reg., Risk-Sharing within UA, 2003 to 2013



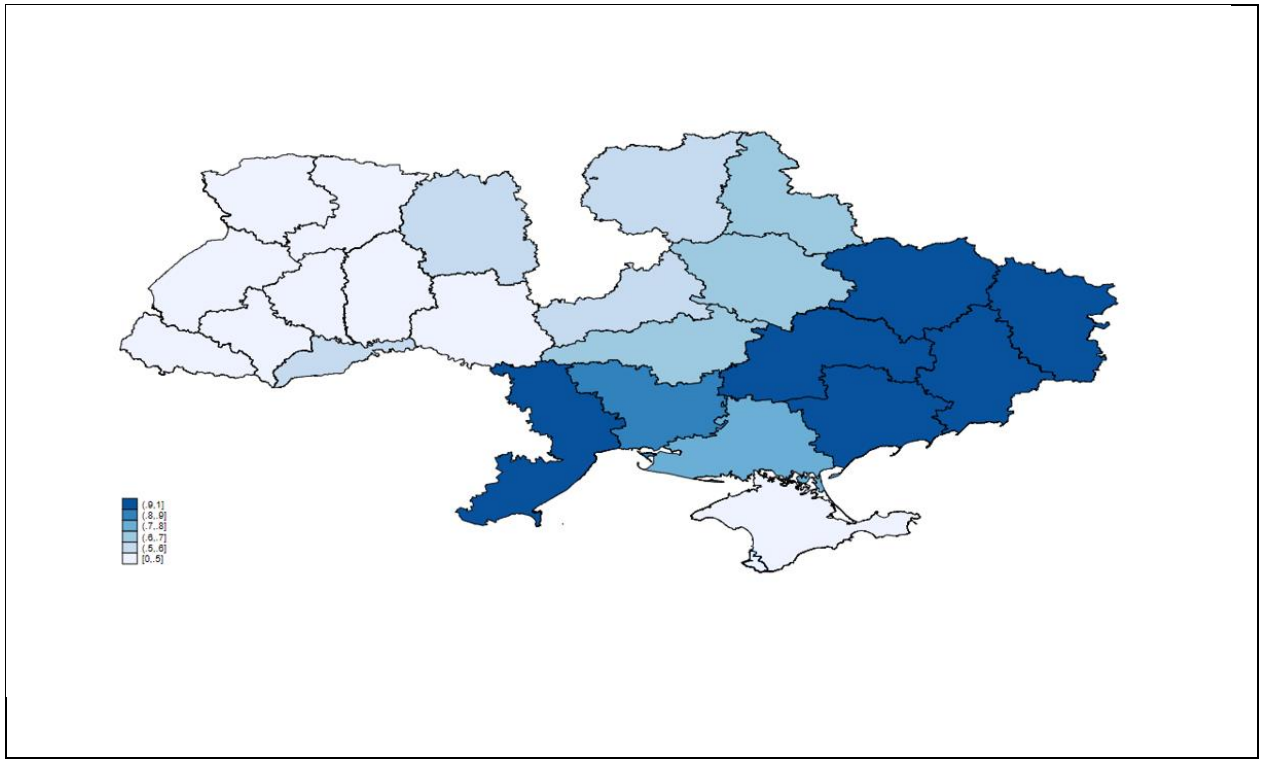
Source: Own compilation based on State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census.

Figure 16: Paper 2 Appendix - SLDV Reg., Risk-Sharing within UA., 2003 to 2013



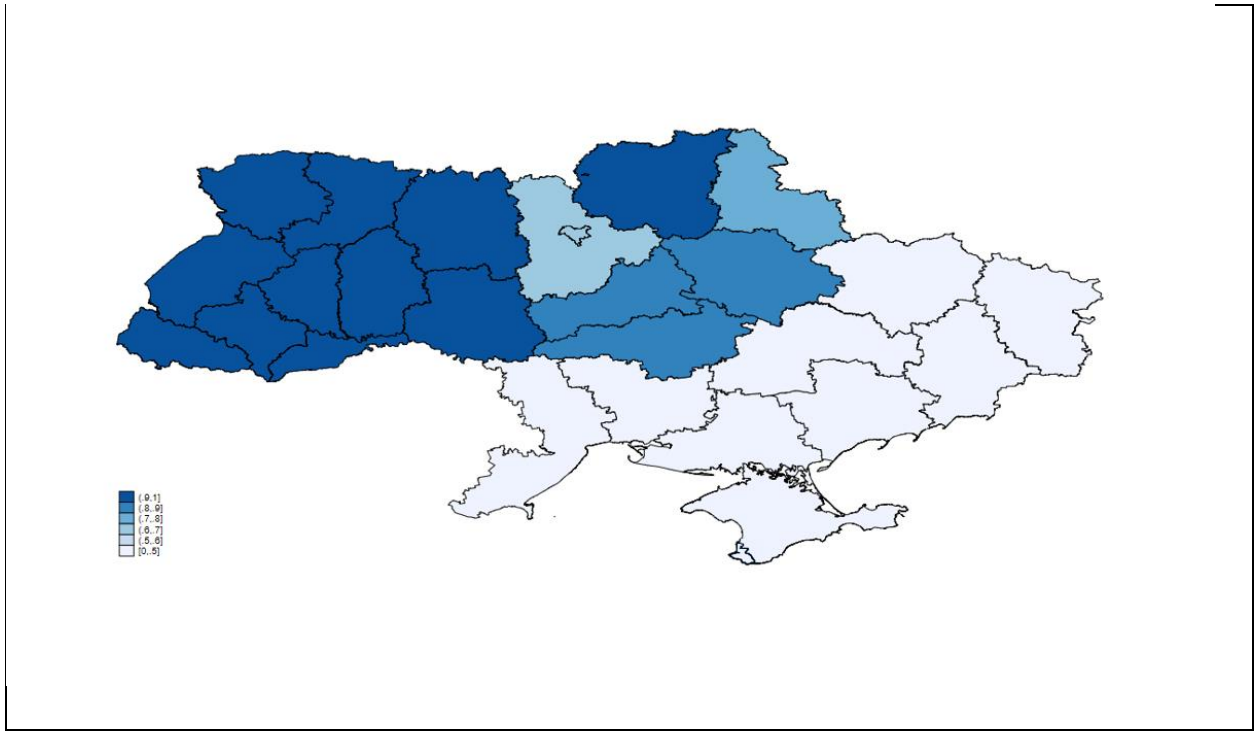
Source: Own compilation based on State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census.

Figure 17: Paper 2 Appendix - FE Reg. without Kyiv, Risk-Sharing within UA., 2003 to 2013



Note: Kyiv region and city are excluded on purpose.
Source: Own compilation based on State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census.

Figure 18: Paper 2 Appendix - FE Reg. Wartime, Risk-Sharing within UA, 2014 to 2016



Source: Own compilation based on State Statistics Service of Ukraine, the National Bank of Ukraine, and the 2001 Ukraine Population Census.

Further Exploration of Heterogeneity

As additional robustness check we perform further analysis of ethnic heterogeneity. Our results hold true, even when a much deeper analysis of ethnic composition is performed. We include people from other former Soviet Union countries (excluding Baltic States), members of ethnic groups in East Europe and West Europe, and selected Asian nationals (China, Korea, Japan and India). Extreme values of homogeneity (i.e., 0 or 100% Ukrainians) are sparse. The share of Ukrainian nationality is at least 24% and never more than 98% and this value is also reported only in two regions, Ivano-Frankivsk and Ternopil. We also included quadratic terms for the main minorities (Russian and Tatars). Alternatively, we also included the Shannon index. The results are highly similar to our preferred estimations.

Table 19: Paper 2 Appendix - Shannon-Index, 2003 to 2013

	(1)	(2)	(3)	(4)
$\tilde{Y}_{it}$	0.676***	0.765***	0.911***	0.968***
	(0.159)	(0.173)	(0.246)	(0.208)
$\tilde{Y}_{it} \times rus$	-0.038***	-0.038***	-0.078**	
	(0.007)	(0.008)	(0.032)	
$\tilde{Y}_{it} \times tat$	0.198***	0.190***	0.177	
	(0.032)	(0.037)	(0.615)	
$\tilde{Y}_{it} \times fsu$		-4.465		
		(7.787)		
$\tilde{Y}_{it} \times EU\ West$		5.285		
		(8.837)		
$\tilde{Y}_{it} \times EU\ East$		-1.692		
		(8.267)		
$\tilde{Y}_{it} \times sq\ rus$			9.738	
			(6.671)	
$\tilde{Y}_{it} \times sq\ tat$			-101.624	
			(551.201)	
Shannon index				-1.605***
				(0.364)
No of obs.	275	275	275	275
No of regions	25	25	25	25
R^2_o	0.389	0.422	0.306	0.290

Note: Robust standard errors clustered at regions are reported in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively. Time effects are not reported. [a] - percentage of GRP.
Source: Own computation.

IV. Paper 3: Impact of Governance on Populist Rhetoric

1. Introduction

Over the last 10 years populism has strengthened in many well-established democracies and even more so in relatively fragile democracies around the world. The current populist developments in Russia show how dangerous populists can be for regional and even global stability (Chandler, 2022). Putin, the president of the Russian federation, speaks from "a special military operation" with the goal of "demilitarization" and "denazification" of the Ukraine (Osborn & Nikolskaya, 2022; Rossoliński-Liebe & Willems; 2022). This is an extreme example of how policymakers use their rhetoric to put forward their political agenda. Given the rising importance of populism, we ask the following questions: What leads to populist rhetoric? And, what is the correlation between governance[24] and populist rhetoric?

While populist rhetoric is most often used by radical left-wing or right-wing politicians with nationalist backgrounds, it is not exclusively limited to them. De Vreese et al. (2009) define populism as a communication phenomenon, where political leaders use out-group rhetoric against capitalists (left) and against immigrants (right). In their speeches populists declare to defend the interests of "the people" against those of the elites, banks, multinational firms, immigrants, and other foreign institutions (Kaltwasser, 2018, Edwards, 2019). Therefore, we refer to populist rhetoric as a particular way to transport specific ideas which often over-simplify and promise easy solutions to complex phenomena. Thereby, populist rhetoric is not bound to an individual politician, which implies that charisma is not an essential feature of populist leaders (Pappas, 2016). In addition, Mudde (2004) and Stanley (2009) call populism a "thin ideology" describing a set of (limited) ideas in politics, which are then combined with full ideologies like communism, ecologism, nationalism, or socialism. Overall, populism is a political trend and communication strategy that uses divisive rhetoric.

Previous researchers have investigated various cultural and economic causes of populism (Ingelhart & Norris, 2016; Mudde & Kaltwasser 2018; Aiginger, 2020). Among them, Stankov (2020) who focuses on identity shocks, ongoing globalization, and the feeling of being unfairly treated. Regarding the relation between populism and institutions, a substantial body of literature in political science argues that populism undermines the quality of institutions. For example, Rode et al. (2014) find that populist governments reduce economic freedom, which comes along with an decrease in legal security and increase in economic regulations. In addition, Keefer, et al. (2021) show that low

[24] With governance, we refer to institutions that work especially well in the context of political freedom, political stability, regulatory quality, governance efficiency, rule of law, and anti-corruption.

trust erodes institutions and leads to the electoral appeal of populists and their rhetoric strategies. Moreover, Hartwell and Devinney (2021) argue that during COVID-19 institutions were subverted for actions far beyond their original conception. In comparison, our argument is that institutions that contribute to high-quality governance can help to mitigate the general prevalence of populist rhetoric and related trends. Accordingly, we propose that the amount of rhetorical populist discourse is dependent on the institutional environment, as measured by the governance quality dimensions of the World Bank, since good governance reduces the likelihood of unaddressed societal grievances and latent points of frustration. We focus on populist rhetoric instead of electoral success, because most likely not only the far left and far right parties use a more incendiary language today but increasingly also mainstream parties and politicians.

More precisely, we analyze the effect of the World Bank's six worldwide governance indicators (WGI) on populist rhetoric. Thereby, we control for refugee immigration, merchandise trade, the unemployment rate, communication infrastructure, and one-party dominance. Our sample consists of 40 developing and developed countries and covers the period from 2000 to 2018. We start with an ordinary least square (OLS) model and control for fixed effects. We continue with a random intercept and a random slope (mixed effects) (ME) model to control for governmental heterogeneity within the data. As a robustness check, we use a quasi-maximum likelihood (QML) linear dynamic model to control for endogeneity. Moreover, we use a spatial model to control for the fact that the political rhetoric of neighboring countries may spill over to the home country.

Our fixed effects model results and random slope model results suggest that good governance reduces populist rhetoric. However, we show that a certain threshold of governance is necessary to mitigate populist rhetoric. The dynamic models confirm previous results for governance effectiveness and rule of law and highlight the importance of controlling for dynamic effects. Finally, the results of our spatial model confirm previous results for five worldwide governance indicators and show that populist rhetoric can spill over to nearby countries.

The structure of the paper is as follows: Chapter 2 reviews previous literature in the context of populist determinants and explains the nexus between governance and populist rhetoric. Chapter 3 describes the data, explains the empirical strategy, and presents the results. Chapter 4 summarizes and concludes.

2. Literature Review

2.1 Determinants of Populism

There are various reasons for the increased popularity of populist parties and their rhetoric discourse: To gain insight into this phenomenon, scholars have explored a range of economic and

cultural factors that may have contributed to the attractiveness of populist politics and rhetoric among voters, such as low economic growth, high unemployment, and a sense of unease regarding the values of liberal Western societies (Aiginger, 2020). In addition, authors like Ingelhart & Norris (2017) and Kende & Krekó (2020) underscored the relevance of xenophobic responses to immigration in Europe and the U.S., while other related work emphasis the importance of an increasing backlash against globalization worldwide (Rooduijn & Burgoon, 2018; Matthes & Schmunck, 2017). Moreover, Gavresi and Litina (2021) show that individuals who experienced a macroeconomic shock at the age of 18 to 25, are more prone to voting for populist parties and trust less in national and European institutions. Likewise, Nowakowski (2021) shows that unhappy people – and not merely dissatisfaction with governments – could have played a lead role in the rise of European populism. Lastly, Gozgor (2021) shows in a panel study of 24 EU countries, that a higher level of overall uncertainty increases total populism and right-wing populist voting behavior. The use of populist rhetoric is a promising communication strategy to increase public attention and electoral success. It is used by many politicians, nevertheless it is difficult to state who is a populist. Vladimir Putin is a good example for this, while Chandler (2022) classifies him as an exemplary populist, Burrett (2020) concludes that while his rhetoric is largely populist, his policy actions are rather not populist. Also, conservative politicians like Donald Trump and Boris Johnson are potential populists. They make use of easy-to-understand and dispositional rhetoric arguments to re-direct anxieties toward international organizations, such as the European Union, and outsiders in general. On the other side of the political spectrum, Nicolás Maduro, a controversial president of the Bolivarian Republic of Venezuela, and Evo Morales, ex-president of Bolivia, represent left-wing politicians with strong anti-capitalist rhetoric.

Stankov (2020), and so will we in the context of populist rhetoric, focuses on three key reasons that explain the emergence of populistic trends: Identity shocks, ongoing globalization, and the feeling of being unfairly treated. First, identity shocks are driven primarily by immigration. With their votes for right-wing populists, citizens may seek to impose additional costs on outsiders, even if such parties espouse detrimental economic policies that could harm the voters themselves. This phenomenon is particularly evident in well-developed and rich regions such as Western-Europe or North America. Second, the ongoing globalization with its distributive effects on trade, is another factor that can contribute to the rise of populism. Domestic employees and producers who feel threatened by import competition may resist trade liberalization and vote for protectionist populism, especially if their sector of production is negatively impacted by international trade. This dynamic is more prevalent in developing regions, such as in Latin America, where especially anti-capitalist and left-wing populism may gain traction. Finally, the feeling of fairness is determined by subjective

perceptions of inequality. Countries with high rates of involuntary unemployment may have a larger population of marginalized voters who feel unfairly treated by society and the system. Such individuals are more likely to support far-left or far-right parties that promise to address these perceived injustices.

Other authors have found more insights concerning identity shocks (immigration), ongoing globalization, and the feeling of being unfairly treated (unemployment). First, regarding immigration, Mayda (2006) further shows that the skill composition of natives relative to migrants in the destination country is important. A country, which is relatively well endowed with high-skilled individuals, is more likely to be pro low-skilled immigration. On the contrary, a country, which is relatively well endowed with low-skilled individuals, prefers high-skilled immigration. Margalit (2019) further shows that economic insecurity directly related to immigration is not the key explanation for populist votes. According to her, it is the way immigration affects society. Second, regarding ongoing globalization, Autor et al. (2020) show for the USA that growing import competition from China has contributed to a shift to the political right, especially by non-Hispanic Whites. Third, regarding the feeling of fairness, Guriev (2018) shows that an increase in unemployment results in a more negative attitude towards immigrants.

2.2 Nexus between Governance and Populist Rhetoric

Populists draw on numerous channels to spread their messages, for example traditional political campaigning but increasingly targeted social media activities (Nadler, 2019). To support their political agenda, populists often make use of rather aggressive rhetorical statements. Moreover, populist rhetoric may heavily rely on simplifications and framing-blaming attribution (Moffitt, 2016; Busby et al., 2019). Populist rhetoric frequently tries to underscore the negative status quo and offers easily understandable arguments for ongoing conflicts. Thereby, populist rhetoric often focuses on contemporary socioeconomic problems and highlights the powerlessness as well as the "made" mistakes of the ruling government or their opposition. In other words, populist rhetoric juxtaposes the tensions between current shortcomings, e. g. lack of efficient and "fair" administrative processes, and potential threats. Ultimately, these populist discourses prompt doubt, instills fear, fuels anger and create a sense of uncertainty among individuals about the (in)effectiveness of established institutions and administrative processes. These sentiments form the socio-emotional basis of populist attitudes and movements (Rico et al., 2017). Examples of such statements include integration problems within the European Union, or the negative supply-side shock induced by the COVID-19 pandemic (Danaj et al., 2018; Hartwell & Devinney, 2021).

North (1991) states that "[institutions] produce a set of economic rules of the game (with enforcement) that induce sustained economic growth". Therefore, institutions reduce uncertainty and determine the transaction and production costs of enterprises (Williamson's, 1981). Put differently, institutions provide individuals and organizations with safety and predictability about economic and political actions. Institutions can be formal or informal. While formal institutions are laws, regulations, and legal agreements, informal institutions are norms, routines, and cultural traditions (North, 1991; Leftwich & Sen, 2010). The institutional context of a given country encompasses a large variety of single institutions, which all together contribute to the overall governance system. Following the methodology of the World Bank, we therefore refer to governance as the aggregated institutions and traditions on which authority and mutual respect is based (Kaufmann et al., 2010). The worldwide governance indicators therefore account on an aggregate level for single institutions like the prevalence of corruption, intellectual property protection, the existence of anti-discriminatory tariffs, government stability, and availability of public infrastructure.

Building on North and Williamson's (1985) new institutional theory, we argue that well established institutions and respectively good governance not only bring sustained economic growth but can also mitigate populist rhetoric. The mechanism behind our argumentation is that institutions and efficient governance structures increase trust in institutions, politics, and administration. This leads to confidence and satisfaction, which is beneficial for both business and trade (Slangen & van Tulder, 2009). Economic development, reduced unpredictability, and social well-being makes citizens less prone to populist propaganda.

Institutional uncertainty due to a populist discourse reduces the entrepreneurial activities (Milliken, 1987; Bennett et al. 2022). Furthermore, this research also suggests, that populists use their rhetorical practices primarily to deconstruct and sabotage existing institutions, especially if the aggregated quality of institutions and governance are weak. Therefore, low-quality governance might foster the more aggressive populist rhetoric, whereas high-quality governance may mitigate populist rhetoric. See Figure 2 in the synopsis of this dissertation for a graphical illustration.

In line with this argument, prior research on election outcomes shows that an increase in uncertainty increases the success rate of populist candidates. Hartwell (2022) further shows that electoral populist success increases volatility in financial markets in the short run, and in the long run country conditions matter for market returns. During times of uncertainty, citizens have pronounced preferences for redistribution, negative sentiments against the ruling political class, and a more inclined desire for more pragmatic as well as non-bureaucratic solutions (Gozgor, 2021). Populist parties offer simplistic solutions to address this feeling of uncertainty. In this regard, the populist

discourse and rhetoric offer reductionist premises to fill this void of uncertainty. Thereby, populist rhetoric not only aims to please the people´s need for security but might also try to erode these institutional environments. In other words, populists may make use of the overall institutional uncertainty to push the boundaries further and reshape their own institutional context to overcome the inherent institutional persistence (Hartwell & Devinney, 2021).

To assess the quality of governance and its impact on populist rhetoric, we look at the governance indicators introduced by the World Bank (Kaufmann et al. 1999, Kaufmann & Kraay, 2002, Kaufmann et al. 2010). By summarizing individual measures of single formal and informal institutions these indicators capture the following six areas of governance: *Voice and accountability* focuses on democratic values, secured human rights, and the freedom of the press and of association. *Political stability and absence of violence* summarizes perceptions of the likelihood of political instability. *Governance effectiveness* describes the quality of public administration. *Regulatory quality* illustrates the ability of the government to implement sound policies that promote private sector development. *Rule of law* measures the confidence in contract enforcement, property rights, the police, and the courts. Finally, *control of corruption* shows whether the government is fighting collusion within elites and private interests.

In the context of populist rhetoric, *Voice and accountability* (VA) ensures that democratic values such as freedom of the press are upheld. An open critical discussion will reveal the arguments of populists and categorize these as exaggeration and severe simplification. Consequently, populist rhetoric should receive less support. *Political stability and absence of violence* (PV) is the basis for prosperity. Populist propaganda should be less attractive to people in politically stable and peaceful countries. *Governance effectiveness* (GE) minimizes opportunistic behavior and increases the efficiency of a well-structured bureaucracy. This leads to citizen satisfaction and should therefore result in less populist rhetoric. *Regulatory quality* (RQ) promotes private sector development through sound polices which fight discriminatory taxes and other unfair and collusive competitive practices. This has an impact on the ease of starting a business, which should also reduce the attractiveness of populist rhetoric. *Rule of law* (RL) creates a climate of trust and innovation through property rights protection, which in turn increases confidence in contract enforcement and institutions in general, again making populist electorally less attractive. Finally, the *control of corruption* (CC) in relation to the fraudulent and abusive behavior of powerful decision makers leads to stability, fairness, and trust. Confidence and assertiveness should please citizens and thus result in less populist rhetoric.

3. Empirical Analysis

3.1. Data Description

Our primary populist rhetoric data has been retrieved from the varieties of party identity and organization database, which is provided by the independent *Varieties of Democracy Research Institute* (V-*Dem*). In addition, an alternative indicator of populist rhetoric is gained from the global populism database, which is provided by the platform *Team Populism*. Both indicators use the rhetoric of politicians as a basis, while we also use the latter to strengthen our findings.

The V-Dem data source is based on expert-coded assessments of party organization and identity. The 665 experts rated to what extent do policy maker use populist rhetoric.[25] We use the median of the populist rhetoric score of the different parties to obtain a populist rhetoric score for a country in a certain year. In comparison, the Team Populism data provides insights into the extent of right- and left-wing populist rhetoric in 728 speeches of governmental leaders around the world.[26] The final list of 40 developing and developed countries includes the eight largest in the Americas and the seven largest European countries (Lewis et al. 2019). The period of our analysis covers the years from 2000 to 2018.

Our summary statistics (Table 20) shows that the variable *populist rhetoric* (V-Dem) ranges between approximately 0 and 1. The *alternative populist rhetoric* score (Team Populism) ranges from 0 to about 2. The explanatory variables of main interest are the six *worldwide governance indicators*, which range between approximately -2.5 and +2.5. To operationalize the three factors identified by Stankov (2020) that lead to growth of populist sentiments and populist attitudes among individuals, resulting in an increased probability of more radical populist rhetoric, we use the following variables: The variable *refugee immigration* (four-year change in asylum seekers as percentage of total population) represents the perceived identity shock and lies between -0.28% and 1.41%. *Merchandise trade* (four-year change in merchandise trade as percentage of GDP) as a proxy for international trade intensity lies between -49.61% and 71.36%. The *unemployment rate* (four-year change in unemployment as percentage of labor force) ranges between -9.84% and 13.53% and approximates the people´s perception of fairness for a given year in a particular country. Furthermore, we add the *fixed telephone subscription variable* (per 100 people), to control for communication infrastructure and access to public information networks. We have a range between roughly 2 and 68 telephone connections per 100 people. Finally, the *dummy for one-party*

[25] We use the "v2xpa_popul" variable, which is based on the following question: To what extent do representatives of the party use populist rhetoric? Scale: Interval, from low to high (0-1).

[26] The grades of populism were derived using textual analysis of speeches to gauge levels of populism. In collaboration with the Guardian, Kirk Hawkins - from Brigham Young University Department of Political Science - and his team trained and supervised 46 paid researchers who examined the speeches of political leaders in 13 different languages.

dominance is 1 if a party ruled a country at least 12 years during the time of our data coverage.[27] Table 1 shows our descriptive statistics. In addition, Table 26 in the appendix shows a list of all analyzed variables and their data sources.

Table 20: Paper 3 - Data Description, 2000-2018

	Count	Mean	SD	Min.	Max.
Dependent Variables					
Populist Rhetoric Score (*V-Dem*)	698	0.404	0.173	0.083	0.967
Alternative Populist Rhetoric Score (*Team Populism*)	704	0.331	0.427	0.000	1.917
Explanatory Variables					
Voice and Accountability	674	0.557	0.697	-1.414	1.739
Political Stability and Absence of Violence	674	0.105	0.779	-2.374	1.610
Governance Effectiveness	674	0.413	0.905	-1.582	2.122
Regulatory Quality	674	0.500	0.858	-2.334	2.047
Rule of Law	674	0.286	1.034	-2.339	2.038
Control of Corruption	674	0.303	1.022	-1.468	2.313
General Governance Index	674	0.361	0.837	-1.747	1.832
Control Variables					
ΔRefugee Immigration (% of population)	525	0.022	0.120	-0.280	1.411
ΔMerchandise Trade (% of GDP)	531	1.812	12.013	-49.607	71.356
ΔUnemployment (% of labor force)	535	-0.530	2.912	-9.838	13.533
Fixed Telephone Subscriptions (Per 100 people)	702	26.795	16.617	1.617	68.413
One-Party Dominance	760	0.291	0.454	0.000	1.000

Source: Own computation based on data provided by V-Dem, Team Populism, WGI, UNHCR, and WDI.

We also displayed the populist rhetoric score in a world map for the years 2001 and 2018 respectively. Figures 8 and Figure 9 in the synopsis of this dissertation clearly show that populist rhetoric has increased within the world in the last two decades. For a list of our full sample and subsamples, see Table 27 and 28 in the appendix.

[27] We also experimented with other thresholds around a variation of 2 years, e. g. 10 years, to test the robustness of our results. These alternative specifications do not change our findings.

3.2 Methodology and Results

In our analysis we use four different methodologies: First, a fixed effects model, which includes country effects indicated by α_i, and time fixed effects indicated by δ_t. Country fixed effects control for country-specific heterogeneity between countries, which is constant over time. Similarly, time fixed effects control for effects that are constant across countries but vary over time. Including fixed effects reduces omitted variable bias.

$$populist\_rhetoric_{it} = \beta_0 + \sum_{k=1}^{K} \gamma_k \, gov_{it}^{k} + \beta_1 immig_{it} + \beta_2 trade_{it} + \beta_3 unem_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (1)$$

Table 21 shows our FE model results. The coefficients of all six governance indicators are negative and statistically significant. In addition, the correlation between the general governance index (the mean of all six governance indicators) and populist rhetoric is also negative and highly statistically significant.

Table 21: Paper 3 - FE Model, Determinants of Populist Rhetoric, 2000 to 2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and Accountability	-0.108**						
	(0.042)						
Political Stability		-0.055**					
		(0.021)					
Governance Effectiveness			-0.062*				
			(0.033)				
Regulatory Quality				-0.110***			
				(0.032)			
Rule of Law					-0.162***		
					(0.046)		
Control of Corruption						-0.093***	
						(0.030)	
General Governance Index							-0.206***
							(0.045)
ΔRefugee Immigration	0.044**	0.033	0.041*	0.050***	0.037*	0.044**	0.026
(% of population)	(0.020)	(0.023)	(0.023)	(0.017)	(0.019)	(0.017)	(0.017)
ΔMerchandise Trade	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001
(% of GDP)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ΔUnemployment	-0.003	-0.004*	-0.004*	-0.004**	-0.003*	-0.004**	-0.004*
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Telephone Subscriptions	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.068**	0.079**	0.075**	0.061**	0.059**	0.081***	0.068**
	(0.028)	(0.031)	(0.031)	(0.027)	(0.025)	(0.029)	(0.027)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	519	519	519	519	519	519	519
R^2	0.212	0.210	0.196	0.229	0.259	0.219	0.259

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively. We include country-fixed effects and time-fixed effects.
Source: Own computation.

In line with our theoretical prediction, governance is significantly related to the use of populist rhetoric. By contrast, we find only limited support for the nexus between the three types of socio-economic shocks and the rise of populist tendencies, as suggested by previous researcher. Interestingly, the results show a weak but significant negative correlation of the unemployment rate and populist rhetoric. This stands as a contradiction to the common understanding that a difficult economic period might fuel preferences for populists and, hence, boost the usage of populist rhetoric. The results indicate that people put more trust in established non-populist parties during recessions. Similarly, the non-significant negative correlation between merchandise trade and populist rhetoric highlights that people understand the importance of the gains from globalization and therefore do not support populist protectionist rhetoric. The variable refugee immigration shows a positive correlation with populist rhetoric, which is in accordance with prior research. The fixed telephone subscription variable, as proxy for communication infrastructure, is also statistically insignificant in regard of populist rhetoric. Finally, our one-party dominance dummy suggest that populist rhetoric is more common in countries with one powerful party. Important to note is, that all five control variables have relatively small coefficients compared to the worldwide governance indicators.

Overall, our fixed effects results show that efficient governance can mitigate populist rhetoric. Moreover, we show that policymaker use more populist rhetoric when one-dominant party is ruling the country, and external shocks exhibit a higher amount of uncertainty due to refugee immigration. Second, to reflect the heterogeneity of the countries analyzed, we use a linear mixed-effects model of populist rhetoric and governance institutions with random intercepts and random coefficients to account for between and within country effects. This allows each country line to have a different intercept and a different slope, which means the explanatory variable – governance – has a different starting point and different effects for each country. Therefore, an additional random term μ_i is included so that it can be different for each country (StataCorp. 2021a; Gelman & Hill, 2006).[28] For a graphical illustration, see Figure 19 in the appendix.

$$populist\_rhetoric_{it} = \beta_0 + \sum_{k=1}^{K} \gamma_{\mathrm{ik}}\, gov_{it}^{k} \; + \beta_1 immig._{it} + \beta_2 trade_{it} + \beta_3 unem_{it} + \mu_{0i} + \mu_{1i} p\_r_{it} + \delta_t + \varepsilon_{it} \qquad (2)$$

Table 22 shows our mixed effects results, which are robust. All six governance indicators are negatively correlated with the use of populist rhetoric, while the refugee immigration variable and

[28] For the multi-level structure of model 2, we use the governance institutions score of a certain country in a certain year as level 1, and the country as level 2.

the one-party dominance verifiable remains positive. In the short run, the increase of governance indicators by one standard deviation reduces populist rhetoric by 0.042 (political stability) to 0.109 (rule of law).[29]

Table 22: Paper 3 - Random Slope Model, Det. of Populist Rhetoric, 2000 to 2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and Accountability	-0.109***						
	(0.031)						
Political Stability		-0.054***					
		(0.020)					
Governance Effectiveness			-0.059***				
			(0.021)				
Regulatory Quality				-0.100***			
				(0.023)			
Rule of Law					-0.105***		
					(0.028)		
Control of Corruption						-0.065***	
						(0.025)	
General Governance Index							-0.141***
							(0.027)
ΔRefugee Immigration	0.046**	0.027	0.043*	0.045***	0.036**	0.050***	0.034**
(% of population)	(0.020)	(0.022)	(0.022)	(0.016)	(0.017)	(0.017)	(0.017)
ΔMerchandise Trade	-0.001	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001
(% of GDP)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
ΔUnemployment	-0.003	-0.003	-0.004*	-0.004*	-0.003	-0.003*	-0.003*
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Telephone Subscription	-0.001	-0.000	-0.001	-0.001	-0.000	-0.001	-0.001
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.068**	0.084***	0.072**	0.055**	0.055**	0.070**	0.067**
	(0.029)	(0.032)	(0.031)	(0.026)	(0.024)	(0.032)	(0.029)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	519	519	519	519	519	519	519
Log Likelihood	666.157	670.441	659.176	676.064	686.738	671.704	675.115

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively. We include random country effects and time-fixed effects.
Source: Own estimation.

In addition, the results of our mixed effects model are confirmed when using the alternative populist rhetoric score (Team Populism) as the dependent variables. The effects are stronger for the alternative populist rhetoric variable. This means that, even though both indicators use populist rhetoric as a base, they are not perfectly correlated. For more details, see Table 30 in the appendix. To explore further the underlying mechanisms that may drive the increase in populist rhetoric, we conduct the following tests: (a) We test if the single effects of the governance indicators and refugee immigration, the governance indicators and merchandise trade, as well as the governance indicators and the unemployment rate also have an additional multiplicative impact on populist rhetoric. Therefore, we include interaction terms for all combinations. However, we do not find robust results

[29] Coefficients of governance indicators multiplied with its standard deviation. For more details, see Table 29 in the appendix.

that these interaction terms have an effect on populist rhetoric. Regarding the interaction term of the governance indicators and refugee immigration, only two out of six interaction terms are statistically significant (see Table 31 in the appendix) (b) We then test if post-populist experience has an impact on populist rhetoric. We add a post-populist categorical variable, defined as a "populist" or "very populist" speech category in the year between 2000 and 2004. The results remain robust and show that post-populist experience increases populist rhetoric. This finding supports the assumption that populist rhetoric fosters uncertainty, and thereby reinforces populist tendencies as well as the perception of institutional qualities (see Table 32 in the appendix). (c) In addition, we test if our findings regarding populist rhetoric were caused by major changes in just a few countries, or if populist rhetoric is a widespread global phenomenon. We run a subsample where we exclude the most populist countries (Venezuela, Turkey, Bolivia, and Ecuador). In this subsample, the results remain robust (see Table 33 in the appendix).

To obtain more insights into the effect of governance on populist rhetoric, we split our sample into countries with a low level of governance quality as well as countries with a medium and high level of governance quality. Table 23 presents the random slope results of our subsamples. It shows that the effects of the world governance indicators on populis rhetoric are more pronounced for the subsample of countries with a medium and high level of governance quality. This suggests that a given threshold of governance quality supports the potential to mitigate populist rhetoric. It is also interesting to note that the sign of the coefficient of refugee immigration even turns from positive to negative in countries with a low level of institutional quality, suggesting that immigrants in these countries lead to less populist rhetoric. This is in line with Mayda (2006) who argues that a country, which is relatively well endowed with low-skilled individuals, prefers high-skilled immigration. Threats of immigration may be more relevant for countries that have already achieved a certain standard of living. Therefore, populists in countries with a high governance quality may focus on the loss of identity due to immigration, while populists in countries with a low governance quality may not depict immigration as a major concern, but instead focus more on inequality within the country.

Table 23: Paper 3 - Random Slope Model Subsamples, Det. of Pop. Rhe., 2000-2018

	Countries with a medium and high level of institutional quality							Countries with a low level of institutional quality						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Voice and	-0.151***							0.005						
Accountability	(0.032)							(0.067)						
Political Stability		-0.045**							-0.072					
		(0.021)							(0.062)					
Governance			-0.053*							-0.104***				
Effectiveness			(0.028)							(0.035)				
Regulatory				-0.084***							-0.113**			
Quality				(0.024)							(0.053)			
Rule of Law					-0.085***							-0.140		
					(0.027)							(0.137)		
Control of						-0.061**							-0.151*	
Corruption						(0.029)							(0.083)	
General Gov.							-0.143***							-0.220**
Index							(0.035)							(0.087)
ΔRefugee Immigr.	0.032*	0.027	0.040*	0.045***	0.036*	0.043***	0.034*	-0.459***	-0.598***	-0.607***	-0.469***	-0.236***	-0.661***	-0.583***
(% of population)	(0.017)	(0.023)	(0.021)	(0.017)	(0.020)	(0.017)	(0.018)	(0.092)	(0.086)	(0.061)	(0.081)	(0.074)	(0.110)	(0.083)
ΔMerch. Trade	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.002	-0.000	-0.002	-0.002	-0.001	-0.002	-0.002
(% of GDP)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
ΔUnemployment	-0.002	-0.003	-0.003	-0.003	-0.002	-0.002	-0.003	-0.014***	-0.010**	-0.015***	-0.014**	-0.014***	-0.014***	-0.013**
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.006)
Telephone Subsc.	-0.001	-0.000	-0.001	-0.001	-0.000	-0.001	-0.001	-0.002	0.001	-0.003	-0.004	0.005	-0.006	-0.004
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.005)	(0.004)
One-Party	0.070***	0.084**	0.071**	0.062*	0.062**	0.071**	0.069**	0.047	0.057**	0.036	0.024	0.079**	0.032	0.023
Dominance	(0.027)	(0.038)	(0.036)	(0.034)	(0.030)	(0.033)	(0.029)	(0.029)	(0.023)	(0.033)	(0.030)	(0.031)	(0.026)	(0.032)
No. of Countries	31	31	31	31	31	31	31	9	9	9	9	9	9	9
No. of Obs.	400	400	400	400	400	400	400	119	119	119	119	119	119	119
Log Likelihood	564.327	550.601	553.859	560.037	559.883	564.595	563.991	141.622	157.200	142.922	143.531	153.324	144.624	145.847

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively. We include random country effects and time-fixed effects.
Source: Own computation.

3.3 Robustness Checks

In addition to previous tests and model specifications, we use a dynamic model to control for endogeneity of governance and populist rhetoric. This is important, as governance may influence populist rhetoric, but also because populist rhetoric may influence governance. We use a quasi-maximum likelihood (QML) estimator for dynamic fixed-effects models (Hsiao et al., 2002).

Endogeneity concerns may threaten the validity of our overall estimated results. While it seems reasonable to assume that our governance indicators are more prone to inertia then populist rhetoric, we nevertheless address this reverse causality issue in a technical way. To eliminate the presence of such a correlation between an endogenous variable with the error term of the model, dynamic panel models make use of lagged variables as additional regressors. Hence, in this model specification the lagged dependent variable serves as an exogenous instrument that removes the potential correlation of endogenous variables with the error term. Specifically, we use a quasi-maximum likelihood (QML) estimator for our dynamic fixed-effects model that is more efficient and less prone to weak instrument concerns like other GMM approaches (Hsiao et al., 2002). To make sure that our models converge, we included only the six worldwide governance indicators and the three control variables: refugee immigration, merchandize trade, and the unemployment rate.

$$\text{populist\_rhetoric}_{it} = \beta_0 + \text{p\_r}_{it-1} + \sum_{k=1}^{K} \gamma_k \, \text{gov}_{it}^{k} + \beta_1 \text{immigr}_{it} + \beta_2 \text{trade}_{it} + \beta_3 \text{unem}_{it} + \alpha_i + \varepsilon_{it} \quad (3)$$

Table 24 shows the QML regression results. The findings only partly confirm previous results, namely for governance effectiveness and rule of law. However, the results show that it is important to control for dynamic effects.

The results of our dynamic model underscore the need to consider a potential reinforcing effect of populist rhetoric. Put differently, while the quality of governance has the potential to mitigate populist rhetoric, populists in power aim to change the governance infrastructure to further support populist tendencies.

Table 24: Paper 3 - Quasi Maximum Likelihood Model, Det. of Pop. Rhe., 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
L.Populist Rhetoric	0.859***	0.950***	0.819***	0.813***	0.779***	0.878***	0.845***
	(0.047)	(0.037)	(0.047)	(0.058)	(0.059)	(0.094)	(0.061)
Voice and Accountability	-0.027						
	(0.025)						
Political Stability		0.003					
		(0.007)					
Governance Effectiveness			-0.041**				
			(0.021)				
Regulatory Quality				-0.014			
				(0.022)			
Rule of Law					-0.061**		
					(0.028)		
Control of Corruption						-0.045	
						(0.029)	
General Governance Index							-0.035
							(0.030)
ΔRefugee Immigration	0.015**	0.008	0.007	0.036***	0.022***	0.004	0.011
(% of population)	(0.007)	(0.008)	(0.011)	(0.011)	(0.007)	(0.012)	(0.008)
ΔMerchandise Trade	0.000	-0.000	-0.000	-0.000	0.000	-0.001	-0.000
(% of GDP)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
ΔUnemployment	-0.001**	-0.001*	-	-	-	-0.003	-
			0.003***	0.003***	0.002***		0.002***
(% of labor force)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
No. of Countries	34	34	34	34	34	34	34
No. of Observations	418	418	418	418	418	418	418
Log Likelihood	715.289	718.067	721.953	720.579	719.293	724.819	721.659

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively. We include country-fixed effects.
Source: Own computation.

Finally, both populist rhetoric and its determinants are likely to be correlated between neighboring countries and proximate countries. On the one hand, populist policies in the home country can act as examples for neighboring politicians. On the other hand, populist policies in the home country can create counter-reactions in neighboring countries. Moreover, unemployment and migration are often spatially correlated across national borders. These effects are more important for neighboring and closely proximate countries than for distant nations. They are likely to create a strong source of cross-sectional correlation. Therefore, as a second robustness check we use a spatial model to control for spatial lags. Our preferred model is the lagged dependent variable regression model. We use an inverse-distance spatial weighting matrix $W \times populism$ (StataCorp. 2021b).

$$populist\_rhe_{it} = ß_0 + W * p\_r_{it} + \sum_{k=1}^{K} Gov_{it}^{k}\ \gamma_{\mathrm{k}} + \beta_1 immigr_{it} + \beta_2 trade_{it} + \beta_3 unem_{it} + \delta_t + \varepsilon_{it} \qquad (4)$$

The results of or spatial lagged dependent variable model are presented in Table 25.

Table 25: Paper 3 - Spatial Model, Determinants of Populist Rhetoric, 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and Accountability	-0.068**						
	(0.027)						
Political Stability		-0.032**					
		(0.016)					
Governance Effectiveness			-0.006				
			(0.025)				
Regulatory Quality				-0.075***			
				(0.024)			
Rule of Law					-0.086***		
					(0.024)		
Control of Corruption						-0.069***	
						(0.022)	
General Governance Index							-0.143***
							(0.034)
ΔRefugee Immigration	0.073**	0.067*	0.077**	0.078**	0.073**	0.070*	0.057
(% of population)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
ΔMerchandise Trade	-0.001**	-0.001***	-0.001**	-0.001***	-0.001***	-0.001**	-0.001***
(% of GDP)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔUnemployment	-0.002	-0.002	-0.002	-0.002*	-0.002	-0.002*	-0.001
(% of lab. force)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Fixed Telephone Subscriptions	-0.001*	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.064***	0.074***	0.071***	0.058***	0.057***	0.071***	0.063***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Spatial Weight Matrix	0.237**	0.269**	0.269**	0.227*	0.288**	0.208*	0.247**
For Populist Rhetoric	(0.116)	(0.115)	(0.115)	(0.116)	(0.113)	(0.117)	(0.114)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	320	320	320	320	320	320	320
Log Likelihood	442.471	441.344	439.445	444.338	445.508	444.481	447.902

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively. We include time-fixed effects.
Source: Own computation.

The results are robust regarding the world governance indicators – five out of six world governance indicators are statistically significant. Our general government index is highly statistically significant, too. The other coefficients are similar compared to our previous results: The coefficients of refugee immigration are once again positive and statistically significant. The coefficients of merchandise trade are negative and statistically significant, indicating that increasing globalization reduces populist rhetoric. The coefficients of the unemployment rate are statistically insignificant. The coefficients of the fixed telephone subscriptions are negative and statistically significant, indicating good communication infrastructure reduces populist trends as people can investigate in the world wide web. However, the coefficients of the latter three variables are very close to zero. Finally, the one-party dominance variable is positive and statistically significant. Moreover, our spatial regression results show a positive spatial correlation between the inverse distance and

populist rhetoric in the home country. This result confirms the complex and reinforcing character of populist tendencies: Populist rhetoric is not just a dynamic phenomenon related to a single country, it can also spill over from nearby countries.

In all four models, we use robust standard errors to controls for heteroscedasticity. We include the governance indicators one by one because of multicollinearity (see for comparison the correlation matrix, Table 34 in the appendix).

4. Conclusions

This paper analyzes the impact of world governance indicators on populist rhetoric. For our estimation, we use a fixed effects model, a random intercept and random slope model, a quasi-maximum likelihood model, and a spatial model. In our estimations, we control for refugee immigration, merchandise trade, the unemployment rate, communication infrastructure, and one-party dominance. Our data show that populism is a widespread, global phenomenon in the 21st century. Moreover, our results indicate a negative correlation between governance and populist rhetoric.

Our random intercept and random slope model results suggest that the worldwide governance indicators reduce populist rhetoric. Furthermore, in an estimation with two subsamples, we show that a certain threshold of governance quality is necessary to mitigate populist rhetoric. While the effects of governance on populist rhetoric are less prevailing for countries with a low level of governance quality, the effects are significant for countries with a medium and high level of governance quality. The variable refugee immigration and one-party dominance are positively and significantly correlated with populist rhetoric. Merchandise trade, the unemployment rate, and fixed telephone subscriptions show partly significant coefficients, which are, however, very close to zero. Our dynamic model confirms previous findings for selected governance indicators and highlights the importance of controlling for dynamic effects. Finally, we document a positive spatial correlation for populist rhetoric, suggesting that populist rhetoric may spill over from countries that are close to the home country.

However, there are a few limitations, which are left for further research. First, endogeneity, i.e. simultaneity and reverse causality, are challenges in our analysis. Acemoglu et al. (2020) show that institutions are inert and thus the worldwide governance indicators suit better as an explanatory variable, but this is an open discussion. Second, the use of textual analysis in combination with expert ratings is merely one method to evaluate the prevalence of populism displayed by political leaders, as noted by Lewis et al. (2019). However, our preferred dependent variable, populist rhetoric (V-Dem), does not exclude the opposition, while our alternative populist rhetoric indicator

(Team Populism; for model comparison see appendix Table 30) solely focuses on the ruling party and disregards the existence of a powerful populist opposition to the government, such as Marine Le Pen in France or Geert Wilders in the Netherlands. Finally, the use of populist rhetoric and its relationship to certain socio-economic shocks and governance might be very sensitive to the country-specific context.

To sum up, the findings that an identity shock through immigration leads to more populist rhetoric is in line with the findings of Stankov (2020). The findings that ongoing globalization and unemployment increases populist rhetoric could not be confirmed. We contribute to previous literature with the finding that well-functioning governance has the potential to mitigate populist rhetoric. Governments that guarantee an open and free discussion, work efficiently, promote private sector development, and protect their citizens and property rights, as well as control corruption, increase trust and can thereby make populist propaganda less appealing. Finally, our analysis highlights the complex character of populist tendencies. Populist rhetoric is highly persistent in time and subject to spillover effects from nearby countries.

The findings may be interesting to policymakers all around the world. It may be a motivation to improve governance transparency though open public data, citizen-participation through deep democracy, and collaboration between ministries. If citizens feel respected by governance practices, and at the same time, the government is accountable for its decisions, this strengthens an atmosphere of trust in institutions, politics, and administration. When institutions are trusted and overall uncertainty is reduced, populist rhetoric loses much of its appeal. In such an environment, citizens tend to be less receptive to oversimplistic and exaggerated arguments made by populist leaders, who often seek to capitalize on people's anger and frustration. Trust in institutions, politics and administration leads to citizen confidence and satisfaction, which makes them less prone to populist propaganda and helps to inoculate society against the allure of populist trends. Trust in institutions thus creates a more efficient and resilient political system.

Appendix of Paper 3

Table 26: Paper 3 Appendix - Definition of Analyzed Variables

Variable	Definition	Source
Populist Rhetoric	Populism score, interval, from low to high (0-1).	Varieties of Democracy (V-Dem): https://www.v-dem.net/en/data/data/v-party-dataset/
Average Populist Rhetoric Score	Average populist rhetoric score, estimate.	Team Populism: https://populism.byu.edu/
Speech Category	*Categorical variable for speech category ranging from not populist, over somehow populist, to populist and very populist.*	Team Populism: https://populism.byu.edu/
Governance institutions	Voice and Accountability, Political Stability and Absence of Violence, Governance Effectiveness, Regulatory Quality and Control of Corruption.	World Governance Indicators (WGI): https://info.worldbank.org/governance/wgi/
Refugee Immigration	Asylum seekers (% of total population).	Refugee Data Finder: https://www.unhcr.org/refugee-statistics/download/?url=E1ZxP4
Merchandise Trade	Merchandise trade (% of GDP).	World Development Indicators (WDI): https://datacatalog.worldbank.org/dataset/world-development-indicators
Unemployment rate	Unemployment, total (% of total labor force).	World Development Indicators (WDI): https://datacatalog.worldbank.org/dataset/world-development-indicators
Telephone Access	Fixed telephone subscriptions (per 100 people).	World Development Indicators (WDI): https://datacatalog.worldbank.org/dataset/world-development-indicators
One-Party Dominance Dummy	If one party ruled a certain country in more than 12 out of 19 years.	Team Populism: https://populism.byu.edu/

Source: See the detailed sources in column three of this table.

Table 27: Paper 3 Appendix - List of Countries

Country Name	Country Name	Country Name
Argentina	France	Peru
Austria	Germany	Poland
Bolivia	Guatemala	Romania
Brazil	Honduras	Russian Federation
Bulgaria	Hungary	Slovak Republic
Canada	India	Spain
Chile	Italy	Sweden
Colombia	Latvia	Turkey
Costa Rica	Mexico	United Kingdom
Croatia	Netherlands	United States
Czech Republic	Nicaragua	Uruguay
Dominican Republic	Norway	Venezuela
Ecuador	Panama	
El Salvador	Paraguay	

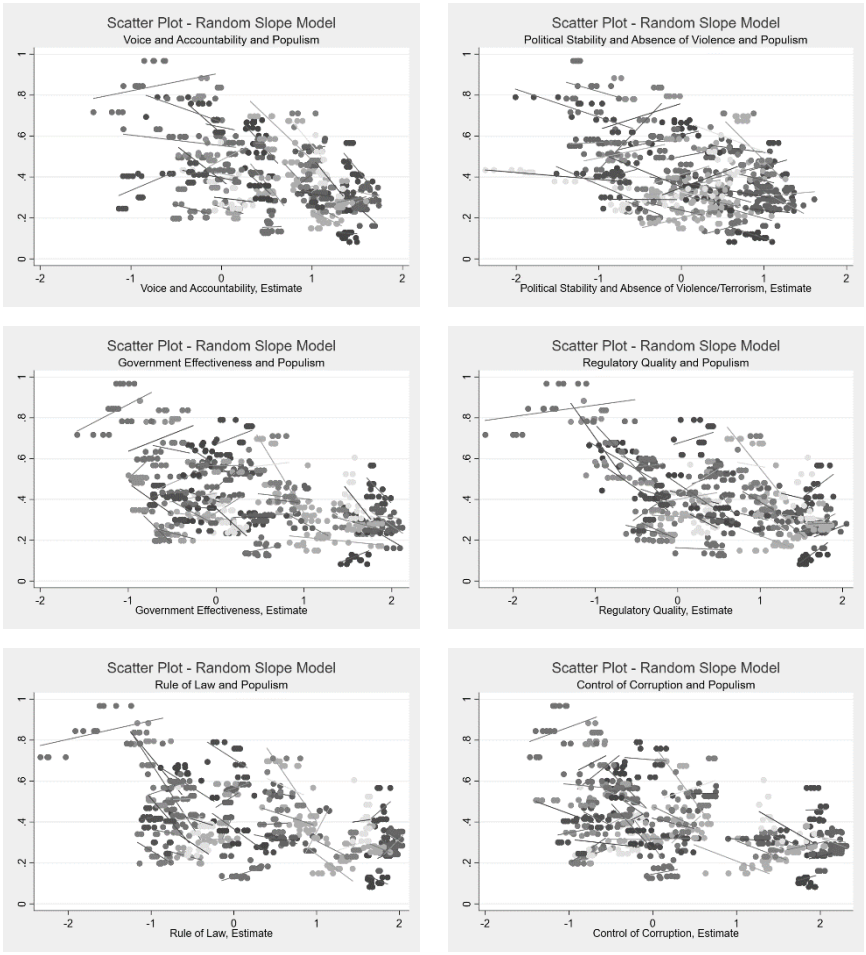
Source: Own compilation.

Table 28: Paper 3 Appendix - List of Counties by Governance Quality

Countries with a high level of governance institutions	Countries with a medium level of governance institutions	Countries with a low level of governance institutions
Austria	Argentine	Bolivia
Canada	Brazil	Colombia
Chile	Bulgaria	Ecuador
Costa Rica	Dominican Republic	Guatemala
Croatia	El Salvador	Honduras
Czech Republic	India	Nicaragua
France	Mexico	Paraguay
Germany	Panama	Russian Federation
Hungary	Peru	Venezuela
Italy	Romania	
Latvia	Turkey	
Netherlands		
Norway		
Poland		
Slovak Republic		
Spain		
Sweden		
United Kingdom		
United States		
Uruguay		

Source: Own compilation.

Figure 19: Paper 3 Appendix - WGI and Populist Rhetoric by Country



Source: Own compilation.

Table 29: Paper 3 Appendix - Effects of Governance on Populist Rhetoric

	Coefficient	×SD	=	Result
Voice and Accountability	-0.109	× 0.697	=	-0.076
Political Stability	-0.054	×0.779	=	-0.042
Governance Effectiveness	-0.059	×0.905	=	-0.053
Regulatory Quality	-0.100	×0.858	=	-0.086
Rule of Law	-0.105	×1.034	=	-0.109
Control of Corruption	-0.065	×1.022	=	-0.066
General Governance Index	-0.141	×0.837	=	-0.118

Source: Own computation.

Table 30: Paper 3 Appendix - Random Slope Model, Det. of Alternative Pop. Rhe., 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and Accountability	-0.362***						
	(0.076)						
Political Stability		-0.150**					
		(0.064)					
Governance Effectiveness			-0.176**				
			(0.073)				
Regulatory Quality				-0.158**			
				(0.069)			
Rule of Law					-0.307***		
					(0.086)		
Control of Corruption						-0.124	
						(0.076)	
General Governance Index							-0.287***
							(0.093)
ΔRefugee Immigration	0.139*	0.062	0.125	0.133*	0.087	0.102*	0.091
(% of population)	(0.072)	(0.065)	(0.079)	(0.078)	(0.060)	(0.057)	(0.060)
ΔMerchandise Trade	0.000	-0.001	-0.000	0.000	-0.000	0.000	-0.000
(% of GDP)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ΔUnemployment	-0.002	-0.003	-0.003	-0.003	-0.002	-0.002	-0.003
(% of labor force)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Fixed Telephone Subscriptions	0.002	0.000	0.001	-0.001	0.001	0.000	0.002
(Per 100 people)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
One-Party Dominance	0.166	0.234*	0.209*	0.185	0.151	0.210*	0.192
	(0.110)	(0.127)	(0.126)	(0.116)	(0.106)	(0.126)	(0.123)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	519	519	519	519	519	519	519
Log Likelihood	-2.377	-3.227	-11.362	-12.088	9.294	-9.707	-3.147

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively.
Source: Own computation.

Table 31: Paper 3 Appendix - Random Slope Model Int. Terms, Det. of Pop. Rhe., 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and Accountability	-0.107***						
	(0.032)						
Political Stability		-0.052**					
		(0.020)					
Governance Effectiveness			-0.056***				
			(0.021)				
Regulatory Quality				-0.099***			
				(0.023)			
Rule of Law					-0.104***		
					(0.028)		
Control of Corruption						-0.061**	
						(0.025)	
General Governance Index							-0.138***
							(0.027)
Voice and Accountability×	-0.083***						
ΔRefugee Immigration	(0.025)						
Political Stability×		-0.082					
ΔRefugee Immigration		(0.051)					
Governance Effectiveness×			-0.050**				
ΔRefugee Immigration			(0.024)				
Regulatory Quality×				-0.012			
ΔRefugee Immigration				(0.022)			
Rule of Law×					-0.010		
ΔRefugee Immigration					(0.015)		
Control of Corruption×						-0.030	
ΔRefugee Immigration						(0.019)	
General Governance Index×							-0.031
ΔRefugee Immigration							(0.022)
ΔRefugee Immigr.	0.150***	0.094*	0.113***	0.061*	0.050*	0.098***	0.076**
(% of pop.)	(0.035)	(0.049)	(0.039)	(0.033)	(0.029)	(0.037)	(0.036)
Merchandise Trade	-0.001	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001
(% of GDP)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Unemployment	-0.003	-0.003	-0.004*	-0.004*	-0.003	-0.003*	-0.004*
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Telephone Subscription	-0.001	-0.000	-0.001	-0.001	-0.000	-0.001	-0.001
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.068**	0.083***	0.071**	0.055**	0.055**	0.070**	0.067**
	(0.029)	(0.031)	(0.031)	(0.026)	(0.024)	(0.032)	(0.028)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	519	519	519	519	519	519	519
Log Likelihood	668.095	671.926	660.488	676.154	686.822	672.458	675.602

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively.
Source: Own computation.

Table 32: Paper 3 Appendix - Random Slope Model Pop. Exp., Det. of Pop. Rhe, 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and	-0.093***						
Accountability	(0.034)						
Political Stability		-0.049**					
		(0.019)					
Governance			-0.047**				
Effectiveness			(0.024)				
Regulatory Quality				-0.092***			
				(0.026)			
Rule of Law					-0.098***		
					(0.030)		
Control of Corruption						-0.053**	
						(0.026)	
General Governance							-0.128***
Index							(0.031)
ΔRefugee Immigration	0.046**	0.030	0.046**	0.047***	0.037**	0.053***	0.036**
(% of population)	(0.021)	(0.023)	(0.023)	(0.016)	(0.017)	(0.018)	(0.018)
ΔMerchandise Trade	-0.001	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001
(% of GDP)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
ΔUnemployment	-0.003	-0.003	-0.004*	-0.004*	-0.003	-0.003*	-0.003*
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Telephone Subsc.	-0.001	-0.001	-0.001	-0.001	-0.000	-0.001	-0.000
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.068**	0.081**	0.070**	0.057**	0.056**	0.069**	0.067**
	(0.028)	(0.032)	(0.031)	(0.025)	(0.023)	(0.030)	(0.028)
Post-Populism	0.319***	0.258***	0.336***	0.237	0.281	0.343**	0.253*
Experience	(0.119)	(0.054)	(0.108)	(0.214)	(0.270)	(0.169)	(0.151)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	519	519	519	519	519	519	519
Log Likelihood	669.853	672.832	663.409	677.869	688.594	675.779	676.998

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively.
Source: Own computation.

Table 33: Paper 3 Appendix - Random Slope Model Subsample, Det. of Pop. Rhe., 2000-2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voice and	-0.106***						
Accountability	(0.035)						
Political Stability		-0.053***					
		(0.019)					
Governance			-0.056**				
Effectiveness			(0.025)				
Regulatory Quality				-0.089***			
				(0.025)			
Rule of Law					-0.081***		
					(0.025)		
Control of Corruption						-0.044*	
						(0.026)	
General Governance							-0.135***
Index							(0.031)
ΔRefugee Immigration	0.041**	0.028	0.041**	0.047***	0.038**	0.049***	0.036**
(% of population)	(0.017)	(0.022)	(0.019)	(0.016)	(0.018)	(0.016)	(0.017)
ΔMerchandise Trade	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
(% of GDP)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔUnemployment	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
(% of labor force)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Telephone Subscr.	-0.001	-0.000	-0.001	-0.001	-0.000	-0.001	-0.000
(Per 100 people)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
One-Party Dominance	0.054**	0.071**	0.057**	0.049*	0.050**	0.052*	0.055**
	(0.024)	(0.032)	(0.029)	(0.026)	(0.023)	(0.027)	(0.024)
No. of Countries	40	40	40	40	40	40	40
No. of Observations	468	468	468	468	468	468	468
Log Likelihood	646.991	644.197	641.965	652.521	649.432	651.709	654.446

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% level respectively.
Source: Own computation.

Table 34: Paper 3 Appendix - Correlation Matrix

	Aver. Pop. Score	**V**oice and Acc.	**P**ol. Stab.	**G**ov. Eff.	**R**eg. Qu.	**R**ule of Law	**C**ontr. of Cor.	**R**ef. Imm.	**M**erc. Trade	**U**nem.	**C**om. Infr.	**O**ne-Party Dom.
Populist Rhetoric	1.00											
Voice and Accountability	-0.47	1.00										
Political Stability	-0.42	0.83	1.00									
Governance Effectiveness	-0.47	0.91	0.74	1.00								
Regulatory Quality	-0.56	0.88	0.74	0.93	1.00							
Rule of Law	-0.48	0.93	0.77	0.97	0.94	1.00						
Control of Corruption	-0.45	0.91	0.74	0.95	0.89	0.96	1.00					
Refugee Immigration	0.03	0.09	0.04	0.11	0.11	0.12	0.12	1.00				
Merchandise Trade	-0.08	0.12	0.12	0.12	0.15	0.12	0.09	-0.13	1.00			
Unemployment Rate	-0.13	0.08	0.02	0.07	0.06	0.09	0.07	0.00	-0.11	1.00		
Communication Infrastructure	-0.43	0.70	0.59	0.80	0.71	0.76	0.79	0.06	0.06	0.07	1.00	
One-Party Dominance	0.23	-0.46	-0.33	-0.37	-0.45	-0.41	-0.35	-0.02	-0.01	-0.13	-0.23	1.00

Source: Own computation.

V. Paper 4: Impact of the Drug War on Regional Social Capital in Mexico

1. Introduction

Mexico's modern history begins with the Mexican Revolution (1910-1920) which had the goal of overthrowing the long-term president Porfirio Díaz. The most remarkable and enduring outcome of these revolutionary years was the foundation of the Institutional Revolutionary Party in 1929 (Spanish: *Partido Revolucionario Institucional*, PRI). Around the same time, drug trafficking organizations (DTOs) began spreading throughout Mexico. Given the high profits, many members of the so-called "revolutionary family" felt attracted to illicit businesses and got involved (Astorga, 1999, p. 14). Consequently, a deeply entrenched state-cartel drug trafficking collaboration developed (Gootenberg, 2011).

In the second half of the 20th century Mexico intensified the economic relationship with the US, which was largely characterized by Mexico's dependence on US consumption and financial markets. On behalf of the US, the PRI-led government increased their endeavors to combat organized crime (Chabat 2002). The symbiotic state-cartel relationship gradually became weaker. Finally, the PRI hegemony ended after more than 70 years with an election victory for the National Action Party (Spanish: *Partido Acción Nacional*, PAN) in 2000. In the aftermath, President Fox (2000-2006) and President Calderón (2006-2012) passed wide-ranging policy reforms with the goal of reducing drug trafficking and corruption. These leaders established military groups to combat drug trafficking and extradited captured drug lords to the United States (Finckenauer et al., 2007; González, 2008).

Drug cartels responded to police and military action against their operations with ever-increasing levels of violence including the creation of private armies (Teichman, 2011). According to the United Nations Office on Drugs and Crimes (UNODC, 2022) Mexico faced one of the highest intentional homicide rates in the world at the beginning of the 21st century. After a brief decline in violence between 2011 and 2014, Mexico's murder rate began increasing again and reached unprecedented levels in 2020 with a murder rate of 28.37 deaths per 100,000 people. Mexico ranked fourth among the deadliest countries in the world in 2020, right behind Jamaica (44.95), Honduras (36.33) and South Africa (33.46) and far ahead of other Central American countries such as Panama (11.59) and Costa Rica (11.19). In contrast to the beginning of the Mexican drug war in 2006, with a value of 9.72 per 100,000, the murder rate had almost tripled.

There has been research into the effect of violence on economic indicators (Robles et al. 2015), economic sector diversity (Ríos, 2016), migration flows and foreign direct investments (Verdugo-

Yepes & Xingwei, 2015). In contrast, the relationship between violence and social capital in Mexico has still not been deeply examined. Given the lack of social capital data in the conflict regions of Mexico, we contribute with an approach proposed by Guriev and Melnikov (2016), who proxied social capital with an indicator based on search engine data.

The data consists of the 32 federal states of Mexico and covers the period from January 2004 to December 2016. This time span has been used, because we wanted to exclude the period of the Trump administration in the US (starting in January 2017), which worsened the US-Mexican relationship due to the construction of the wall on the southern US border and his anti-Mexican rhetoric (Verea 2018). Moreover, the estimation period ends before the pandemic, which is likely to have had dramatic effects on social capital. For our analysis we use a common correlated effects model following Ditzen (2018, 2021), a random intercept and random model, as well as a spatial model. The results show a negative relationship between violence and social capital. Moreover, we show a positive spatial correlation for social capital.

The structure of this paper is as follows: Section 2 defines social capital and discusses search engine data as proxy for social capital; Section 3 explains our empirical strategy and presents the results; Section 4 concludes.

2. Theory

Bourdieu (1979) first introduced the term social capital as a product of social networks and relationships. Furthermore, Putnam et al. (1992, p. 167) refer to social capital as "features of social organization, such as trust, norms, and networks that can improve the efficiency of society."

It can be argued that a lack of social capital cultivates crime (e.g. Putnam, 2001; Akcomak & Weel, 2012). In comparison, it can also be argued that violence destroys social capital (e.g. De Luca and Verpoorten, 2015) (see Figure 3 in the synopsis of this dissertation). So simultaneous causality is present. In the case of Mexico, violence intensified abruptly following President Fox's and President Calderón's political decision to fight drug trafficking. Hence, we consider this explosion of violence as an exogenous shock, which can explain the dramatic development of social capital in Mexico.

Theoretical explanations provide three mechanisms through which violence affects social capital: *First*, during times of high levels of violence, acquiring information on other individuals may be more difficult and thus more expensive. The lack of information can result in a situation of general mistrust. *Second*, intensified violence may entail a real psychological change among its population towards a more skeptical perception of other individuals (Rubio, 2014), which results again in general

mistrust.[30] *Third*, it can be argued that violence decreases the social interaction frequency within communities. Consequently, social capital is impaired (De Luca & Verpoorten, 2015).

Most scientists analyzing the nexus between violent conflict and social capital have shown a negative relation. For example, studies from Cambodia and Rwanda have shown that civil wars are likely to disrupt the "social fabric" of societies (Colletta and Cullen 2000, p. 1). Moreover, in a study of Columbia, Rubio (2014) finds that an increase in violence lowers participation in local community organizations. Furthermore, De Luca and Verpoorten (2015) proved that armed conflicts in Uganda negatively affected social capital.

In our paper we consider social capital as a synonym of trust, commitment, and altruism. Trust is usually measured through surveys. In Mexico there are two surveys measuring the perception of public safety.[31] However, these two surveys are not in line with our understanding of social capital. New measurement opportunities for social capital have emerged due to the increased use of search engines. This offers easily accessible, near real-time, and highly disaggregated data on the preferences of people from determined regions (Wu & Brynjolfsson, 2015).

The most well-known search engine is Google Trends. Since 2004, Google has made data on search queries publicly available (Choi & Varian, 2012). Before releasing the data to the public, Google transforms it in two ways: *First*, the data is normalized by the total number of search queries within a specific geographical region. *Second*, the normalized data is indexed with a maximum value of 100. Levels of Google Trends data are therefore not easily comparable with each other (Carrière-Swallow & Labbé, 2011). The numbers provided by Google Trends show the search interest relative to the peak popularity on the chart for a given geographical location and time. While 100 represents the peak popularity, 0 means the popularity was less than one percent of the peak.

In recent years, various studies have demonstrated the suitability of Google search queries as both dependent and independent variables. For example, by using influenza-related search queries as an explanatory variable, Ginsberg et al. (2009) were able to accurately nowcast the level of weekly spread of influenza. Furthermore, Wu and Brynjolfsson (2009) analyzed the US housing market and found that it is highly correlated with the US housing-related Google search indices. Most relevant to this research paper, Guriev and Melnikov (2016) used a social capital indicator based on search engine data to analyze how conflict intensity affected social capital in Russian regions. They concluded that pro-social behavior went up in regions closer to the conflict.

[30] This mechanism is used by Nunn Wantchekon (2011) to explain the influence of slavery on mistrust in Africa.

[31] National Survey of Victimization and Perception of Public Safety (Spanisch: *Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública*, ENVIPE), and National Urban Public Safety Survey (Spanisch: *Encuesta Nacional de Seguridad Pública Urbana*, ENSU).

3. Empirical Strategy

3.1 Data Description

The monthly dataset includes data for all 32 Mexican states and covers the period from January 2004 to December 2016. It was retrieved from Google Trends and the *Instituto Nacional de Estadística y Geografía* (INEGI), the *Consejo Nacional de Población* (CONAPO), and the *Secretaría de Educación Pública* (SEP). The geodata was provided by the *United Nations Office for the Coordination of Humanitarian Affairs* (OCHA).

Following Guriev & Melnikov (2016), we used search queries in order to develop a monthly Google index that proxies social capital for the following four thematic areas of interest: (1) "Voluntary work and social help", (2) "community life", (3) "charity", and (4) "political engagement." For all these topics a list of key words was generated (see Table 40 in the appendix). When selecting key words, the following aspects were considered: *First*, the key words were in Spanish. *Second*, they had to be of a very general nature. *Third*, the analysis could not account for colloquial language. *Fourth*, plural and singular forms of words were used if possible. Furthermore, two data retrieval methods were applied. *First*, single words (e.g., charity) were searched for. S*econd* combinations of those key words were used (e.g., charity + voluntary + community). The plus sign (+) corresponds to an inclusive "or", which means that search queries may include only one, a few, or all key words.[32] These four topics served then as the basis for creating the social capital index. Zero values, which mainly occurred at the beginning of the recording, were omitted when calculating the average; their inclusion would have skewed the index downward. The resulting index was normalized to 100. The development of average social capital in Mexico decreased drastically between 2004 and 2016 (see Figure 20 in the appendix).

Despite all advantages, our social capital index has a range of shortcomings, which are important to bear in mind. *First and foremost*, the values provided by Google Trends do not provide any information about the importance of the terms relative to all search queries conducted over the given time. The *second* shortcoming is the fact that certain wealthier classes had earlier access to the internet, while poor social groups were still not connected to it. This is problematic, as poorer social groups are more affected by drug trafficking (Nieto, 2012, Rivelois, 1999). The *third* shortcoming is that the social capital index omits other non-digital sources.

Our key explanatory variable is violence, which is expected to be the driving force for the social capital decline during the drug war. It is defined as the "deliberate infliction of harm on people" (Kalyvas 2006, p. 19). We use the officially reported *homicide rate* by the *Institute Nacional de*

[32] Neither of the two methods described resulted in usable data on "blood and organ donations" and "childcare and adoption" except in the case of Mexico City. The two thematic areas were thus removed.

Estadística y Geografía (INEGI) to proxy drug-trade related violence. Besides violence, other control variables were utilized. To proxy economic development, we use data on *regional unemployment* provided by INEGI. Obviously, the loss of the job and income brings a lot of insecurities, which decreases trust and social capital. As it was only available on a quarterly basis, a linear interpolation was conducted. *Urbanization* may also influence the degree of social capital. According to this logic, urban areas have lower levels of social capital than rural areas, due to anonymity, for example. Rural areas are thus more likely to exhibit civil participation (Iyer et al. 2005). Data on urbanization was supplied by *Consejo Nacional de Población* (CONAPO). The degree of privatization of the Mexican economy may also explain social capital (Champlin 1999). We argue that a higher level of privatization brings competition and thus decreases social capital. As there is no predetermined indicator for the degree of privatization on a monthly, state basis, the *share of students enrolled in private schools of the total amount of students* is used. Yearly Data on the number of students by school-type was provided by the *Secretaría de Educación Pública* (SEP). As it was only available on a yearly basis, a linear interpolation was conducted.

Table 35 shows the descriptive statistic (see Table 41 in the appendix for a definition of the variables, as well as Figure 21 – Figure 25 in the appendix for a graphical illustration of the variables).

Table 35: Paper 4 - Data Description, 2004 to 2016

	Count	Mean	SD	Min.	Max.
Social Capital (in percent)	4992	34.811	20.828	1.170	100.000
Homicide Number (per 100,000)	4992	1.353	1.605	0.000	20.080
Unemployment (in percent)	4992	4.193	1.528	0.730	9.600
Urbanization (in percent)	4992	60.297	18.863	24.219	98.600
Share Students in Private Schools (in percent)	4992	11.993	4.346	4.110	26.389

Source: Own computation based on Google Trends, INEGI, CONAPO, and SEP data.

Moreover, we displayed the average homicide rate in Mexico in 2004 and 2016, as well as average social capital in Mexico in 2004 and 2016. We can see a high degree of parallel developments of both variables - while the homicide rate increased, social capital decreased. For a graphical illustration see Figure 12 and Figure 13 in the synopsis of this dissertation.

3.2 Methodology and Results

We address several issues which can be important for the estimation of determinants of the regional social capital in Mexico. On the one hand, cross-sectional correlation, on the other hand heterogeneity within the data, as well as spatial lags. Therefore, three types of models are specified for the given panel data.

3.2.1 Common Correlated Effects Model

First, we use a common correlated effects model for data with dependence between cross-sectional units (Pesaran, 2007; Ditzen, 2018, 2021). This is important as the drug war in Mexico affects the Mexican society in various aspects. Because of possible multicollinearity, we include the variables successively. The time fixed effects are indicated by δ_t. We used cross-sectional averages of all variables. The estimation equation is as follows:

$$soc\_cap_{it} = \beta_0 + \beta_1 hom_{it} + \beta_2 une_{it} + \beta_3 urb_{it} + \beta_4 pri_{it} + \delta_t + \varepsilon_{it} \quad (1)$$

As far as drug war constitutes a national policy development, we control for cross-sectional inter-dependence between regions as proposed by (Ditzen 2018, 2021). The common correlated effects model results are presented in Table 36.

Table 36: Paper 4 - Common Corr. Effects Model, Det. of Social Capital, 2004 to 2016

	(1)	(2)	(3)	(4)
Homicide Rate	-0.153***	-0.127**	-0.124*	-0.136**
(per 100,000)	(0.045)	(0.062)	(0.066)	(0.068)
Unemployment		-0.336***	-0.413***	-0.462***
(in percent)		(0.113)	(0.127)	(0.129)
Urbanization			-1.279***	-1.420***
(in percent)			(0.044)	(0.049)
Students in Private Schools				-1.592***
(in percent)				(0.139)
No of obs.	4992	4992	4992	4992
No of regions	32	32	32	32
R^2	0.568	0.571	0.580	0.607

Note: Common correlated effects in fixed-T panels (Westerlund et al., 2019) are in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include time-fixed effects.
Source: Own computation.

The results confirm our starting expectations regarding violence and social capital. The coefficients of the *homicide rate* are negative and significant for specification 1-4. This means that an increase in the monthly homicide rate by one unit is associated with the reduction of the social capital index by 0.12-0.15 units.

Unemployment is negatively correlated with the regional social capital in Mexico. Unemployment leads to marginalization and lower trust in the system. *Urbanization* is negatively correlated with

regional social capital in Mexico, too. In big cities like Mexico City, citizens live a more individual and anonymous life than citizens in the countryside. In addition, a high degree of privatization, measured with *share of students in private schools*, is negatively correlated with social capital.[33]

3.2.2 Random Intercept and Random Slope Model

Second, we use a linear mixed-effects model of the *homicide rate* and *social capital* with random intercepts and random coefficients by level 2 (i.e. region level), which allows each region line to have a different intercept and a different slope for violence.[34] This means the explanatory variable *homicide rate* has a different starting point and different effects for each region. Therefore, we add a random intercept and term $\mu_{0i} + \mu_{1i} hom$ so that the intercept and homicide rate can be different for each region (Pillinger 2021; StataCorp. 2021a).

$$soc\_cap_{it} = \beta_0 + \beta_1 hom_{it} + \beta_2 une_{it} + \beta_3 urb_{it} + \beta_4 pri_{it} + \mu_{0i} + \mu_{1i} hom_{it} + \alpha_i + \delta_{t_t} + \varepsilon_{it} \quad (2)$$

The random intercept and random slope model controls for regional heterogeneity within the data. The results are presented in Table 37.

Table 37: Paper 4 - Random Slope Model, Det. of Social Capital, 2004 to 2016

	(1)	(2)	(3)	(4)
Homicide Rate	-0.944**	-0.923**	-0.932**	-0.934**
(per 100,000)	(0.378)	(0.378)	(0.376)	(0.376)
Unemployment		-0.295	-0.285	-0.286
(in percent)		(0.401)	(0.394)	(0.394)
Urbanization			-0.043	-0.023
(in percent)			(0.065)	(0.075)
Students in Private Schools				-0.123
(in percent)				(0.346)
No of obs.	4992	4992	4992	4992
No of regions	32	32	32	32
Log Likelihood	-18178	-18176	-18176	-18176

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include regional-fixed effects and time-fixed effects.
Source: Own computation.

[33] The results also hold when we control fort the legislation of each president. See Table 42 in the appendix.
[34] We use the homicide rate of a certain region in a certain year as level 1, and the region as level 2.

Previous findings are strengthened. A high homicide rate decreases regional social capital in Mexico. The coefficients of the *homicide rate* are significant at least at the 5% level. In this model, the coefficients of the control variables *regional unemployment*, *urbanization*, and *share of students in private schools* are statistically insignificant.

3.2.3 Spatial Model

Third, we use a spatial model to control for spatial lags. This is important as, *first*, nearby outcomes may affect outcomes in the home region, *second*, nearby covariates may affect outcomes in the home region, and *third*, nearby residuals may affect outcomes in the home region. We use an inverse-distance spatial weighting matrix $W \times social\_capital$ (StataCorp. 2021b).

$$soc\_cap_{it} = \beta_0 + \lambda W * soc\_cap_{it} + \beta_1 hom_{it} + \beta_2 une_{it} + \beta_3 urb_{it} + \beta_4 pri_{it} + \delta_t + \varepsilon_{it} \quad (3)$$

Both social capital and its determinants are likely to be correlated between neighboring regions and proximate regions. To control for spatial correlation, a spatial model is run. The spatial model results are presented in Table 38.

Table 38: Paper 4 - Spatial Model, Det. of Social Capital, 2004 to 2016

	(1)	(2)	(3)	(4)
Homicide Rate	-1.454***	-1.581***	-1.298***	-1.379***
(per 100,000)	(0.417)	(0.446)	(0.423)	(0.420)
Unemployment		-2.093***	-1.589***	-1.812***
(in percent)		(0.494)	(0.472)	(0.474)
Urbanization			-2.807***	-2.457***
(in percent)			(0.378)	(0.392)
Students in Private Schools				-2.130***
(in percent)				(0.707)
W × Social	1.110***	0.897***	0.858***	0.845***
Capital	(0.022)	(0.021)	(0.024)	(0.025)
No of obs.	416	416	416	416
No of regions	32	32	32	32
Log Likelihood	-19163.056	-19086.311	-18857.924	-18821.066
Method	SLDP	SLDP	SLDP	SLDP

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include regional-fixed effects and time-fixed effects. SLDP – spatial lagged dependent variable model.
Source: Own computation.

Previous results are confirmed. A high *homicide rate* correlates negatively with social capital in Mexico. This is also true for *unemployment*, *urbanization*, and the *share of students in private*

schools. Moreover, the results show a positive spatial correlation for social capital. This means that if social capital is high in a nearby region it tends to be also high in the home region.[35]

3.3 Robustness Check

To validate the Google-based index, we use data produced by CONEVAL (2023). The alternative social capital index was constructed from the following variables: Alimentation deficit, education deficit, health access deficit, housing deficit, basic services deficit, and social security deficit. First, we calculated the percentage of people with a certain deficit to the total population of a certain state. Second, we calculated the average of all six deficit variables. As the data was only available for the years 2010, 2012, 2014, and 2015, we had to aggregate our monthly data to the year level. The results of our alternative social capital variable are presented in Table 39.[36]

Table 39: Paper 4 - Random Slope Model, Det. of Alternative Social Capital, 2004 to 2016

	(1)	(2)	(3)	(4)
Homicide Rate	-0.386**	-0.322**	-0.319**	-0.324**
(per 100,000)	(0.171)	(0.158)	(0.142)	(0.137)
Unemployment		-0.629	-0.639	-0.763
(in percent)		(0.555)	(0.574)	(0.562)
Urbanization			0.028	0.172
(in percent)			(0.256)	(0.237)
Students in Private Schools				-0.849
(in percent)				(0.663)
No of obs.	128	128	128	128
Log Likelihood	-453.030	-452.686	-452.683	-452.182

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include regional-fixed effects and time-fixed effects.
Source: Own computation.

Our explanatory variable homicide rate stays statistically significant when using the alternative social capital index. The coefficients of the control variables (unemployment, urbanization, and students in private schools) are statistically insignificant.

[35] Results are confirmed when a spatial lagged independent variable regression model or a spatial lagged error term regression model is used. For the lagged independent variable regression model the spatial correlation is negative (see Table 43 in the appendix) implying that homicide rates tend to be negatively correlated between the regions.

[36] We cannot use common correlated effects model because the model requires too many dummy variables (more than observations). Moreover, our spatial model shows insignificant coefficients for the homicide rate.

4. Conclusions

This paper analyzes the correlation between violence and social capital in the 32 federal states of Mexico after the outbreak of the drug war in 2006. It contributes with an empirical analysis that uses monthly internet-based data as a proxy for social capital. For our analysis we use a common correlated effect model, a random intercept and random slope model, and a spatial model. Our results show that the monthly homicide rate in Mexico's states correlates negatively with our Google-Trends based social capital index. Moreover, we show a positive spatial correlation for social capital. The results are robust, when using an alternative social capital index on a yearly basis.

Moreover, it is important to mention that our findings, i.e. that Mexico's social capital has been adversely affected by the outbreak of the drug war in 2006, contradict the positive correlation between conflict intensity and (digital) social capital found by Guriev and Melnikov (2016). This may be explained by the different setting of both studies. While Guriev and Melnikov (2016) analyze the correlation of a conflict in another country (i.e. the conflict in Eastern Ukraine) on national social capital (i.e. social capita in Russia), this paper evaluates the correlation of a national conflict (i.e. drug war in Mexico) on national social capital (i.e. social capital in Mexico).

It is necessary to treat the results of this paper with circumspection and to point out potential limitations. *First of all*, endogeneity needs to be mentioned. We argue that in the case of Mexico the violent outbreak after 2006 is an exogenous shock (Calderón's policy) and explanatory. While this may mean that the direction of the relationship is questionable, it does not change the fact that the correlation between violence and social capital is highly negative in Mexico. *Second*, the connection between the internet based social capital index and real-life social capital in Mexico, may be questioned. Regarding this point, previous studies (e.g. Ginsberg et al. 2009) have proven the suitability of Google Trends data for real-world economic phenomena. *Lastly*, Brown et al. (2019) have shown that the homicide rate in Mexico fluctuates substantially between municipalities. This is a point, which may be addressed in further research endeavors. Despite an element of uncertainty about the causality direction, our results nevertheless underline the socioeconomic importance of the development: Violence creates mistrust and increases poverty in the affected regions.

Overall, since social capital is an important driver for economic development, damaging effects of violence on social capital need to alert policymakers. If the drug war ceased and Mexican citizens felt respected by their government, this could create an atmosphere of trust. A higher level of social capital is an important precondition for economic prosperity.

Appendix of Paper 4

Table 40: Paper 4 Appendix - Google Trends Search Terms

Thematic areas of interest	Spanish translation
"voluntary work and social help"	"voluntariado y ayuda social"
"community life"	"vida comunitaria"
"charity"	"beneficencia"
"political engagement"	"compromiso político"
"blood and organ donations" [a]	"donaciones de sangre y órganos" [a]
"childcare and adoption" [a]	"cuidado de los niños y adopción" [a]

Notes: a – not included in the index of social capital due to low volume of Google searches.
Source: Own compilation.

Figure 20: Paper 4 Appendix - Development of Social Capital in Mexico, 2004 to 2016

Source: Own compilation based on Google Trends data.

Table 41: Paper 4 Appendix - Definition of Analyzed Variables

Variable	Definition	Data Source
Social capital	Social Capital score from low to high (0-100).	*Based on Google Trends Data*
Homicide rate	Number of homicides per 100,000.	*Institute Nacional de Estadística y Geografía* (INEGI)
regional unemployment	Unemployment, total (% of total labor force).	*Institute Nacional de Estadística y Geografía* (INEGI)
Urbanization	Urbanization score from low to high (0-100).	*Consejo Nacional de Población* (CONAPO)
Share of students enrolled in private schools of the total amount of students	Measured in thousands.	*Secretaría de Educación Pública* (SEP)
Share of population with alimentation deficit, education deficit, health access deficit, housing deficit, basic services deficit, and social security deficit	Average of all six deficit variables.	*Consejo Nacional de Evaluación de la Política de Desarrollo Scoial* (CONEVAL)

Source: Own compilation.

Table 42: Paper 4 Appendix - Random Slope Model Presidents, Det. of S.C., 2004 to 2016

	(1)	(2)	(3)	(4)
Homicide Rate	-0.993**	-0.974**	-0.984**	-0.984**
(per 100,000)	(0.386)	(0.386)	(0.384)	(0.383)
Unemployment		-0.251	-0.242	-0.243
(in percent)		(0.400)	(0.394)	(0.393)
Urbanization			-0.042	-0.027
(in percent)			(0.066)	(0.076)
Students in Private Schools				-0.091
(in percent)				(0.347)
President Fox	47.098***	47.177***	47.085***	47.019***
	(1.483)	(1.481)	(1.506)	(1.546)
President Calderon	30.299***	30.430***	30.339***	30.285***
	(2.554)	(2.586)	(2.586)	(2.568)
President Nieto	-8.670***	-8.662***	-8.662***	-8.661***
	(0.559)	(0.558)	(0.558)	(0.558)
N	4992	4992	4992	4992
LL	-18112.63	-18112.36	-18112.26	416

Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include regional-fixed effects and time-fixed effects.
Source: Own estimations.

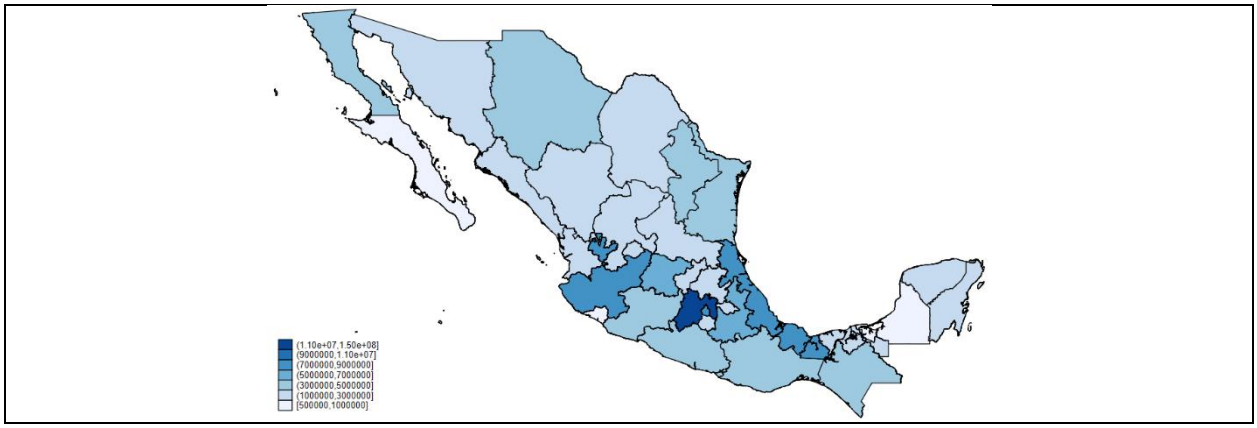
Additional information: The dummy variables of the three presidents are highly statistically significant. Whereas the coefficients of the dummy variables of President Fox and Calderon are positive, the dummy variable of President Nieto is negative. This makes sense, because president Fox and president Calderon are both member of the National Action Party, whereas President Nieto is part of the Institutional Revolution Party, which was highly involved in drug business in the 20th century.

Table 43: Paper 4 Appendix - Spatial Methods, Det. of Social Capital, 2004 to 2016

	(1)	(2)	(3)
Homicide Rate	-0.981	-1.379***	-1.308***
(per 100,000)	(0.646)	(0.420)	(0.450)
Unemployment	-0.791	-1.812***	-2.665***
(in percent)	(0.750)	(0.474)	(0.611)
Urbanization	-3.332***	-2.457***	-2.135***
(in percent)	(0.591)	(0.392)	(0.408)
Students in Private Schools	-6.403***	-2.130***	-1.231*
(in percent)	(1.038)	(0.707)	(0.699)
W × Homicide	-27.267***		
	(1.942)		
W × Social Capital		0.845***	
		(0.025)	
W × ε_{it}			0.914***
			(0.020)
No of obs.	416	416	No of obs.
No of regions	32	32	32
Log	-1378.092	-18821.066	-18981.95437605
Method	SLIV	SLDP	SLE

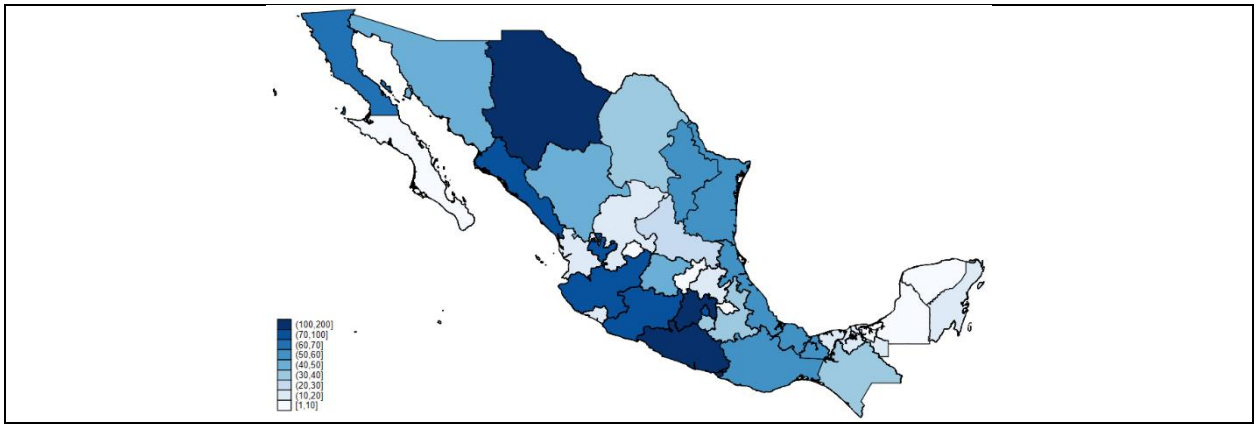
Note: Robust standard errors in parentheses. ***, **, * Significant at 1%, 5% and 10% levels, respectively We include regional-fixed effects and time-fixed effects.
SLIV - spatial lag independent variable; SLDV - spatial lag dependent variable; SLE - spatial lag error term.
Source: Own estimation.

Figure 21: Paper 4 Appendix - Average Population in Mexico, 2004 to 2016



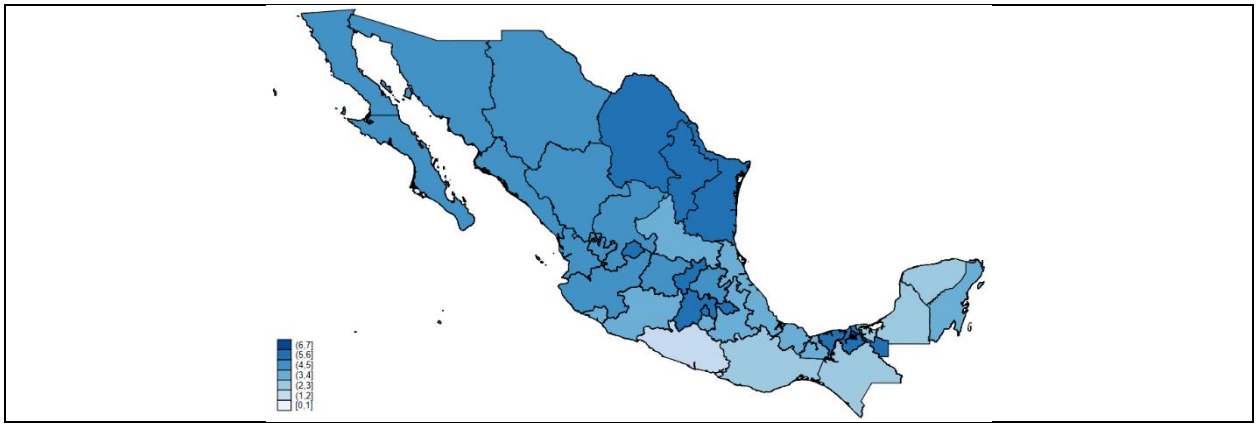
Source: Own compilation based on INEGI data.

Figure 22: Paper 4 Appendix - Average Homicide Rate, 2004 to 2016 [37]



Source: Own compilation based on INEGI data.

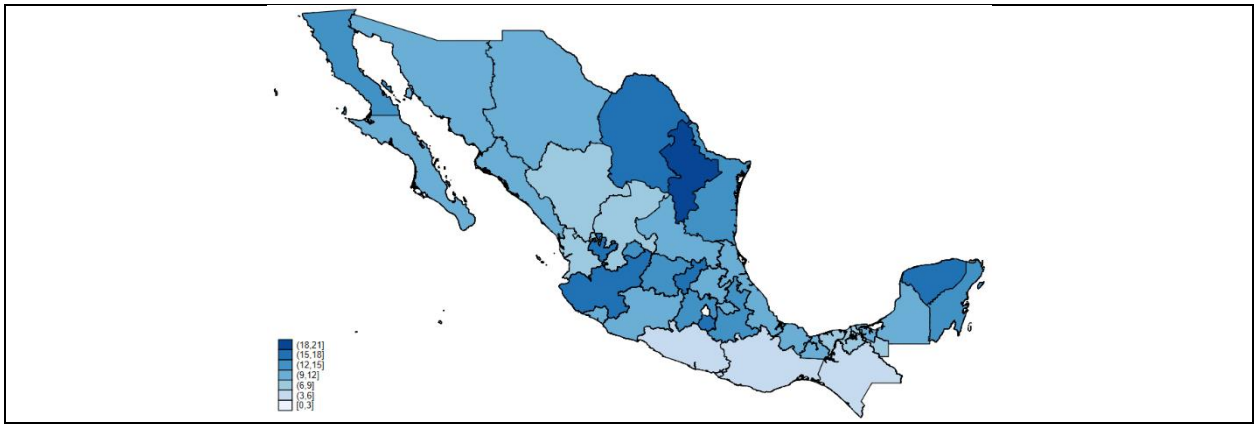
Figure 23: Paper 4 Appendix - Average Regional Unemployment Rate, 2004 to 2016



Source: Own compilation based on INEGI data.

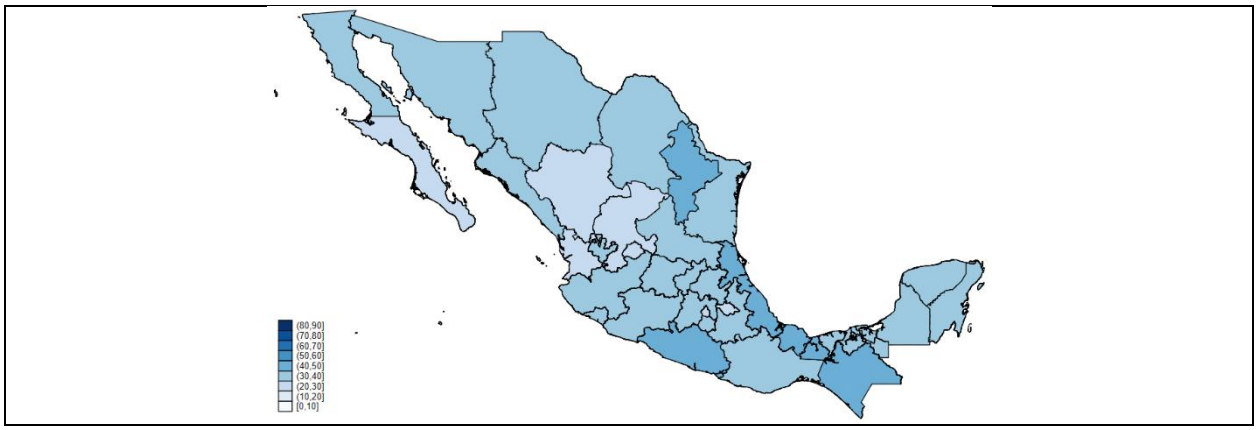
[37] In our analysis we use the homicide rate per 100,000 inhabitants.

Figure 24: Paper 4 Appendix - Average Share of Students in Private Schools, 2004 to 2016



Source: Own compilation based on SEP data.

Figure 25: Paper 4 Appendix - Average Social Capital in Mexico, 2004 to 2016



Source: Own compilation based on Google Trends data.

VI. Bibliography

A

Acemoglu, D.; Johnson, S. & Robinson J. A. (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review*, 91(5), 1369-1401.

Acemoglu, D.; Johnson, S. & Robinson, J. A. (2005). Institutions as a Fundamental Cause of Long-Run Growth. *Handbook of Economic Growth*, 1(Part A), 385-472.

Acemoglu, D. & Robinson, J. (2010). The Role of Institutions in Growth and Development. *Review of Economics and Institutions*, 1(2), 1-33.

Acemoglu, D.; Egorov, G. & Sonin, K. (2020). Institutional Change and Institutional Persistence. *The Handbook of Historical Economics*, 365-389.

Acemoglu, D. (2020, January 15). Is America Going Fascist? *Project Syndicate, 2020.* (Online: 27.06.2022), https://www.project-syndicate.org/commentary/trump-fascist-parallels-unhelpful-by-daron-acemoglu-2020-01

Adoptive Families (2022). Mexico Adoption Fast Facts. (Online: 27.06.2022), https://www.adoptivefamilies.com/how-to-adopt/mexico-adoption-fast-facts/

Aiginger, K. (2020). Populism: Root Causes, Power Grabbing and Counter Strategy. *Intereconomics*, 55, 38-42.

Akcomak, S. & Weel, B. T. (2012). The Impact of Social Capital on Crime: Evidence from the Netherlands. *Regional Science and Urban Economics*, 42(1-2), 323-340.

Alesina, A. & La Ferrara, E. (2005). Ethnic diversity and economic performance. *Journal of Economic Literature*, 43(3), 762–800.

Alfaro L. & Charton A. (2007). Growth and the Quality of Foreign Direct Investment: Is All FDI Equal. *HBS Finance Working Paper No. 07-072*. (Online: 15.01.2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=981163

Arellano M. & Bover O. (1995). Another Look at the Instrumental Variable Estimation of Error-Components Models, *Journal of Econometrics* 68, 29-51.

Argen, D. (29th January 2016). Mexico City officially changes its name to – Mexico City, The Guardian. (Online 08.11.2022), https://www.theguardian.com/world/2016/jan/29/mexico-city-name-change-federal-district-df

Asdrubali, P.; Sørensen, B. E. & Yosha, O. (1996). Channels of Interstate Risk-Sharing: United States 1963-1990. *Quarterly Journal of Economics*, 111(4), 1081–1110.

Astorga, L. (1999). Drug Trafficking in Mexico: A First General Assessment. *Management of Social Transformation – Discussion Paper no. 36.* (Online: 27.06.2022), https://unesdoc.unesco.org/ark:/48223/pf0000117644

Autor, D.; Dorn, D.; Hanson, G. & Majlesi, K. (2020). Import Political Polarization? The Electoral Consequences of Rising Trade Exposure. *American Economic Review*, 110(10), 3139-3183.

Aziz, O. G. (2018). Institutional quality and FDI inflows in Arab economies. *Finance Research Letters 25*, 111–123.

B

Backus, D. K.; Kehoe, P. J. & Kydland, F. E. (1992). International Real Business Cycles. *Journal of Political Economy*, 100(4), 745–775.

Bai, Y. & Zhang, J. (2012). Financial Integration and International Risk-sharing. *Journal of International Economics*, 86(1), 17–32.

Balli, F. & Rana, F. (2015). Determinants of Risk-Sharing through Remittances. *Journal of Banking & Finance*, 55, 107-1016.

Baltagi, B.; Song, S.H. & Koh, W. (2003). Testing Panel Data Regression Models with Spatial Error Correlation. *Journal of Econometrics*, 117, 123-150.

Baltagi, B.; Egger, P. & Pfaffermayr, M. (2013). A Generalized Spatial Panel Data Model with Random Effects. *Econometric Reviews*, 32(5-6), 650-685.

Becker, S. O. & Hoffmann, M. (2006). Intra- and International Risk-Sharing in the Short Run and the Long Run. *European Economic Review*, 50(3), 777–806.

Bělín, M. & Hanousek, J. (2019). Which Sanctions Matter? Analysis of the EU/Russian sanctions of 2014, *Discussion Papers 13549, CEPR London*. (Online: 15.01.2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3346338

Bénassy-Quéré A.; Coupet M. & Mayer T. (2007). Institutional Determinants of Foreign Direct Investment. *The World Economy 30*, 764–782.

Bennett, D.; Boudreaux, C. & Nikolaev, B. (2022). Populist Discourse and Entrepreneurship: The role of political ideology and institutions. *Journal of International Business Studies*. 54, 151-181.

Bitzer, J. & Kerekes, M. (2008). Does Foreign Direct Investment Transfer Technology across Borders? New evidence. *Economic Letters*, 100(3), 355-358.

Blanchard, O. (2002/2017). *Macroeconomics*. Pearson Education Limited.

Blundell R. & Bond S. (1998). Initial Conditions and Moments Restrictions in Dynamic Panel Data Models, *Journal of Econometrics* 87, 115-143.

Borensztein E.; De Gregorio J. & Lee J. W. (1998). How does Foreign Direct Investment affect Economic Growth? *Journal of International Economics*, 45, 115–135.

Bourdieu, P. (1979). *Distinction: A Social Critique of the Judgement of Taste.* Harvard University Press.

Brown, R.; Montalva, V.; Duncan T. & Velásquez, A. (2019). Impact of Violent Crime on Risk Aversion: Evidence From the Mexican Drug War. *The Review of Economics and Statistics*, 101(5), 892-904.

Buchanan B. G.; Le Q. V. & Rishi M. (2012). Foreign Direct Investment and Institutional Quality: Some Empirical Evidence. *International Review of Financial Analysis 21*, 81–89.

Bun M. J. G. & Sarafidis V. (2013). Dynamic Panel Data Models. In: Badi H. Baltagi (Eds.) *The Oxford Handbook of Panel Data* (76-110), Oxford Academic.

Burrett, T. (2020). Charting Putin's Shifting Populism in the Russian Media from 2000 to 2020. *Politics and Governance*, 8(1). 193-205.

Busby, E. C.; Gubler, J. R. & Hawkins, K. A. (2019). Framing and Blame Attribution in Populist Rhetoric. *The Journal of Politics*, 81(2), 616-630.

C

Carrière-Swallow, Y. & Labbé, F. (2011). Nowcasting with Google Trends in An Emerging Market, *Journal of Forecasting*, 32(4), 289, 298.

Coase, R. H. (1960). The Problem of Social Cost. *Journal of Law and Economics*, 2, 1-44.

Chabat, J. (2002). Mexico's War on Drugs: No Margin for Maneuver. *Annals of the American Academy of Political and Social Science*, 582, 134-148.

Champlin, D. (1999). Social Capital and the Privatization of Public Goods. *International Journal of Social Economics*, 26(10/11), 1302-1314.

Chandler, A. (2022). Populism in Power? Discourses of Leadership in Putin's Russia, 2000-2020. In: Chotinger, B.A and Cook, L. J. (Eds.), *The Post-Communist World in the Twenty-First Century* (119-141), Lexington Books.

Choi, H. & Varian, H. (2012). Predicting the Present with Google Trends. *Economic Record*, 88(1), 2-9.

Colletta, N. J. & Cullen, M. L. (2000). The Nexus between Violent Conflict, Social Capital and Social Cohesion: Case Studies from Cambodia and Rwanda. *Social Capital Initiative Working Paper No. 23*, 1-47.

Consejo Nacional de Evaluación de la Política de Desarrollo Scoial (2023). Evolution of Social Deprivation 2010-2015. [Data set], https://www.coneval.org.mx/Medicion/EDP/Paginas/Datos-del-Modulo-de-Condiciones-Socioeconomicas.aspx

Consejo Nacional de Población (CONAPO) (2022). Urbanization Data. [Data] (Online: 27.06.2022), https://www.gob.mx/conapo

Coscia, M. & Rios, V. (2012). Knowing Where and How Criminal Organizations Operate Using Web Content. (Online: 27.06.2022), https://scholar.harvard.edu/files/vrios/files/cosciarios2012_wherehowcriminalsoperate.pdf

Crucini, M. J. (1999). On International and National Dimensions of Risk-Sharing. *Review of Economics and Statistics* 81(1), 73–84.

D

Danaj, A.; Lazányi, K. & Bilan, Svitlana (2018). Euroscepticism and Populism in Hungary: The Analysis of the Prime Minister's Discourse. *Journal of International Studies*, 11(1), 240-247.

Dell, M. (2015). Trafficking Networks and the Mexican Drug war. *American Economic Review*, 105(6), 1738-1779.

Dellis K.; Sondermann D. & Vansteenkiste I. (2017). Determinants of FDI Inflows in Advanced Economies. Does the Quality of Economic Structure Matter? *Working Paper No. 2066 / May 2017*. (Online: 15.01.2020), https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2066.en.pdf

De Luca, G. & Verpoorten, M. (2015). Civil War, Social Capital, and Resilience in Uganda. *Oxford Economic Papers*, 1, 661-686.

De Vreese, C. H.; Esser, F.; Aarlber, T.; Reinemann, C. & Stanyer, J. (2018). Populism as an Expression of Political Communication Content and Style: A new perspective. *The International Journal of Press/Politics*, 23(4), 423-438.

Deltuvaité, V.; Kapounek, S. & Koráb, P. (2019). Households' Saving Behavior in Reaction to the External Macroeconomic Chocks and Behavioral Attention. *Prague Economic Papers: Quarterly Journal of Economic Theory and Policy*, 28(2), 155–177.

Demyanky, Y.; Ostergaard C. & Sørensen, B. E. (2008). Risk-Sharing and Portfolio Allocation in EMU. *Economic Papers no. 224*, European Commission, Brussels.

Díez, J. & Nicholls, I. (2006). *The Mexican Armed Forces in Transition.* (Online: 25.02.2022), https://www.globalsecurity.org/military/library/report/2006/ssi_nicholls-diez.pdf

Ditzen, J. (2018). Estimating Dynamic Common-Correlated Effects in Stata. The Stata Journal: *Promoting communications on statistics and Stata*, 18(3), 585-617.

Ditzen, J. (2021). Estimating Heterogeneous Coefficient Models Using Common Correlated Effects in a Dynamic Panel with a Large Number of Observations Over Groups and Time periods. *The Stata Journal: Promoting Communications on Statistics and Stata*, 21(3), 687-707.

Dornbusch, R.; Fischer, S. & Samuelson, P. A. (1977a). Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods. *The American Economic Review*, 67(5), 823-839.

Dornbusch, R.; Fischer, S. & Samuelson, P. A. (1977b). Heckscher-Ohlin Trade Theory with a Continuum of Goods. *The Quarterly Journal of Economics*, 95(2), 202-224.

Dreger, C.; Kholodilin, K. A.; Ulbricht, D. & Fidrmuc, J. (2016). Between the Hammer and the Anvil: The Impact of economic Sanctions and Oil Prices on Russia's Ruble. *Journal of Comparative Economics*, 44(2), 295–308.

E

Edwards, S. (2019). On Latin American Populism, and its Echoes Around the World. *Journal of Economic Perspectives*, 33(4), 76-99.

F

Fathi A.; Fiess N. & MacDonald R. (2010). Do Institutions Matter for Foreign Direct Investment? *Open Economies Review 2*1, 201–219.

Federal Ministry for Economic Affairs and Energy (2020). *30 Years United, East Germany Still Trails the West.* Quoted from Statista. [Data] (Online 27.06.2022), https://www.statista.com/chart/19903/economic-differences-between-eastern-and-western-germany/

Fidrmuc J. & Degler M (2019). Temporal and Spatial Dependence of Interregional Risk-Sharing: Evidence from Russia. *Macroeconomic Dynamics*, 25(1) 178-200.

Fidrmuc, J.; Kapounek, S. & Siddiqui, M. (2017). Which Institutions are Important for Firm's Performance? Evidence from Bayesian Model Averaging Analysis. *Panoeconomicus*, 64(4), 383–400.

Fidrmuc, J.; Moroz, S. & Reck, F. (2020). Regional Risk-Sharing in Ukraine. *The Bank of Finland Institute for Economies in Transition Discussion Papers 20/2020*. BOFIT, Helsinki.

Fidrmuc, J.; Moroz, S. & Reck, F. (2021). Regional Risk-Sharing in Ukraine. *Empirica*, 48, 645-660.

Fiedler, P.; Fidrmuc, J. & Reck, F. (2021). Automation, Digitalization, and Income Inequality in Europe. *Journal of Economics and Finance*, 71(3), 203-219.

Finckenauer, J. O.; Fuentes, J. R. & Ward, G. L. (2007). Mexico and the United States: Neighbors Confront Drug Trafficking. National Institute of Justice Publications. (Online 27.06.2022), https://www.ojp.gov/pdffiles1/nij/218561.pdf

Frank, A. G. (1966). The Development of Underdevelopment. *Monthly Review*, 18(4), 17-31.

Friedman, M. (1957). *A theory of the consumption function.* Princeton University Press. Princeton, New Jersey.

G

Gavresi, A. & Litina A. (2021). Past Exposure to Macroeconomic Shocks and Populist Attitudes in Europe. *Munich Personal RePec Archive Paper No. 108909*, MPRA, Munich.

Gelman, A. & Hill, J. (2006). *Data Analysis Using Regression and Multilevel/Hierarchical Models.* Cambridge: Cambridge University Press.

Ginsberg, J.; Mohebbi, M. H.; Patel, R. S.; Brammer, L.; Smolinski, M. S. & Brilliant, L. (2009). Detecting Influenza Epidemics Using Search Engine Query Data. *Nature*, 457, 1012-1014.

Globerman, S. & Shapiro, D. (2002). Global Foreign Direct Investment Flows: The Role of Governance Infrastructure. *World Development*, 30(11), 1899-1919.

González, F.E. (2008). Mexico's Drug Wars Get Brutal. *Current History*, 108(715), 72-76.

Google Trends (2022). Google Trends Data for our Social Capital Index. [Data] (Online: 27.06.2022), https://trends.google.de/trends/?geo=DE

Gootenberg, P. (2011). Cocaine's Blowback North: A Pre-History of Mexican Drug Violence. (Online: 27.06.2022), https://www.readkong.com/page/cocaine-s-blowback-north-a-commodity-chain-pre-history-5179288

Gozgor, G. (2021). The Role of Economic Uncertainty in the Rise of EU Populism. *Public Choice*, 190, 229-246.

Gundacker, L. & Fidrmuc, J. (2017). Oligarchs and Social Capital in Russian Regions: A Quantitative Assessment. *Empirica*, 44(3), 509–527.

Guriev, S. & Melnikov, N. (2016). War, Inflation, and Social Capital. *American Economic Review*, 106(5), 230–235.

H

Hartwell, C. A. & Devinney, T. (2021). Populism, Political Risk, and Pandemics: The Challenges of Political Leadership for Business in a Post-COVID World. *Journal of World Business*, 56(4), 101225.

Hartwell, C. A., (2022). Populism and Financial Markets. *Finance Research Letters*, Vol. 46(PB).

Hawkins, K & Kaltwasser C. R. (2017). The Ideational Approach to Populism. *Latin American Research*, 52(4), 513-528.

Helpman, E.; Melitz, M. J. & Yeaple S. R. (2004). Export versus FDI with Heterogeneous Firms. *American Economic Review*, 94(1), 300-316.

Hsiao, C. & Pesaran, M. (2002). Maximum Likelihood Estimations of Fixed Effects Dynamic Panel Data Models Covering Short Time Periods. *Journal of Econometrics*, 109(1), 107-150.

Hüther, M. & Deiermeer, M. (2019). Perception and Reality: Economic Inequality as a Driver of Populism? *Analyse und Kritik*, 41(2), 337-357.

I

ILO, State Statistics Service of Ukraine, Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine (2013). Report on the Methodology, Organization and Results of a Modular Sample Survey on Labor Migration in Ukraine, (Online: 25.05.2020), www.ukrstat.gov.ua/druk/publicat/kat_u/2013/dop/12_13/zvit.zip

Ingelhart, R.F.; & Norris, P. (2016). Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash. *HKS Working Paper No. RWP16-026*. (Online 25.01.2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2818659.

InSight Crime (2022, February 1st). InSight Crime's 2021 Homicide Round-Up. (Online: 27.06.2022), https://insightcrime.org/news/insight-crimes-2021-homicide-round-up/

Institute Nacional de Estadística y Geografia (INEGI) (2022). Homicide Rate Data and Redional Unemployment Data. [Data] (Online: 27.06.2022), https://www.inegi.org.mx/

Iyer, S.; Kitson, M. & Toh, B. (2005). Social Capital, Economic Growth and Regional Development. *Regional Studies*. 39(8), 1015-1040.

J, K

Kaltwasser, C. R. (2018). Studying the (Economic) Consequences of Populism. *American Economic Association Papers and Proceedings*, 108, 204-207.

Kalyvas, S. N. (2006). *The Logic of Violence in Civil War*. Cambridge University Press.

Kapoor, M.; Kelejian H. H. & Prucha I. R. 2007. Panel Data Models with Spatially Correlated Error Components. *Journal of Econometrics* 140: 97–130.

Karachurina L (2013). Migration processes in Russia in 2012. *Trends and Outlooks*, 34, 309-326.

Kaufmann, D.; Kraay, A. & Zoido-Lobatón, P. (1999). Aggregating Governance Indicators. *Policy Research Working Paper 2195*. (Online: 27.06.2022), http://info.worldbank.org/governance/wgi/pdf/govind.pdf

Kaufmann, D. & Kraay, A. (2002). Growth Without Governance. *Economía* 3(1), 169-230.

Kaufmann, D.; Kraay, A. & Mastruzzi, M. (2010). The Worldwide Governance Indicators. Methodology and Analytical Issues. *Hague Journal on the Rule of Law*, 3, 220-246.

Keefer, P.; cScarlascini, C. & Vlaicu, Razvan (2021). Social Trust and Electoral Populism: Explaining the Quality of Government. *Inter-American Development Bank Working Paper No. 1052*. (Online: 27.06.2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3460914

Kende, A., & Krekó, P. (2020). Xenophobia, Prejudice, and Right-Wing Populism in East-Central Europe. *Current Opinion in Behavioral Sciences*, 34, 29-33.

Korovkin, V. & Makarin A. (2019). Trading with the Enemy: The Impact of Conflict on Trade in Non-Conflict Areas. Working Paper. *Center for Economic Research and Graduate Education - Economics Institute*. Prague.

Kose, M. A.; Prasad E. S. & Terrones M. E. (2009). Does Financial Globalization Promote Risk-Sharing? *Journal of Development Economics*, 89(2), 258-270.

Krugman P. R. (1996). Increasing Returns, Monopolistic Competition, and International Trade. *Journal of International Economics*, 19(4), 469-479.

L

La Ferrara, E. & Alesina, A. (2000). Participation in Heterogeneous Communities. *Quarterly Journal of Economics*, 115(3), 847-904.

La Porta, R.; Lopez-de-Silanes, F.; Shleifer, A. & Vishny, R. (1999). The Quality of Government. *Journal of Law, Economics & Organization*, 15(1), 222-279.

Lee, L.-F., & J. Yu. 2010a. Estimation of Spatial Autoregressive Panel Data Models with Fixed Effects. *Journal of Econometrics* 154: 165–185.

Leftwich, A. & Sen, K. (2010). Beyond Institutions. University of York and University of Manchester, (Online: 25.01.2022), https://assets.publishing.service.gov.uk/media/57a08b00e5274a31e00008e8/8933_Beyond-Institutions-final.pdf

Lewis, K. K. (1999). Trying to Explain Home bias in Equities and Consumption. *Journal of Economic Literature*, 37(2), 571–608.

Lewis, P.; Clarke, S. & Barr, C. (2019). How we Combed Leaders' Speeches to Gauge Populist Rise. A look at the Methodology Team Populism used to Chart Surge in Populism. *The Guardian*. (Online: 27.06.2022), https://www.theguardian.com/world/2019/mar/06/how-we-combed-leaders-speeches-to-gauge-populist-rise

Litina, A. & Palivos, T. (2016). Corruption, Tax Evasion and Social Values. *Journal of Economic Behavior & Organization*, 124, 164-177.

M

Margalit, Y. (2019). Economic Insecurity and the Cause of Populism, Reconsidered. *Journal of Economic Perspectives*, 33(1), 152-170.

Matthes, J., & Schmuck, D. (2017). The Effects of Anti-Immigrant Right-Wing Populist Ads on Implicit and Explicit Attitudes: A Moderated Mediation Model. *Communication Research*, 44(4), 556-581.

Mayda, A. M. (2006). Who is Against Immigration? A Cross-Country Investigation of Individual Attitudes towards Immigrants. *The Review of Economics and Statistics*, 88(3), 510-530.

Milliken, F. J. (1987). Three Types of Perceived Uncertainty about the Environment: State, Effect and Response Uncertainty. *Academy of Management Review*, 12(1) 133-143.

Ministry of Unification, Republic of Korea (2020). *Comparison of the Nominal Gross Domestic Product (GDP) between South and North Korea from 2010 to 2019*, [Data Set] Quoted from Statista. [Data] (Online: 27.06.2022), https://www.statista.com/statistics/1035390/south-korea-gdp-comparison-with-north-korea/

Moffitt, B. (2016). The Global Rise of Populism: Performance, Political Style, and Representation. Stanford California: Stanford University Press.

Mudde, C. (2004). The Populist Zeitgeist, *Government and Opposition*, 39, pp. 542–563.

Mudde, C. & Kaltwasser, C.R. (2018). Studying Populism in Comparative Perspective: Reflection on the Contemporary and Future Research Agenda. *Comparative Political Studies*, 51(3), 1667-1693.

N

Nadler, A. (2019). Populist communication and media environments. *Sociology Compass*, 13(8), 1-10.

National Bank of Ukraine (2020). Statistics. [Data] (Online: 27.06.2022), https://bank.gov.ua

Nieto, N. (2012). Political Corruption and Narcotrafficking in Mexico. Transience, 3(2), 1-36.

North, D. C. (1990). A Transaction Cost Theory of Politics. *Journal of Theoretical Politics*, 2(4), 355-367.

North, D. C. (1991). Institutions. *The Journal of Economic Perspectives*, 5(1), 97-112.

Nowakowski, A. (2021). Do Unhappy Citizens Vote for Populism? *European Journal of Political Economy*, 68, 1-28.

Nunn, N. & Wantchekon, L. (2011). The Slave Trade and the Origins of Mistrust in Africa. *American Economic Review*, 101(7), 3221-3252.

O

Obstfeld, M. & Rogoff, K. (2001). The Six Major Puzzles in International Macroeconomics: Is There a Common Cause? *In NBER Macroeconomics Annual 2000*, 15. MIT press.

Organization for Economic Cooperation and Development (2016). *Factbook 2015 – 2016: Economic, Environmental and Social Statistics*, OECD Publishing, Paris.

Osborn, A. & Nikolskaya, P. (2022, February 24). Russia's Putin authorizes 'special military operation' against Ukraine. *Thomson Reuters*. https://www.reuters.com/world/europe/russias-putin-authorises-military-operations-donbass-domestic-media-2022-02-24/

Osiichuk, M. & Shepotylo O. (2019). Conflict and Well-Being of Civilians: The Case of the Russian-Ukrainian Hybrid War. *Economic Systems*, 1-47.

P

Pappas, T. S. (2016). Are Populist Leaders "Charismatic"? Constellations 23(3), 278-390.

Peres M.; Ameer W. & Xu H. (2018). The Impact of Institutional Quality on Foreign Direct Investment Inflows: Evidence for Developed and Developing Countries, *Economic Research*, 31, 626–644.

Pesaran, M. H. (2007). A Simple Panel Unit Root Test in the Presence of Cross-section Dependence. *Journal of Applied Econometrics*, 22(2), 265-312.

Pham, T.; Talavera, O. & Tsapin, A. (2018). Shock Contagion, Asset Quality and Lending Behavior. *Discussion Paper 21*. The Bank of Finland Institute for Economies in Transition. Helsinki.

Pillinger, R. (2021). Random slope models [video and transcript]. (Online: 27.06.2022) https://www.bristol.ac.uk/cmm/learning/videos/random-slopes.html.

Prebisch, R. (1964). Für eine bessere Zukunft der Entwicklungsländer. In: Fischer, K., Hödl, G., Sievers, W. (Editors). Klassiker der Entwicklungstheorie, (120-147), Mandelbaum Verlag.

Putnam, R. D.; Leonardi, R. & Nanetti, R. Y. (1992). Making Democracy Work: Civic Traditions in Modern Italy. Princeton University Press.

Putnam, R. (2001). Social Capital: Measurement and Consequences. *Canadian Journal of Policy Research*. 2(Spring), 41-51.

Q, R

Rauch J. & Trindade V (2002). Ethnic Chinese Networks in International Trade. *Review of Economics and Statistics*, 84(1),116–130.

Reck, F (2020). The Impact of Governance on FDI. *Applied Economics Quarterly*, 66(2), 131-144.

Rico, G.; Guinjoan, M., & Anduiza, E. (2017). The emotional underpinnings of populism: How anger and fear affect populist attitudes. *Swiss Political Science Review*, 23(4), 444-461.

Ríos, V. (2017). Crime and Violence Effects on Economic Diversity: The case of Mexico's Drug War. (Online: 27.06.2022), https://scholar.harvard.edu/files/vrios/files/crimeanddiver2017_v4.pdf

Rivelois, J. (1999). *Drogue et pouvoirs: du Mexique aux paradis*, L'Harmattan.

Robinson, J. & Acemoglu, D. (2012). *Why Nations Fail*. Crown Publishing Group.

Robles, G.; Calderón, G. & Magaloni, B; (2015). The Economic Consequences of Drug Trafficking in Mexico. Stanford International Crime and Violence Lab Publications. (Online: 27.06.2022), https://cddrl.fsi.stanford.edu/crimelab/publication/economic-consequences-drug-trafficking-violence-mexico

Rode, M. & Revuelta, J. (2014). The wild Bunch! An Empirical Note on Populism and Economic Institutions. *Economics of Governance*, 16, 73-96.

Rodrik, D. (2018). Is Populism Necessarily Bad Economics? *American Economic Association. Papers and Proceedings*, 18, 196-199.

Roodman D. (2007). How to Do xtabon2: An Introduction to "Difference" and "System" GMM in Stata. *Working Paper No. 103*. Center for Global Development, Washington DC.

Rooduijn, M., & Burgoon, B. (2018). The Paradox of Well-Being: Do Unfavorable Socioeconomic and Sociocultural Contexts Deepen or Dampen Radical Left and Right Voting among the Less Well-Off? *Comparative Political Studies*, 51(13), 1720-1753.

Rossoliński-Liebe, G., & Willems, B. (2022). Putin's Abuse of History: Ukrainian 'Nazis','Genocide', and a Fake Threat Scenario. *The Journal of Slavic Military Studies*, 35(1), 1-10.

Rostow, W. (1960). *The Stages of Economic Growth. A Non-Communist Manifesto*. Cambridge University Press.

Rubio, M. (2014). The Effect of Armed Conflict on Social Capital in Colombia. (Online: 27.06.2022) http://aswede.iies.su.se/papers/ASWEDE_C1_Rubio.pdf

S

Sabir, S.; Rafique A. & Abbas K. (2019). Institutions and FDI: Evidence from Developed and Developing Countries, *Financial Innovation 5*, 1–20.

Sánchez-Guerrero, S. A. (2015). The Donation of Blood in Mexico. *Medicina Universitaria*, 17(66), 16-17.

Schott, H. & Wied-Nebbeling, S. (2005*).* *Grundlagen der Mikroökonomik*. Springer.

Secretaría de Educación Pública (SEP) (2022). Share of Students Enrolled in Private Schools of the Total Amount of Students. [Data] (Online: 27.06.2022), https://www.gob.mx/sep

Slangen, A.H.; & van Tulder, R. J. M. (2009). Cultural Distance, Political Risk, or Governance Quality? Towards a more Accurate Conceptualization and Measurement of External Uncertainty in Foreign Entry Mode Research. *International Business Review*, 18(3), 276-291.

Smeets, R. (2008). Collecting the Pieces of the FDI Knowledge Spillovers Puzzle. T*he World Bank Research Observer*, 23(2), 107-138.

Sørensen, B. E. & O. Yosha (1998). International risk-sharing and European monetary unification. *Journal of International Economics*, 45(2), 211–238.

Stankov, P. (2020). *The political economy of populism. An introduction.* New York: Routledge Taylor & Francis Group.

Stanley, B. (2009). The thin ideology of populism. *Journal of Political Ideologies*, 13(1), 95-110.

StataCorp. (2021a). Stata 16 Base Reference Manuel. Multilevel Mixed-Effects Linear Regression. College Station, TX: Stata Press.

StataCorp. (2021b). Stata 16 Base Reference Manuel. Spatial Autoregressive Models for Panel Data. College Station, TX: Stata Press.

State Statistics Service of Ukraine (2012, 2017, 2018). Economic Statistics & Regional Statistics. [Data] (Online: 27.06.2022), www.ukrstat.gov.ua

Statistics Service of Ukraine (2017). External Labor Migration of the Population. Statistical Bulletin, [Data] (Online: 27.06.2022), www.ukrstat.gov.ua/druk/publicat/kat_u/2017/bl/12/bl_ztm_2017.zip.

T

Team Populism (2022). Team Populism Data. [Data] (Online: 27.06.2022), https://populism.byu.edu

Teichman, J. (2011). *Mexico: From Perfect Dictatorship to Imperfect Democracy*. In: Isbester, K. (Ed.). The Paradox of Democracy in Latin America. Ten Country Studies of Division and Resilience. Toronto Press.

The Fund For Peace (2022). Fragile States Index. [Data] (Online: 27.06.2022) https://fragilestatesindex.org/excel/

Treisman, D. (2018). *Crimea: Anatomy of a Decision*. In: Treisman, D. (Ed.) The new Autocracy: Information, Politics, and Policy in Putin`s Russia. *Brookings Institution Press.* Washington, D.C.

U

Ukrainian Center for Social Reforms, State Statistics Committee of Ukraine (2009). External Labor Migration of the Population of Ukraine. Kyiv, SE "Information-analytical agency", www.ukrstat.gov.ua/druk/katalog/pracia/ztm.zip

Ukraine Population Census (2001). Population of Ukraine. [Data] (Online: 27.06.2022),http://database.ukrcensus.gov.ua

Ullah I. & Khan M. A. (2017). Institutional Quality and Foreign Direct Investment: Evidence from Asian Countries. *Journal of Economic Studies 44*, 1030–1050.

United Nation Office for the Coordination of Humanitarian Affairs (OCHA) (2020). The Humanitarian Data Exchange. [Data] (Online: 27.06.2022), https://data.humdata.org/

United Nations High Commissioner for Refugees (2022). Refugee Data. [Data] (Online: 27.06.2022), https://www.unhcr.org/refugee-statistics

United Nations Office on Drugs and Crimes (2022). Homicide Country Data. [Data] (Online: 27.06.2022), https://dataunodc.un.org/content/homicide-country-data

V

Varieties of Democracy (V-Dem) (2022). V-Party Dataset. [Data] (Online: 27.06.2022), https://www.v-dem.net/vpartyds.html

Verea, M. (2018). Anti-Immigrat and Anti-Mexican Attitudes and Policies during the First 18 Months of the Trump Administration. Norteamérica, 13(2), 197-226.

Verdugo-Yepes, P.P. & Xingwei, H. (2015). Crime and the Economy in Mexican States: Heterogeneous Panel Estimates (1993-2012). *International Monetary Fund Working Paper* 121, (Online: 25.02.2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2623806

W

Wallerstein, I. (2004). *World-Systems Analysis. An Introduction*. Duke University Press.

Westerlund, J.; Petrova, Y. & Norkute, M. (2019). CCE in Fixed-T Panels. *Journal of Applied Econometrics*, 34(5), 1-34.

Williamson, O. E. (1985). *The Economic Institutions of Capitalism. Firms. Markets, Relational Contracting.* The Free Press.

World Bank (2022). Word Development Indicators. [Data] (Online: 27.06.2022). https://data.worldbank.org/indicator

World Bank (2022). Worldwide Governance Indicators. [Data] (Online: 27.06.2022). http://info.worldbank.org/governance/wgi/

Wu, L. & Brynjolfsson, E. (2015). The Future of Prediction: How Google Searches Foreshadow Housing Prices and Sales. (Online: 27.06.2022) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2022293

X,Y,Z

Younsi, M. & Bechtini M. (2019). Does Good Governance Matter for FDI? New Evidence from Emerging Countries Using a Static and Dynamic Panel Gravity Model Approach. *Economics of Transition and Institutional Change 27*, 841–860.