

HISTORICAL LEGACIES AND  
ECONOMIC PERFORMANCE IN  
UKRAINE

by

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Abstract

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The Decentralization reform in Ukraine started in 2015, transforming towns and cities into newly amalgamated communities. Although this reform has been praised as successful by many researchers, the amalgamated communities diverge in economic performance significantly. Few empirical studies were conducted to explain this variation. This research presents new historical explanations of this divergence dating back to the 19th-century Russian Empire. By leveraging the unique data gathered from archive documents and publicly available data on communities' revenues, the research investigates the relationship between the state capacity of the Russian Empire, the Ukrainians' experience of self-governance, the historical background of the Ukrainian regions, and the economic performance in 2021. Drawing on the theoretical scholarship by Acemoglu and Robinson (2020), Borcan and colleagues (2017), and Markevich (2019), this paper analyzes the Russian Empire from a regional perspective. Statistical models show that territories with the higher share of the Ukrainians in local administrations at the end of the 19th century tend to collect more revenues in 2021. Besides, the territories gained from the Polish-Lithuanian Commonwealth are disadvantaged due to historical-geographical circumstances, and the pattern persists till nowadays.

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## LIST OF ABBREVIATIONS

**ATC.** Amalgamated territorial community

**MCTD.** Ministry of Communities and Territories Development

## *Chapter 1*

### INTRODUCTION

The Decentralization reform in Ukraine appeared to be one of the most successful reforms since 2014. It started in 2015, and the amalgamations were finished in 2021 so that the country's whole territory is covered by amalgamated territorial communities (ATCs). Undoubtedly, it has a profound effect on the political and economic life of the Ukrainians. Research has shown the multiple positive impacts of the reform. It improved taxes, spending, and satisfaction with local services (Reznik et al. 2020; Harus and Nivyevskyi 2020). Although contemporary researchers and pundits often discuss decentralization and communities as a recent phenomenon in Ukraine, in fact, the concept of "hromada" (community) dates back to at least 1878 (when M. Drahomanov (an influential Ukrainian intellectual) published his political work on Hromadas). Drahomanov considered the idea as genuinely inherent to the Ukrainians. His ideas are still present in the modern political discourse. However, whether the historical development of communities from the 19th century impacts the socio-economic performance of the Ukrainian territories today is still unknown. My thesis aims to address this question.

Addressing the question contributes to the discussion on the Russian Empire's impact on the socio-economic development of Ukraine. The discussion is actively developing in political science, history, and cultural study fields and much less vibrantly in the fields of economics. It primarily concerns the issue of the colonial status of Ukraine within the Russian Empire and USSR (von Hagen 2014). In turn, this discussion is a part of a larger field on colonialism. Also, it contributes to the literature on long-lasting historical effects (Nunn 2009) and foundations of economic growth (in a comparative development perspective).

Revealing the historical explanations of economic divergence in the Ukrainian regions might show new ways of dealing with regional inequality. The awareness of historical background may increase the quality of policymaking and highlight which weaknesses and strengths the government should focus on.

Introducing decentralization, the central government has empowered communities and provided them with extra resources. More than 1,700 communities were formed. Local people received unprecedented opportunities for self-government but also a great responsibility. Accordingly, for the first time, we received unique data on economic performance and governance efficiency at the community level in Ukraine. The number of observations provides excellent opportunities for economic analysis within a country.

Acemoglu and Robinson state that the proper combination of state capacity and liberties tends to result in higher economic development. Borcan and colleagues argue that state experience is crucial for the development of societies. Markevich analyzes the economic divergence in the Russian Empire from a regional perspective. In turn, I apply their concepts and approaches to discover the impact of state capacity and self-governance experience on the current economic performance of the Ukrainian regions.

I use local taxes per capita as the primary indicator of economic performance. The main assumption of this paper is that the experience of self-governance combined with state capacity and historical regional legacies explain these variations.

The detailed data processing allowed us to get census data distinguishing Russians, Ukrainians, and Belarusians. Most publicly available datasets do not contain variables we are interested in, while the others consider Ukrainians and Belarusians as Russians avoiding divisions. Besides the census, I processed two

other sources adding new valuable variables. Thus, my new data are more detailed and suitable for capturing some new hidden historical traces.

This research is pioneering in bridging historical legacies of the Russian empire and modern outcomes at the level of communities. The empirical data was manually extracted from archives, providing a novel unique dataset. It opens promising opportunities for within-country research to determine the intrinsic causes of the regional economic performance variations. This work is the first step in discovering the extent to which the Russian Empire's legacy explains the variation in the economic performance of the Ukrainian regions (communities) today.

The results show that number of Ukrainians in local administration is an important factor explaining variation in today's taxes per capita. The finding supports the assumption that the self-governance experience positively affects economic performance. Moreover, the quadratic term of this variable has a negative sign indicating that the relationship is concave: more Ukrainians in administration would have a positive effect overall. However, it is diminishing with each extra Ukrainian. At the same time, the presence of non-Ukrainians in local administration has a negative sign. It could mean those imperial officials were inefficient and corrupted or cared less about developing the territories and more about extracting resources. This question needs additional research.

Another important finding concerns the regional divergence tendency over centuries. It appears that territories gained from the partition of the Polish-Lithuanian Commonwealth are significantly disadvantaged compared to the other territories. We propose several explanations the Chapter 5.

The structure of the paper is organized as follows. Chapter 2 starts with a literature review on the relevant historical-economic studies and municipality amalgamation reform research. Chapter 3 develops the methodology of the study.

Chapter 4 describes the data for the models to which results are to be presented in Chapter 5, along with considerations on alternative data management and robustness checks. Chapter 6 summarizes the main findings and discusses the results.

## *Chapter 2*

### LITERATURE REVIEW

Researchers consider the reforms on municipal consolidation and their effects ambiguous. Studies on amalgamation propose ambiguous results on economic efficiency. Merging does increase the quality of services, but it also leads to increasing costs (expenditures). Also, it was discovered that larger local governments could provide better quality services to their citizens.

Concerning the fiscal outcomes, municipal amalgamations improve the fiscal outcomes in a five-year perspective (Hansen 2014). The general effect of amalgamations on economic growth is still undefined. It is supposed that fragmentation, not amalgamation, supports experimentation and innovation (Tavares 2018). However, amalgamation may also be perceived as fragmentation in the Ukrainian case. That is due to a prior administrative division where central government hierarchy played a much more crucial role. Before the reforms, rayons were the most influential regional units that distributed finances. Local governments were weak, suffered from low institutional and financial capacity to provide basic services sufficiently, and most importantly, they were dependent on central state organs financially and politically (Romanova and Umland 2019). The decentralization reform led to financial decentralization as well. The direct impact is the growth of local budgets, which probably became one of the most important outcomes of the reform (Reznik et al. 2020). Eventually, the collection of taxes and financial flows from the center became more predictable and transparent. The reform reduced “the opportunities for national and elites to engage in patron-client dealings” (Myshlovska 2021).

In turn, decentralization prompts local government competition (Swianiewicz 2017). As a result, communities become more diversified in different terms.

Particularly, they differ in economic performance that become more traceable (Tavares 2018). Compared to the rayon division, these new and more fragmented entities are expected to have increased managerial effectiveness and higher quality of services. On the other hand, amalgamated communities are larger than single villages or towns. The common view is that larger local governments can provide better quality services to their citizens (Swianiewicz 2017). However, the other interesting notice of Swianiewicz is that most empirical studies of municipal mergers' effects have focused on top-down (compulsory) reforms. Thus, little is known about the degree of success of voluntary mergers. It implies that differences in performance of newly amalgamated communities could be explained by the fact of mandatory or voluntary amalgamation. In the Ukrainian case, the reform included both features since, initially, this process was voluntary until 2020, when all separated towns and villages were amalgamated from the top-down. It may appear that these retarded communities perform worse.

Therefore, communities and municipalities tend to compete, so they succeed differently. Obviously, there are multiple socio-economic reasons for the variation, and many may be deeply rooted. We suppose these differences might be partially explained by the historical legacy of the Russian Empire.

The historical legacies of the empires have a long-lasting impact on cultural norms in society, mode of interactions in society, and trust in state institutions. The new institutionalism view suggests that history is important because it shapes institutions while institutions shape the economy (de Blasio and Nuzzo 2006). Thus, a bulk of literature is devoted to investigating historical legacies.

Sasha Becker and colleagues found that people living in former Habsburg territory have higher levels of trust in courts and police (Becker et al. 2015). Together with other authors, he also researched mechanisms of the transmission of cultural norms over time, discovering the effect of history on people's trust in

the state and the ensuing functioning of state institutions. Volha Charnysh and Leonid Peisakhin show that the state's institutions that form identity leave lasting cultural legacies but with some nuances (2021). State capacity is a crucial factor in this process (Peisakhin 2013). Furthermore, Acemoglu and Robinson researched the long-lasting effect of colonists' mortality rate on institutions that, in turn, affected economic performance (mortality rate was used as IV for institutions) (Acemoglu et al. 2001). They conclude that institutions determine economic performance, and the diversity of institutions results in a divergence of national incomes. It largely depended on the climate conditions and higher mortality rates among settlers. Unfavorable conditions inclined settlers to set up extractive institutions, while inclusive institutions were set up under favorable conditions. The latter is associated with vastly higher national incomes today.

To discover historical legacies, one might benefit from a natural experiment. Peisakhin (2010) took Ukraine for investigation as after Poland's Partition, the local otherwise homogenous population appeared to be divided between two monarchies. The author argues that after demolishing empires, the established behavioral scripts persisted into the present. He surveyed people on the sides of the imperial frontier to prove the statement. In the case of the Russian Empire solely, the year of accession of new hubernia may also be an influential factor compared to older hubernias. Volyn and Podillia hubernias were accessed after the Partitions of Poland (in the 1790s), so they were under Poland's law for a long time. Particularly, the difference in serfdom law that has long-lasting effects is apparent (Markevich and Zhuravskaya 2015). Despite the serfdom, all the other discrepancies and factors also play an essential role. Becker and colleagues argue that years later, the empire's legacy still significantly influences cultural norms in society, interaction in society, and trust in state institutions today (2011). Moreover, the authors suggest that even short interventions can have a long-persistent effect. Peisakhin also emphasizes that, as a rule, the state's institutions

that form identity leave lasting cultural legacies. According to Putnam, these differences may significantly contribute to variations in a country's economic development of regions (Putnam 1992; Barrutia and Echebarria 2010; de Blasio and Nuzzo 2006; Calcagnini and Perugini 2018).

All these factors are interrelated. However, there are fundamental predeterminants of economic development. Acemoglu and Robinson argue that state capacity in combination with inclusive institutions is crucial (Acemoglu et al. 2002; Acemoglu and Robinson 2020). More specifically, a balanced combination of state capacity and property rights is essential to economic prosperity (Acemoglu 2019). A lot of other works also emphasize the role of property rights (Sekeris 2015) and why it depends on institutions and state capacity (Williamson and Kerekes 2011). This interplay of state capacity and property rights appeared to become the fundamental predeterminants of economic development. Broadly saying, the state capacity might be understood as military and bureaucratic/administrative capacity (Hendrix 2010). It may be reflected, for example, in the number of police officers in a district or the number of bureaucrats (public servants) though the quality of service is more important than quantity. Müller-Crepon and colleagues (2020) show that distance to the capital of a country or Empire matters as well (St. Petersburg in the case of the Russian Empire). The most obvious reason is that the state control becomes weaker with the distance. That is why, for example, the likelihood of conflict events increases with distance to the capital (e.g., the number of rebellions).

Despite a rich literature on historical predeterminants of economic development, there is a lack of within-country research. This analysis seems promising at the level of communities, municipalities, or other small administrative divisions. From a broad perspective, researchers say that the success of municipal consolidation and the consequent performance also depends on the history, spatial and economic circumstances of the distinct region (Vojnovic 2000). Other

researchers also argue that historical legacies are essential in shaping the political environment and newly formed institutions (Pop-Eleches 2015). Notably, in his article, Pop-Eleches develops the statement that communism was unable to reverse longer-term intraregional differences in areas of socio-economic development (or post-communist economic reforms made it insignificant). Overall, “the consensus is that empires affected development patterns of modern countries significantly. In particular, the identity of the colonizing power is important to the growth of modern nations” (Grier 2007). Thus, the legacy of the Russian Empire may still be salient today within ATCs.

A within-country approach could be the most beneficial to discover the apparent effects of historical legacy. Last works on topics related to the economic development of countries and regions shifted from cross-country to within-country approach (mainly due to improvement of identification and the possibility to employ the best econometric techniques) (Michalopoulos and Papaioannou 2020). Some historical divisions constitute great examples of natural experiments whose outcomes are present nowadays. More specifically, some authors (Borcan et al. 2017) argue that the development of modern states is strongly related to the extent of state history. The relationship is hump-shaped, meaning that too much or too little state experience is associated with the least developed countries. The arguments are based on within-country analysis.

Markevich's research (2015, 2019) can be considered a starting point for my research. He focused on the economic analysis of the whole Russian Empire's regions. We are more interested in the parts concerning the Ukrainian territories. From the analysis, we can see that three regions within the borders of Ukraine differ in indicators of economic activity.

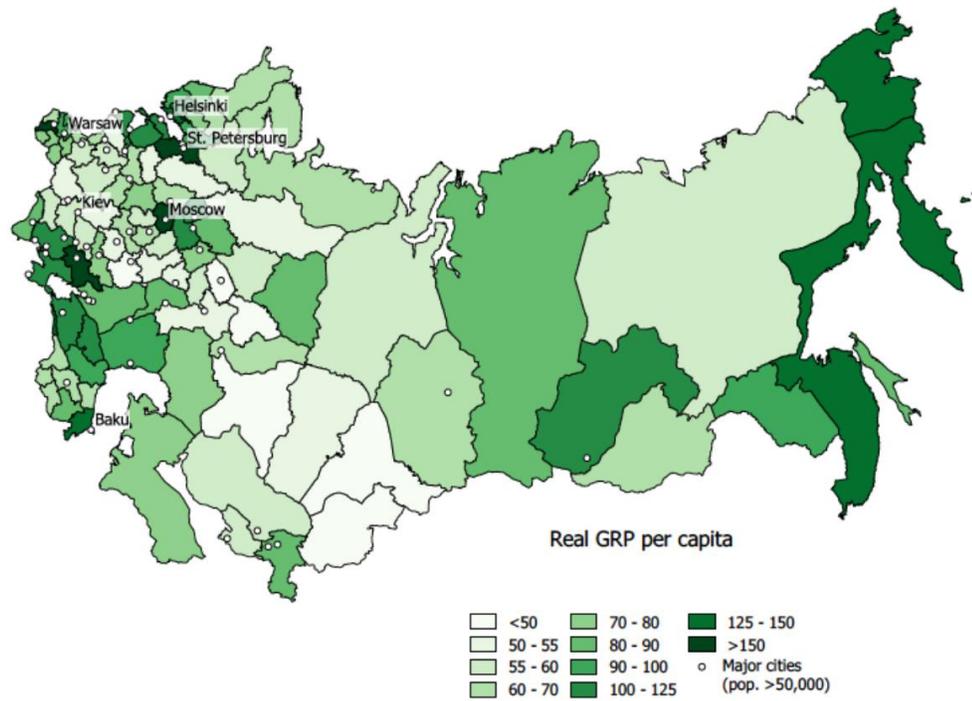


Figure 1. Real gross regional product per capita in the provinces of the Russian Empire in 1897 (1897 rubles)

Source: Markevich 2019

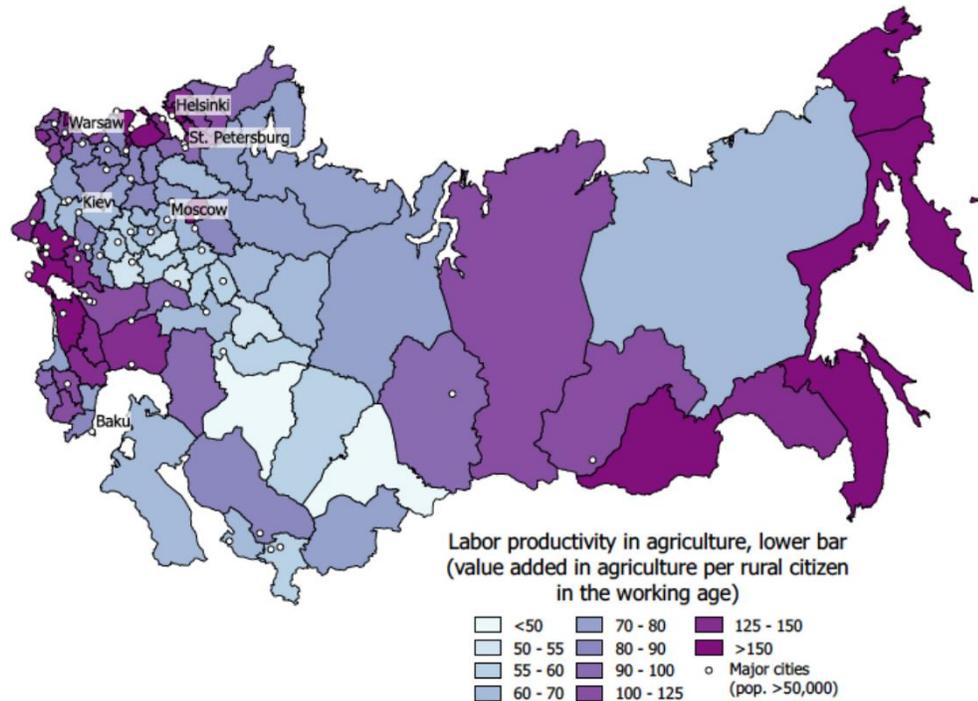


Figure 2. Labor productivity in agriculture in the provinces of the Russian Empire in 1897 (1897 rubles)

Source: Markevich 2019

Besides, many works on the economic performance of the new Ukrainian hromadas note a positive economic impact. Mainly, A. Harus and O. Nivjevskyi argued that amalgamated territorial communities had collected more local taxes than before territorial consolidation (Harus and Nivjevskyi 2020). Although they found it an undoubtedly successful reform, they did not research the issue of differences in income per capita and how it is related to historical legacies. Thus, much research is to be done since “in 1991, Ukraine inherited a difficult legacy with its independence. It lies on the border between East and West, with regions that have completely different histories, with a plethora of unresolved ethnic, religious, social, and economic conflicts,” as Frank-Walter Steinmeier said (Blome 2014).

### Chapter 3

#### METHODOLOGY

The research concerns whether variation in political factors and different historical conditions in the late 19th century affects the economic performance of amalgamated territorial communities (ATC) created after 2014 (within the modern Ukrainian territories under the Russian Empire's rule). The general framework for the modeling is borrowed from the ideas of Acemoglu and Robinson, Borcan and colleagues, and Markevich.

In this research I will estimate the following model (where vector (x) stands for a vector of other control variables):

$$\text{Local taxes} \sim \text{Non-Ukrainians in administration} + \text{Ukrainians in administration} + (\text{Ukrainians in administration})^2 + \text{Macroregion (factors)} + \text{Vector (X)} + U_i$$

Taking this model as a basic, we try three different data arrangements: first aggregation method (povit level), second aggregation method (povit level), and ATC level data. For control purposes, we include variables on education, urbanization, industrialization, distance to Moscow, trade activity, population and population density, and private lands. The data manipulation and variables are described in the next chapter.

In this work, the dependent variable is taxes collected per capita of ATC. It is used to consider revenue as a proxy for economic performance, reflecting the wealth of a commune (Vogler 2019). Also, revenue is used as an indicator of economic growth in other research on Polish communities (Raźniak and Winiarczyk-Raźniak 2013). This research requires distinguishing the revenues by the sources of income:

state transfers and local taxes collected. We are interested in the latter since they represent local communities' actual capabilities. The transfers could rather be evidence of the economic weakness of ATC (meaning that it needs donations).

The concept of a narrow corridor (Acemoglu and Robinson 2020) implies that the proper combination of liberties and state capacity can lead a society to prosper. However, the excessive state capacity and, in turn, the state's intervention in people's lives can have negative consequences. The state capacity might be measured utilizing the data on the number of public servants and administration representatives per 1000 population. We are going further by creating two variables related to state capacity: non-Ukrainians in administration (per 1000) and Ukrainians in administration (per 1000). We use the latter one to discover how much the presence of Ukrainians in the Russian Empire's local administrations is associated with the economic performance of ATCs today. We assume it represents the self-governance experience as discussed above.

Also, we take a quadratic term to get a complete picture. That will show us the rate of change. I suppose the effect of Ukrainians in administration decreases as the number of Ukrainians increases. The form of relationship is essential as with the increasing number of Ukrainians they will have increasingly more access to power. If their number is not large enough, they could be overruled by the Russians or other minorities. That is why we include non-Ukrainians in the administration variable, expecting it will have a negative sign.

First, we calculate the sum of all people occupied in local administration, and then we subtract the number of Ukrainians. Eventually, we take all non-Ukrainians and Ukrainians and divide it by the povit population to get those two variables. The variables used are 1) administration, courts, and police; and 2) public service. (Ukrainians in administration)<sup>2</sup> variable is a quadratic term of the Ukrainians in administration variable.

Basically, the idea of looking for the self-governance experience is grounded on the state experience research (Borcan et al. 2017), showing that within a country, the regions that perform better also have more extended state experience (though with reservations discussed above). We take this idea to derive the hypothesis that the higher presence of Ukrainians in the local administration implied they gained more self-governance experience. In this case, we consider this experience closer to the state experience.

The history of the Ukrainian territories is complicated. Thus, we created several major administrative divisions when searching for imperial legacies. Macroregion became another variable of primary interest. It factorizes three regions: Polish hubernias, South hubernias, and Malorosia (the reference factor).

Russia conquered large parts of modern Ukrainian territories as a result of wars against the Polish-Lithuanian Commonwealth and Ottoman Empire. The territories of Volyn, Podillia, and Kyiv (except the city Kyiv being under Russian rule before) hubernias were annexed to the empire due to the partitions of the Commonwealth. This process was finished after the Third Partition in 1795. Therefore, these territories had a long pre-Russian history, and supposedly they preserved some footprint (at least Leonid Peisakhin argues that influence from 18-19<sup>th</sup> persists). Similar reasoning might be applied to Kherson, Katerynoslav, Tavria, and Bessarabia hubernias. They constituted the South macroregion of the Russian Empire (the South of Ukraine) and were annexed during the second part 18<sup>th</sup> – beginning of the 19<sup>th</sup> century resulting from wars against Ottoman Empire and Crimean Khanate. Thus, these two macroregions stand for Polish-Lithuanian Commonwealth and Ottoman Empire, respectively.

However, the third region is considered as a reference one – Malorosia. This region plays a unique role as it corresponds to the lands of the Cossack Hetmanate. It saved the memory of past state history and autonomy. The history

of relations between the Ukrainians and the central government in Moscow is full of tensions. Nevertheless, the issue of autonomy never disappeared. Even some of the top governors were supporters of autonomy. Generally, the local aristocracy was embedded deeply in the social structure of the region. Thus, some extent of autonomy persisted over time. It allows us to suppose that the people of the Malorosia region had more sufficient self-governance (state experience) dating back to the Cossack Hetmanate.

Unlike Malorosia, Polish hubernias were dominated by Poles (the social structure and hierarchical relations inherited from the Polish-Lithuanian Commonwealth). The South region was experimental. The Russian Empire invested a lot of resources to colonize it, founded new settlements, and strengthened the borders. Ukrainians became the predominant group of the region (due to geographic proximity). A lot of settlements were founded by people from the Malorosia region. Nevertheless, the Ukrainians were challenged by other ethnicities (local Tatars, Moldovans or resettled Germans, Bulgarians, Serbs, Greeks, etc.). Also, the Empire favored resettlements of the Russians. Thus, we got a completely different picture of the social structure and hierarchical relations. There were much less of Ukrainians in the local administrations.

Thus, following the experience of other researchers (Peisakhin, Becker, Borcan, Putnam, and others), we are going to exploit this regional division.

The other variables included are for control purposes to prevent some warnings. First of all, the variables corresponding to the population are included. Since the old borders of povit contain multiple ATCs, we took the median of ATCs' population for each povit. The population of povits is represented in thousands. The first significant warning is latent modern effects of communities such as urbanization. There are several variables to handle it. First, we use the ratio of the urban population to the whole povit population. Also, all the ATCs are divided

into six groups (by population size). The communities of oblast centers constitute the reference group. This division is applied only in the third ATC-level approach.

The industrialization effect is another warning mentioned by Markevich. It is grasped by utilizing the number of factories per 1000 (povit level).

There are also some additional control variables. Distance to Moscow is important as the state capacity becomes weaker (according to the literature mentioned above) with distance. Thus, it is an essential variable with a positive sign expected.

The share of private land is another important additional variable. It is calculated as a ratio of private land to all lands (communal and state lands). Unfortunately, the appropriate data on the state of property rights in different districts is currently not available. Moreover, it is quite complicated to measure it within a country. Still, this variable may help us to account for the effects of attitudes to property rights. Markevich (2015) uses it as a control variable. He says that historically, the law upheld the institution of the commune so that they had higher chances of gaining lands. In turn, it harmed peasant incentives and led to lower yields in comparison to yields on private lands (Markevich, 2019). However, the regional divergence is salient—the variable control for those povits more favorable to private ownership.

Three more variables are calculated in line with calculations for the state capacity variables: number of teachers per 1000, and number of merchants per 1000.

Table 1. Explanatory variables and expected signs

Variable	Description	Expected effect
Non-Ukrainians in administration	Number of non-Ukrainian officials per 1000	-
Ukrainians in administration	Number of Ukrainian officials per 1000	+
(Ukrainians in administration) <sup>2</sup>	Quadratic term for the <i>Ukrainians in administration</i>	-
Macroregion	Includes 3 factors: Polish hubernias, South hubernias, and Malorosia as the reference factor	Ambiguous

Source: own calculations

## *Chapter 4*

### DATA

This chapter consists of three parts: description of data sources, data aggregation, and discovering the differences of macroregions.

#### **Description of data sources**

The data on Ukrainian ATCs is provided on the state website of the Ministry of Communities and Territories Development (U-LEAD 2021). It includes a wide range of variables: population, area of the community, total revenues, and taxes collected. It is available for the whole of 2021 – the most updated available data. Taxes collected is the variable of primary interest. It represents the economic performance of ATC and the effectiveness of the governance. We take annual taxes per capita for each ATC. On the histogram below (Figure 4), all taxes were rounded to hundredths, and the outliers were dropped off.

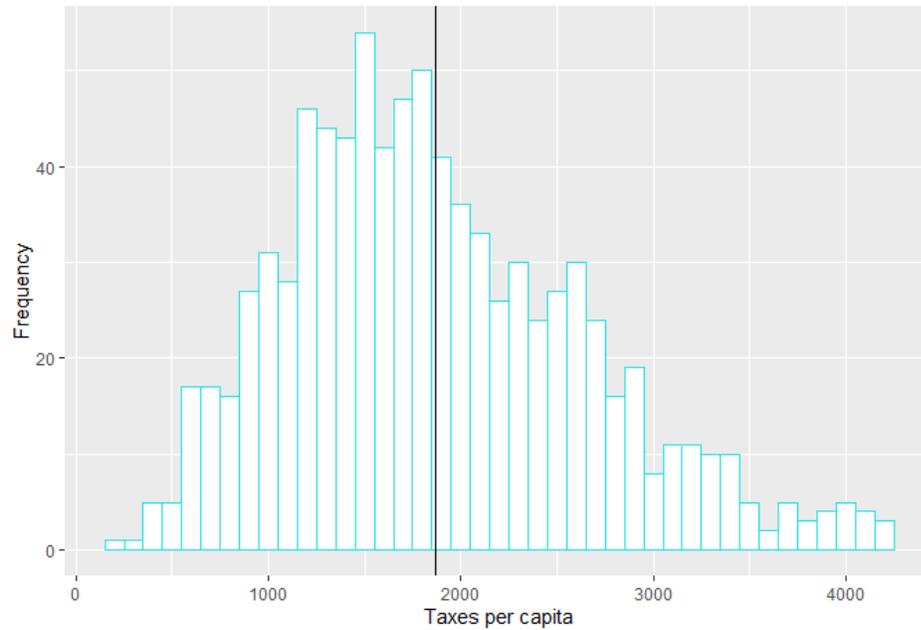


Figure 3. Distribution of taxes collected

Source: own calculations

Getting rid of outliers was the next step. We calculate the interquartile range and keep observation with values (local taxes collected) within  $1.5 \cdot \text{IQR}$  of  $Q1$  and  $Q3$ . There were 911 observations (ATCs) before filtering and 861 after. Thus, 50 observations were dropped off. Eventually, all the communities belonged to 86 povits. Besides, the MCTD published a dataset with ATCs' borders that allows building maps. Thus, we could find which ATC belonged to which historical administrative region. Additionally, it allowed us to calculate the distance to Moscow from the centroid of each ATC. Povit borders are displayed on the background of the map.

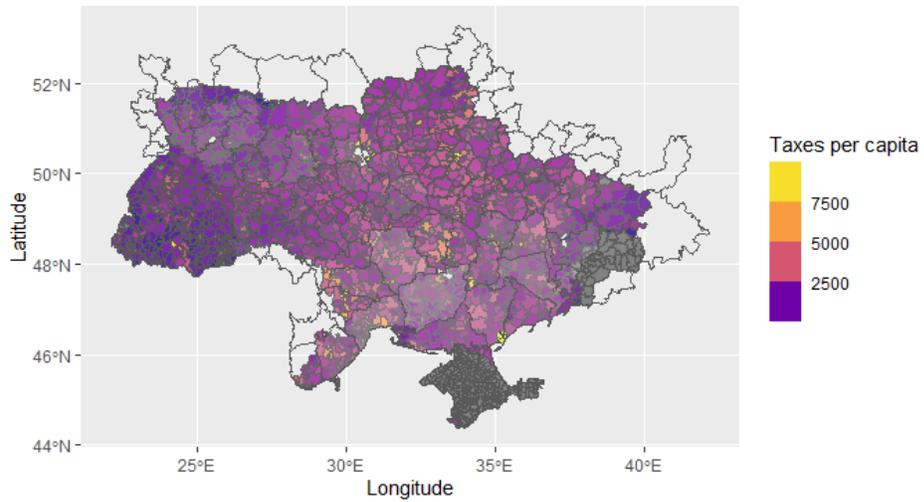


Figure 4. Taxes distribution by ATCs (map of Ukraine)

Source: own calculations

Table 2 represents the number of ATCs by population size. We created six groups and distinguished oblast centers in a separate group.

Table 2. Number of ATCs by population size

<b>Size of ATC (by population)</b>	less than 5 ths.	5 to 10 ths.	10 to 15 ths.	15 to 30 ths.	more than 30 ths.	oblast center
<b>Number of ATCs</b>	125	278	147	168	128	11

However, the research design implies using historical data. The availability of that data is also crucial for the research. Thus, it requires much data from the Russian

Empire. A bulk of historical data we rely on is available in scanned documents of the first Russian census conducted in 1897 (Trojnitckij 1903-1905). It includes data on demographics, occupations, social classes, etc. The most important feature is that it is available by nationality.

Additionally, another archived document provides data on land ownership in the Russian Empire: “Volosti y vazhneyshye selenyya evropeyskoy Rossii” (Ergeshov 1885-1886). The data on population and number of factories is extracted from a statistical book by Yasnopolskij (1913). All the data on the Russian Empire is available at the povit level. Povit is a type of administrative subdivision that is part of a gubernia (a principal administrative subdivision of the Russian Empire).

Most of the data had to be processed manually. Since this is a significant amount of work, about ten volunteers worked on it. In total, the work lasted almost half a year. In the end, we processed ten volumes of censuses (one for each province), two volumes of data on the amount of private land, one volume on the number of population and factories in 1913, and many other documents, the data from which could not be used in this study.

Finally, Kessler provided the Russian Empire Historical GIS Maps with coordinates of povit borders. That enables calculating the intersections of ATCs and povit and distances from povits and ATCs to Moscow (Kessler 2017). The distance is calculated from the centroid of a povit to Moscow. In the third data-aggregation approach (read below), the distance is from an ATC to Moscow. We take a log of it.

### Data aggregation

The main problem is the difference in administrative borders of ATC and povit. There are several ways to approach the issue. The first way implies aggregating the data to the level of povit. However, the challenge is defining which ATC belongs to which povit. We worked through two strategies:

- 1) Take the area of ATC and the area of povit to find the intersection. If more than 75% of the ATC's territory belongs to a specific povit, then it goes to the pool of that povit. The results are shown on the Figure 5 and Figure 6 (red colors represent the intersection area, and black color is for the administrative borders). Figure 7 represents the taxes distribution by ATCs included into the sample.



Figure 5. ATCs with area intersection of povits > 75%

Source: own calculations

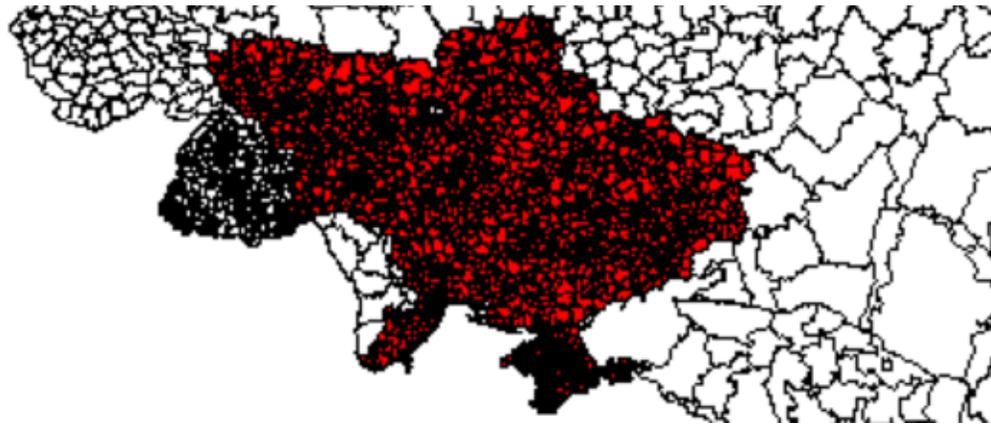


Figure 6. All intersection of ATCs and povit  
 Source: own calculations

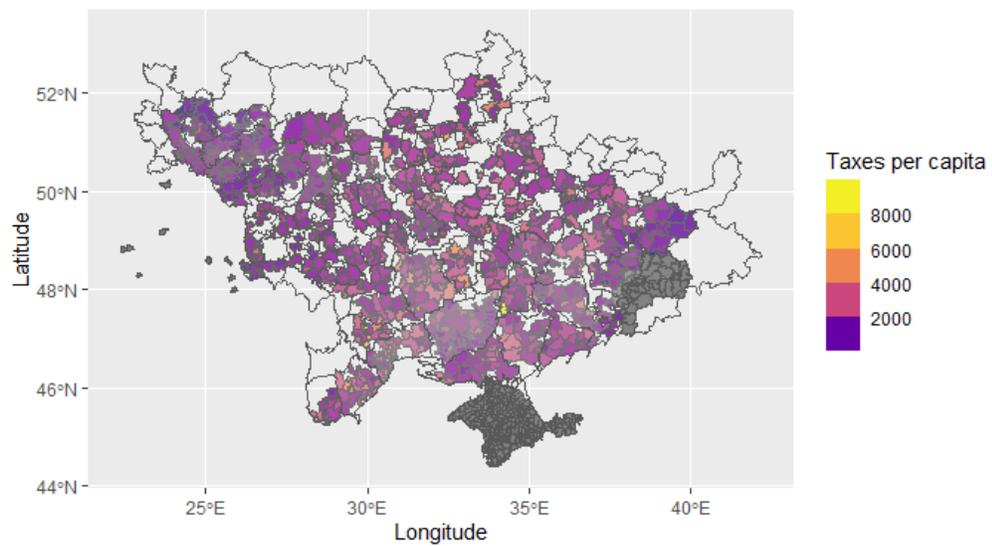


Figure 7. Taxes distribution after cleaning and aggregating  
 the data  
 Source: own calculations

- 2) Take the central settlement (city or village) of the ATC and figure out to which povit this city belonged in the 19<sup>th</sup> century. There is no unique source

to find this information; some cases required digging into electronic archives.

This approach is less accurate.

- 3) Stick to the ATC-level data. All the communities within the borders of a povit will get the same values associated with the povit data (e.g., the number of Ukrainians in administration will be equal for all ATCs within Balta povit borders).

### **Discovering the differences of macroregions**

We defined three macroregions. Markevich showed that they differed in economic performance in the 19<sup>th</sup> century. Besides, they differ in ethnic composition, trade activity, industrialization and more. Consequently, they differ in taxes collected in the 21<sup>st</sup> century.

The number of merchants stands for the trade activity. Figure 9 shows that the Polish hubernias region had the lowest trade activity (in terms of the number of merchants).

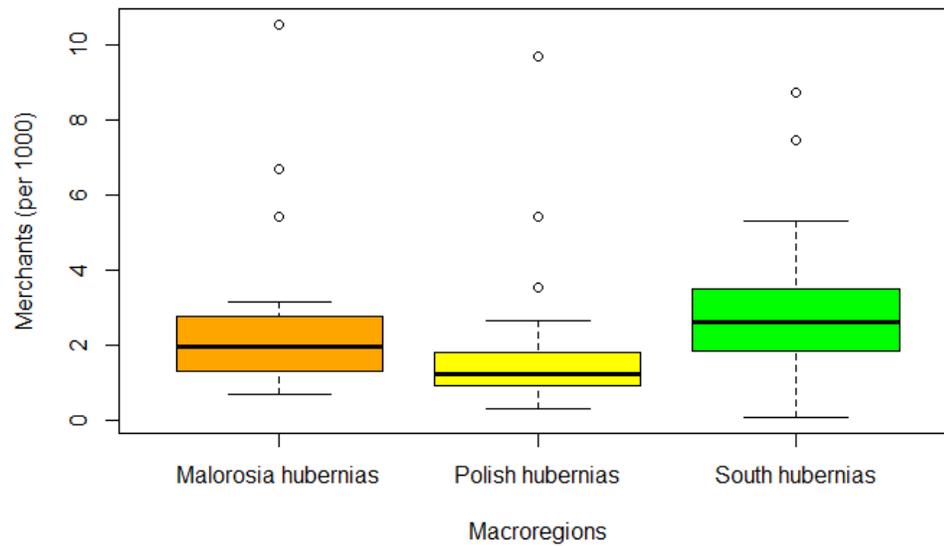


Figure 8. Number of merchants by macroregion

Source: own calculations

Industrialization took momentum in the 19th century. However, some regions were industrialized much more profoundly than the rest. The data on industrialization in the prewar year (1913) reveal that the South hubernias had considerably more factories per 1000 population than two other regions. Again, the Polish hubernias were the least industrialized in 1913 (Figure 10).

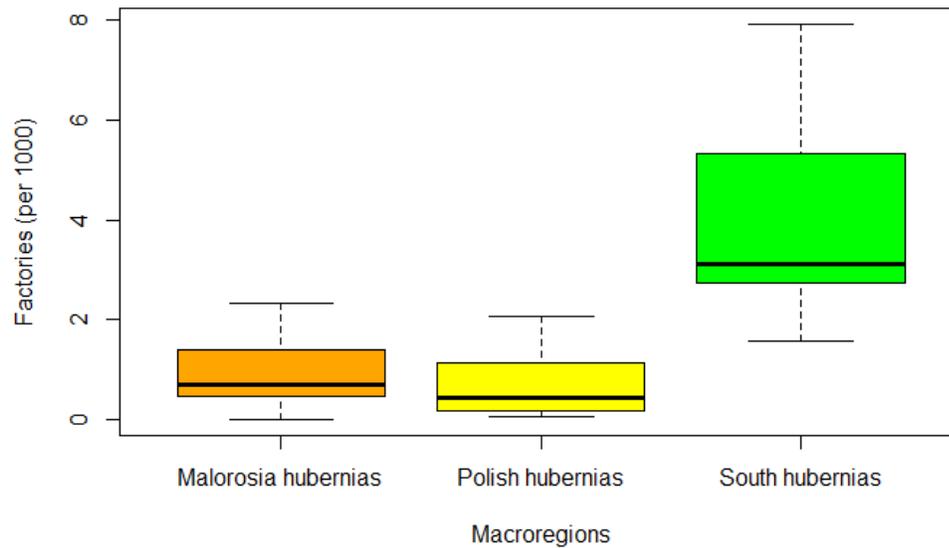


Figure 9. Number of factories by macroregion

Source: own calculations

However, the number of Ukrainians in the administration is a crucial variable in my research. Since the ethnic composition is heterogeneous, we may look for the number of Ukrainians in administration per 1000 Ukrainian population. Figure 11 reveals that the reference region (Malorosia) was the most favorable to the Ukrainians.

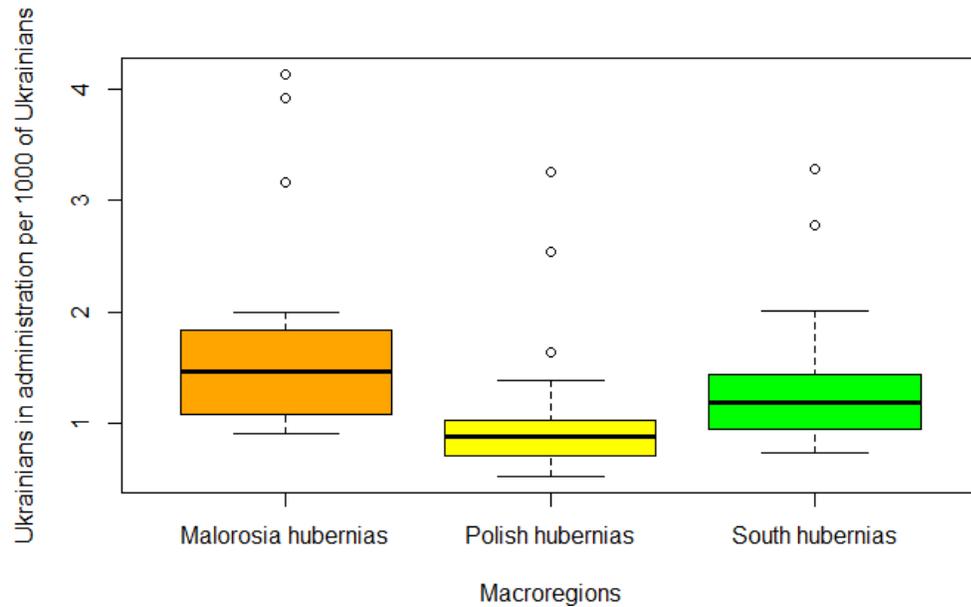


Figure 10. The share of Ukrainians in administration relative to the share of Ukrainian population

Source: own calculations

Based on the two first figures, one can observe that the Polish hubernias region is the most disadvantaged. The third figure shows that it also was least favorable to the Ukrainians.

The picture becomes even sharper (Figure 12) if we take the number of Ukrainians per 1000 of the population (irrespective of ethnicity). There were much less of Ukrainians in the local administrations of the Polish and South hubernias (as we discussed in the previous chapter).

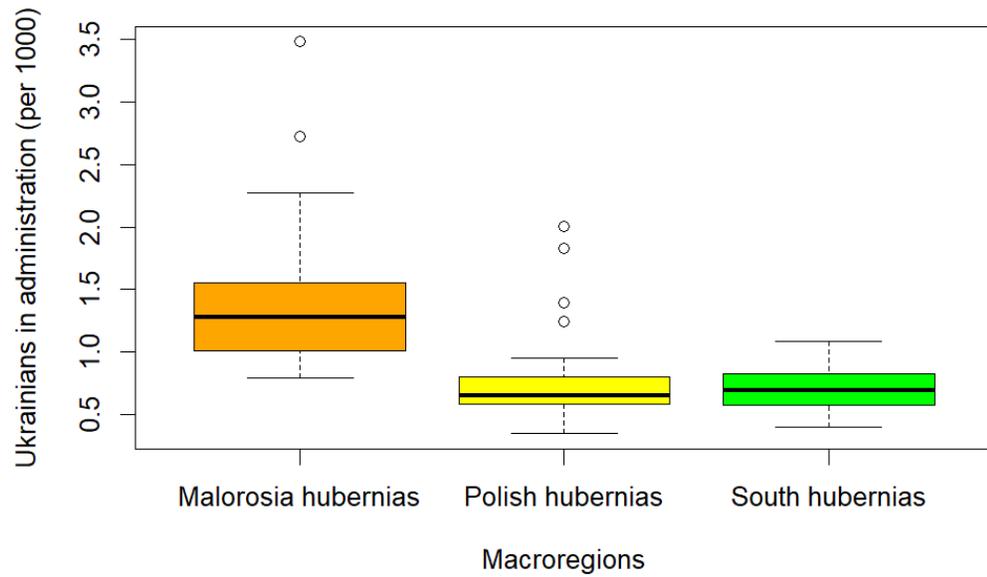


Figure 11. Share of Ukrainians in administration relative to all the population

Source: own calculations

More precisely, Table 3 includes the median number of Ukrainians in administration, showing that Malorosia hubernias had almost twice as many Ukrainians as the other two.

Table 3. Median number of Ukrainians in administration by macroregion

	Malorosia hubernias	Polish hubernias	South hubernias
Ukrainians in administration	1.27	0.65	0.69
Non-Ukrainians in administration	0.27	0.76	1.04

Source: own calculations

The median number of officials per 1000 is 1.52 (irrespective of ethnicity).

The data on ATCs' taxes also follow this pattern. Looking for the difference in taxes per capita between regions, we can see that ATCs within the Polish

hubernias region collect fewer taxes than the rest (Figure 12). However, the difference between the Malorosia and South hubernias regions looks insignificant.

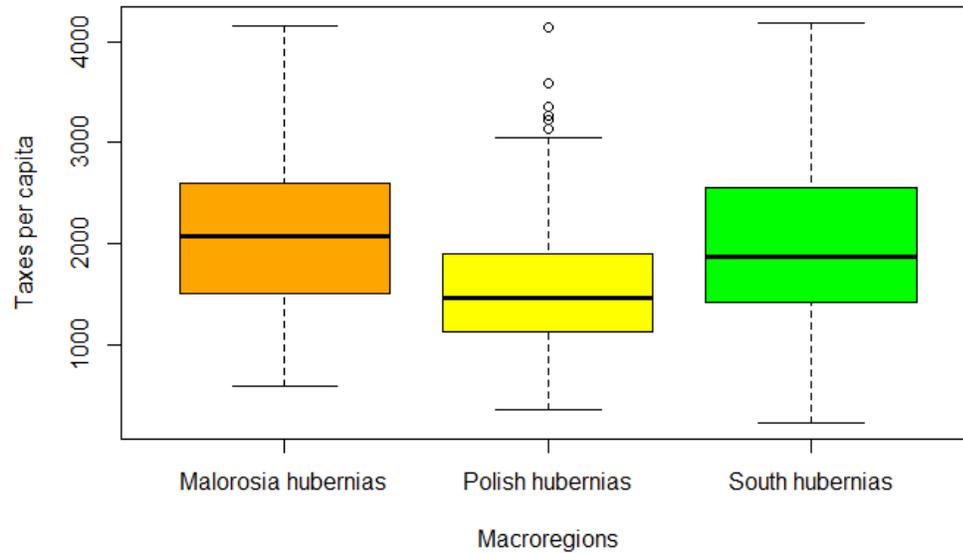


Figure 12. Macroregions by taxes per capita collected

Source: own calculations

Therefore, the territories within the Polish hubernias region were disadvantaged in the 19th century. They also seem to be disadvantaged in the 21st century. The following chapter provides estimation results and some possible explanations of these differences.

## *Chapter 5*

### ESTIMATION RESULTS

In this chapter, we present the estimation results. The results of three approaches are presented: first aggregation approach, second aggregation approach, and third aggregation approach (ATC-level data). The first approach is considered as a baseline, and the two others are supportive. All results are presented with robust standard errors since the heteroskedasticity is present in all models (tested with the studentized Breusch-Pagan test).

The estimation results of the first approach are shown in Table 4. Non-Ukrainians in administration variable has a negative sign as we expected, although that is not self-obvious. First, the Russian Empire is famous for its inefficient administration (it was corrupted and unskilled) and characterized by repressiveness. Also, it could be treated as metropolitan administration which was more inclined to set up extractive institutions in its colonies (if to consider the Ukrainian territories as a colony). However, the crucial argument lies in the theory of state experience. The more non-Ukrainians in administration we get, the lesser of Ukrainians are there. Eventually, we are left with less state experience, and so the higher presence of non-Ukrainians in administration is associated with lower taxes collected (worse governance efficiency today). Consequently, we observe the positive sign of the Ukrainians in administration variable. In the case of Ukraine, the Ukrainians in the administration may represent the state experience accumulated through time. Although that is not the experience of an independent state, the Ukrainians in the administration gained valuable experience. We discussed it in detail above. This variable shows that access to administration seats matters for future economic performance. It also implies that access matters for governance efficiency since the

ATCs got more resources and responsibilities, so the economic performance largely depends on the local governance.

The quadratic term shed some light on the issue. Note that it became significant at a 90% confidence interval after adding the number of factories. We can accept its significance since the third model confirmed it too (at a 99% confidence level). It confirms that the effect of Ukrainians in administration decreases as the number of Ukrainians increases. That suits the common law of diminishing returns. The turning point is 2.26, while the median values for the regions are much lower. Generally, we can assume that more Ukrainians in administration would have positively contributed to the amount of local taxes collected in the 19th century.

Obviously, the 2.26 number has no sense regarding the number of people. We are more interested in the return on increasing the number of Ukrainians in administration from 1 to 2. Thus, it would increase the local taxes per capita by 12.8% today. At the same time, decreasing the number of non-Ukrainians by 1 would increase taxes collected by 23.8%.

What we got next is that Polish hubernias are disadvantaged compared to the hubernias of Malorosia. Controlling for all the other variables, one can observe that ATCs located within the borders of past Polish hubernias are disadvantaged. On average, it means they tend to collect 35.8% of taxes less than those from Malorosia hubernias. Also, the sign of the South hubernias factor is negative, though not significant.

It follows the historical pattern Markevich showed in his research (2015). He showed that the Malorosia region was the most developed of these three regions in the 19th century. Possibly it might have several explanations. The region was under the rule of Poland for a long time, and it had some uncovered negative effects. To some extent, it is explained by the geographical reason (following Markevich): it has no intensive mining industry and no access to the sea.

Supposedly, these economic-geographical conditions still persist today. It follows the discoveries from the previous chapter showing that the region had the lowest trade activity (in terms of the number of merchants) and was less industrialized than the rest in 1913 (Figure 9 and Figure 10, respectively).

The other historical argument is that this region had experienced many wars between Poland, Russia, and the Ottomans (including the Crimean Khanate). In 1667 (The Truce of Andrusiv was signed) Russia (Tsardom of Muscovy) gained Left-bank Ukraine, and the Polish–Lithuanian Commonwealth was left with Right-bank Ukraine. Since then, the continuing raids, fights, rebellions, and robberies targeting Right bank Ukraine have devastated the region entirely. A century after the Truce of Andrusiv (1768-1769), Right-bank Ukraine was engulfed in a massive bloody peasant-Cossack uprising (anti-Polish) called Koliivshchyna. In 1863 the region experienced another massive uprising with dire consequences – January Uprising (an anti-Russian uprising led by Poles and actively supported by Lithuanians, Ukrainians, and Belarusians). Possibly these territories still bear the scars of the past.

Besides, the Polish hubernias had relatively more Poles in administration, as discussed above. It implied the Ukrainians gained less of the state experience. We found a negative correlation between the number of Poles in the povit (-0.39) and the number of Ukrainians in local administrations ( $p$ -value = 0.02). Actually, it looks like Ukrainians were underrepresented in the administration in the South region, too (Figure 10). However, the difference between the South and Malorosia is insignificant according to t-test results ( $p$ -value = 0.2097). At the same time, the difference between Malorosia and Polish hubernias is significant ( $p$ -value = 0.0004443) and between the Polish and South hubernias ( $p$ -value = 0.03965).

The South territories are not disadvantaged according to the first model. It supports Markevich's findings, which showed that this region could compete with

the other Russian regions in economic productivity terms. When we control for the industrialization effect, the effect of the South region factor increases, though it remains insignificant. Note that the number of factories appeared to be the economic locomotive of the region (Figure 11). Also, in the previous chapter, we observed that ATCs within the Polish hubernias perform considerably worse, collecting fewer taxes than the rest (Figure 12).

The distance is an important control variable and has a positive sign (the longer the distance, the higher the local taxes), though insignificant. The other control variables (the share of private land, the number of merchants, the share of urban population, and the population size of povits) appeared insignificant too. Nonetheless, the median population of ATCs within povit borders variable is significant in this model. We discuss it in detail below after the results of the third approach. Also, the number of teachers became significant at a 90% confidence interval.

Table 4. First approach models (povit-level, aggregated by means of geocoded data)

	Dependent Variable: 2021 Annual Local Taxes per capita		
	OLS: basic	OLS: + quadratic term	OLS: + industrialization
	(1)	(2)	(3)
Non-Ukrainians in administration	-0.187*** (0.071)	-0.206*** (0.077)	-0.238*** (0.076)
Ukrainians in administration	0.126** (0.063)	0.374** (0.186)	0.380** (0.172)
(Ukrainians in administration) <sup>2</sup>		-0.075 (0.048)	-0.084* (0.044)
Distance to Moscow	0.154 (0.259)	0.226 (0.269)	0.174 (0.245)
Share of private land	0.016 (0.081)	0.023 (0.081)	-0.006 (0.091)
Population of ATC	-0.184** (0.079)	-0.181** (0.080)	-0.178** (0.077)
Povit population	0.082 (0.133)	0.085 (0.130)	0.111 (0.118)
Teachers (per 1000)	0.008 (0.010)	0.012 (0.011)	0.017* (0.009)
Polish hubernias	-0.274* (0.150)	-0.285* (0.156)	-0.306** (0.136)
South hubernias	-0.071 (0.139)	-0.050 (0.143)	-0.264 (0.167)
Merchants (per 1000)	0.053 (0.032)	0.043 (0.035)	0.035 (0.026)
Share of urban population	0.003 (0.460)	0.056 (0.457)	0.160 (0.384)
Factories (per 1000)			0.070*** (0.024)
(Intercept)	6.467* (3.429)	5.249 (3.647)	5.799* (3.361)
Observations	82	82	80
R <sup>2</sup>	0.427	0.438	0.515
Adjusted R <sup>2</sup>	0.337	0.340	0.420
F Statistic	4.745*** (df = 11; 70)	4.480*** (df = 12; 69)	5.398*** (df = 13; 66)

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

The second approach to aggregating the ATCs to the level of povit is less accurate. Thus, it cannot serve as the basic model. Still, we use it to make a crosscheck. Although most variables became insignificant, the first two variables remained significant (Table 5). Consequently, this model partially confirms the results obtained with the first approach.

The quadratic term and categorical variables (Polish and South hubernias) all have negative signs as they used to be before, though insignificant. The taxes collected in ATCs within Polish hubernias borders are 22.3% less. The size of the effect became lower. The return on increasing the number of Ukrainians in administration from 1 to 2 is 18.6%. The turning point is 3.05. Both values obtained are higher than before.

The number of factories and intercept is significant at a 95% confidence interval. Adding this variable turns the Ukrainians in administration to be significant at a 95% confidence interval. Besides, the variable corresponding to the median population of ATC is negative, following the pattern of the first model. It is significant at a 90% confidence interval.

Table 5. Second approach models (povit-level, aggregated manually according to the central ATC's settlement povit belonging in the 19th century)

	Dependent Variable: 2021 Annual Local Taxes per capita		
	OLS: basic	OLS: + quadratic term	OLS: + industrialization
	(1)	(2)	(3)
Non-Ukrainians in administration	-0.178*** (0.065)	-0.190*** (0.071)	-0.221*** (0.070)
Ukrainians in administration	0.187*** (0.064)	0.355* (0.189)	0.366** (0.182)
(Ukrainians in administration) <sup>2</sup>		-0.051 (0.047)	-0.060 (0.044)
Distance to Moscow	0.092 (0.251)	0.140 (0.258)	0.107 (0.239)
Share of private land	-0.035 (0.065)	-0.029 (0.065)	-0.057 (0.070)
Population of ATC	-0.132* (0.079)	-0.131* (0.079)	-0.129* (0.077)
Povit population	0.005 (0.009)	0.007 (0.010)	0.012 (0.009)
Teachers (per 1000)	-0.009 (0.133)	-0.007 (0.132)	0.014 (0.121)
Polish hubernias	-0.161 (0.153)	-0.169 (0.156)	-0.201 (0.137)
South hubernias	-0.003 (0.138)	0.012 (0.140)	-0.175 (0.179)
Merchants (per 1000)	0.055* (0.032)	0.048 (0.034)	0.038 (0.028)
Share of urban population	0.310 (0.462)	0.345 (0.461)	0.478 (0.409)
Factories (per 1000)			0.062** (0.025)
(Intercept)	7.427** (3.328)	6.624* (3.507)	6.954** (3.213)
Observations	80	80	78
R <sup>2</sup>	0.419	0.424	0.488
Adjusted R <sup>2</sup>	0.325	0.321	0.384
F Statistic	4.454*** (df = 11; 68)	4.117*** (df = 12; 67)	4.697*** (df = 13; 64)

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

The third approach has much more differences from the rest (Table 6). It is based on ATC-level analysis, including more variables originating from the 21<sup>st</sup> century. Also, note that we are left with over 800 observations. The results are presented in Table 6.

This model also confirms the results obtained in the first model. Moreover, the quadratic term became significant at a 99% confidence interval. The turning point is 2.14 (number of Ukrainians in administration), which is reasonably close to the 2.26 value obtained from the first model. The return on increasing the number of Ukrainians from 1 to 2 is 16.3%

Interestingly, adding the Factories variable turns the South region to be significantly negative unlike the previous results. Thus, controlling for the industrialization this region appears disadvantaged too. The industrialization variable is also significant. Besides, the share of urban population in 1897 became significant which was not the case before.

Even more importantly, we broke the ATCs into six groups by size of the ATC population. In the model, the oblast center communities constitute the reference group, and there is no surprise that they perform mostly better than others. However, they have challengers. The smallest ATCs perform even better. Also, the communities with population from 10 to 15 thousand also tend to perform better than oblast centers. That contradicts the theory since the larger communities perform better according to the literature.

Nevertheless, it is not so awkward if we dig deeper into the Ukrainian context of the amalgamation process. There are many cases when thriving communities, with some factories or large enterprises paying huge taxes to the local budget, do not want to amalgamate. Otherwise, they would share their enormous revenues with not-so-lucky ATCs. The most prominent case is with Hirska silska hromada (Hora village). The largest Ukrainian airport “Boryspil” is registered there and

pays taxes to the village. Accordingly, the community collects enormously high taxes per capita: 11,297 UAH.

The generalizations and conclusions are provided in the next chapter.

Table 6. Third approach models (ATC-level)

	Dependent Variable: 2021 Annual Local Taxes per capita		
	OLS: basic (1)	OLS: + quadratic term (2)	OLS: + industrialization (3)
Non-Ukrainians in administration	-0.189*** (0.036)	-0.209*** (0.036)	-0.262*** (0.035)
Ukrainians in administration	0.163*** (0.040)	0.521*** (0.106)	0.544*** (0.104)
(Ukrainians in administration) <sup>2</sup>		-0.115*** (0.029)	-0.127*** (0.028)
Distance to Moscow	0.033 (0.141)	0.140 (0.145)	0.176 (0.147)
Share of private land	-0.040 (0.031)	-0.033 (0.030)	-0.046 (0.036)
Merchants per 1000	0.029** (0.013)	0.017 (0.014)	0.013 (0.013)
Povit population	0.066 (0.056)	0.064 (0.055)	0.062 (0.057)
Teachers (per 1000)	0.012*** (0.004)	0.016*** (0.004)	0.022*** (0.004)
Polish hubernias	-0.294*** (0.069)	-0.313*** (0.070)	-0.340*** (0.066)
South hubernias	-0.034 (0.066)	-0.023 (0.066)	-0.198** (0.085)
ATC: more than 30 ths.	-0.052 (0.045)	-0.057 (0.045)	-0.096** (0.044)
ATC: 15 to 30 ths.	0.028 (0.042)	0.029 (0.041)	0.0002 (0.040)
ATC: 10 to 15 ths.	0.242*** (0.049)	0.238*** (0.049)	0.216*** (0.048)
ATC: 5 to 10 ths.	-0.182*** (0.052)	-0.186*** (0.052)	-0.201*** (0.051)
ATC: 5 ths.	0.203** (0.091)	0.235*** (0.080)	0.221*** (0.081)
Share of urban population	0.350 (0.214)	0.438** (0.218)	0.507** (0.215)
Factories (per 1000)			0.053*** (0.015)
(Intercept)	6.574*** (1.943)	4.866** (2.025)	4.369** (2.016)
Observations	841	841	812

Note: \* p&lt;0.1; \*\* p&lt;0.05; \*\*\* p&lt;0.01

## *Chapter 6*

### CONCLUSIONS AND POLICY RECOMENDATIONS

The research reveals that influential historical factors stay behind the economic performance of Ukrainian amalgamated territorial communities in the 21st century. The experience of self-governance is crucial in explaining the variation in taxes collected per capita by communities. Since the Ukrainian territories were under the rule of the Russian Empire, the presence of Ukrainians in local administrations was limited. The optimal number of Ukrainians in administration (that maximizes the economic performance) is 2.26, according to the results of the base-case model (the third model of the first aggregation approach). At the same time, the median numbers of Ukrainian officials were lower than the number of non-Ukrainian in Polish and South hubernias ( $< 1$ ), while in Malorosia hubernias, the Ukrainians dominated ( $> 1$ ). The estimated model suggests statistically and economically significant results implying that increasing the number of Ukrainians in administrations (per 1000) from 1 to 2 would increase taxes collected by 12.8%.

However, there is a flip side of the coin. Note that the value of 2.26 is higher than the median value for all the observations, which is 1.52. That could mean local administrations suffered from a personnel shortage, so the state capacity suffered. The variable number of Ukrainians and number of non-Ukrainians measure state capacity too. The interpretation is complicated because two of these variables have opposite signs.

Since the actual median number of officials (irrespective of ethnicity) and actual numbers of Ukrainians in administration are less than the optimal number of Ukrainians suggested (2.26), we conclude that all the regions lacked state capacity. However, there are some nuances here. Increasing the number of non-Ukrainian officials would have a negative effect (and vice versa if increasing the number of

Ukrainian officials). The presence of non-Ukrainian officials instead worsened the situation. The number of non-Ukrainians in administration (per 1000 of the population) has a negative effect, implying that decreasing that number by 1, *ceteris paribus* would increase taxes collected by 23.8%.

These ambivalent results indicate some kind of colony-metropolitan relations. Not surprisingly, Russians constituted the overwhelming share of these non-Ukrainian officials. They represented the imperial authority. Supposedly, the imperial officials were inclined to promote extractive institutions fraught with long-lasting outcomes. The other explanation is that they competed with the Ukrainian officials. The lesser number of imperial officials could have meant that power would be shifted to locals, so they would have gotten a chance to gain more self-governance experience and rule with more dedication. Overall, the lack of state capacity could be compensated most effectively by decreasing the number of non-Ukrainians and increasing the number of Ukrainians simultaneously.

The other dimension of the research shows regional dynamics. The Malorosia hubernias are leaders in economic performance and the number of Ukrainian officials. Unsurprisingly, this macroregion benefited from a relatively long time of autonomy and relatively safer living conditions. It stands as a reference group for the categorical variable on regions. The estimated model reveals that ATCs within the Polish hubernias borders perform worse than the rest, controlling the state experience effect. On average, they tend to collect 35.8% of taxes less than Malorosia hubernias' ATCs. South hubernias do not perform significantly worse than Malorosia, though the sign is negative. Only the Polish hubernias appeared disadvantaged compared to the rest. That could happen due to multiple geographical and historical reasons. These territories experienced dozens of bloody events for centuries, even before World War I. Besides, the Russian Empire vastly invested in the South hubernias, colonizing it, building cities, attracting entrepreneurs and settlers from other hubernias, etc. Also, these territories have

fertile soil and access to the sea. That was not the case for the Polish hubernias. Markevich also observed this pattern of economic divergence by analyzing the Russian Empire.

The two other approaches to estimation suggest slightly different sizes of the effects, though they do not differ considerably. Overall, they confirm the results obtained in the first approach models. However, the third model of the third approach (ATC-level) shows that the South hubernias are also disadvantaged if controlling for the number of factories per 1000. In all the other models, this variable has a negative sign, too, though insignificant. It indicates some uncovered differences, so more research is needed to clarify them.

The results obtained indicate the complicated problem of regional economic inequality. It depends mainly on the historical background and state experience (or the experience of self-governance). The model explains 51.5% of the variation in economic performance ( $R^2$  is 0.515). ATCs within the borders of Polish hubernias are disadvantaged, and some state intervention could be needed to break this pattern. However, more research is needed to find the other causes of this divergence and identify the most effective measure. Overall, all the ATCs could benefit from investing more in the education of local government officials. Those territories where the locals gained the least self-governance experience might be primarily treated.

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