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Diversity & Empire: Baltic Germans & Comparative Development

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Abstract: In this paper, we explore the long-run effects of cultural and imperial legacies in the Baltic region. Drawing evidence from the 1897 population census in the Russian Empire, we find that localities with a higher share of German historical population are inclined to be more developed in contemporary Latvia and Estonia. Furthermore, based on the Life-In-Transition Survey (LiTS), we use robust regression discontinuity and identify persistent differential patterns of socioeconomic and political preferences across the borders of the former imperial territories of Estland, Livonia (Swedish Livonia), Letgallia (Polish Livonia) and Courland. Hence, we argue for the persistence of legacies as drivers of divergent development paths in the regions of Latvia and Estonia.

Keywords: Baltic Germans, diversity, empire, development, culture

JEL Codes: N43, O57, P51

I. Introduction

The Baltic region was the "first German colony" according to Theodor Schiemann, a Baltic German writer and history professor (Wezel, 2017b). For nearly seven hundred years, Germans formed the elite that dominated the political, economic and social life in the Baltics, oppressing local population and preventing them from creating their own rule. Tabellini (2005) shows that prior political institutions and literacy rates at the end of 19th century are important determinants of regional social capital (trust, respect, confidence) and contemporary economic performance in Western Europe. Easterly and Levine (2016) find a remarkably strong impact of colonial European settlement on development and they identify human capital as the main channel in that direction. Spolaore and Wacziarg (2013) argue that a higher proportion of descendants from technologically more advanced territories 500, or even 1,000, years ago leads to higher income per capita in these territories nowadays. Furthermore, the variation in degrees of administrative centralization and the adoption of agriculture across ancestral populations offer complementary definitions of state history and its growth-enhancing

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effects. As data about ancestry *per se* are rarely available, data on ethnolinguistic fractionalization/polarization or genetic distance are used as proxy indicators for cultural relatedness. In their paper on linguistic heterogeneity and political economy outcomes, Desmet et al. (2009) show that deep linguistic differences cause conflicts of interests, such as civil conflict and redistribution, whereas finer linguistic differences matter for economic growth and the provision of public goods. Lameli et al. (2015) test the effect of language on intra-regional trade in Germany. They find that similarities in historic local dialects have a sizable and significant positive impact on trade between regions in Germany. Even if language differences have become negligible, cultural differences persist and influence economic behavior. Last but not least, Spolaore and Wacziarg (2013) analyze data from 1870 to 2005 and show that a relative genetic distance to the technological frontier predicts income differences. Similarly, genetic heterogeneity within populations has been shown to bring both advantages (higher specialization and productivity) and costs (lower trust and coordination).

To explore the German effect on long-run economic development in the Baltic region, we concentrate on institutions, human capital, and non-economic factors of economic growth. A large body of literature focuses on the role of institutions in economic performance, including contributions by North (1990, 1994), Michie (1994), Williamson (1995), Greif (1998, 2000), Acemoglu et al. (2002, 2005, 2006), Djankov et al. (2003) and Hodgson (2004). Institutions are socially approved models of collective behavior that are formed in the long-run and transmitted between generations (Greif, 1998; Greif, 2000; North, 1990; North, 1994). The idea of institutions as a determinant of economic performance goes back to 18th century Scottish Enlightenment and Adam Smith (1776), who wrote that "commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government" (p. 909). However, Max Weber at the beginning of the 20th century was the first to outline the role of culture in economic performance by advocating that the Protestant ethic had led to the rise of the modern capitalism. He also compared the Western and Chinese law traditions and argued that rational Western law facilitated economic development in Europe (Horwitz and Boettke, 2005). Related research has underscored the importance of institutions as compared to other growth-enhancing factors such as geography, trade, physical capital stock, human capital (Rodrik et al., 2004; Hall and Jones, 1999), the role of institutions in the Industrial Revolution and the evolution of modern economics (Crafts and Mills, 2009; Galor and Weil, 2000; Hansen and

Prescott, 1998; Bogart et al., 2010; Persson, 2010), as well as the long-run effect of institutions once created in European colonies on contemporary economic performance of those territories.[3]

Further evidence on the role of institutions and culture in economic performance is provided by quasi-experimental methods that may identify similarities or differences in communities that used to belong in a homogenous society but were divided by a "political" border in the context of a historical natural experiment. Michalopoulos and Papaioannou (2010) compare economic outcomes in African regions belonging to the same ethnic group with distinct pre-colonial institutions, but divided by national borders at the end of the 19th century. They show that ethnic pre-colonial institutions are closely related to contemporary regional development. Furthermore, Europe offers a good example of the creation of such "political" borders due to the incorporation of Eastern and Southern European territories into the European superpowers – Prussian, Habsburg, Russian and Ottoman empires – before World War I. This unique history of political fragmentation allows the persistence of imperial cultural heritage at a micro-level to be tested. Grosjean (2011b) explores the impact of cultural integration of 21 Central, Eastern and South-Eastern European states into the four empires before World War I. She uses sub-national data to show that imperial legacies persist through culture, in terms of social trust, whereas more recent history, such as that of the USSR, European Union or contemporary nation states, is not associated with significant differences at the level of general trust. More specific research on cultural legacies of empires has been carried out by Becker et al. (2016), who show that the inclusion of a territory in the Habsburg Empire, with its well-functioning bureaucracy and a high level of rule of law, has left a long-lasting effect in five European countries (Poland, Ukraine, Romania, Serbia and Montenegro). Communities living in a former Habsburg location experience higher levels of trust and less corruption than their counterparts residing on the other side of the former border. Furthermore, Grosjean (2011a) argues that the legacy of the Ottoman Empire caused a delay in the financial development of Southeastern Europe in terms of bank penetration.

As mentioned earlier, imperial borders split contemporary European states and therefore allowed the identification of imperial legacies within one particular country. Modern Poland offers an outstanding setting, as it was divided by the Habsburg, Russian and Prussian Empires. As Grosfeld and Zhuravskaya (2014) point out, there are persistent differences in religious practices and beliefs in democratic ideas in Polish communities around the former borders. Poles are less religious in the "Russian" zone of Poland due to the oppression of the Catholic Church by the Russian Empire (ibid.).

[3] For the core argument, see Acemoglu et al. (2002) "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution".

Furthermore, people living in the "Austrian" zone have a more positive attitude towards democracy, suggesting that the administrative, cultural, and political autonomy granted by the Habsburgs have created a persistent legacy of democracy (ibid.). Peisakhin (2012) observes that Ukrainians living in the "Habsburg" zone of Ukraine are more pro-European, whereas the population on the side of the former Russian Empire is more oriented towards Russia and the Commonwealth of Independent States. Moreover, Grosfeld et al. (2011) identify a Jewish cultural legacy in the territories of Eastern Europe that belonged to the Russian Empire (Pale of Settlement); local communities having a Jewish minority developed an anti-market culture and bonding trust due to their living side-by-side with an ethnic group, which they perceived as rival.

In this paper, we find that there is a robust Baltic German effect that predicts contemporary socioeconomic development in Latvia and Estonia. Instrumented by the distance to Riga/Reval (Tallinn), the Baltic German share of the 1897 general census of the Russian Empire is associated with higher levels of income, literacy and higher education. Furthermore, implementing a robust regression discontinuity approach across the former imperial borders of Courland-Livonia, Lettgallia-Livonia and Estland-Livonia, we argue that the Swedish imperial legacy is more conducive to political openness and socioeconomic development than the Polish imperial legacy or an intermediate independence status, as in the case of Courland, which was formally part of the Polish Empire, but *de-facto* independent.

The paper is structured as follows. Section 2 offers the historical background about the German effect on long-run economic development in contemporary Latvia and Estonia and discusses the border changes linked to overlapping imperial rules in the Baltic region. Section 3 presents our data and empirical strategy. In Section 4, we analyze our main results and robustness checks. Section 5 concludes.

II. Historical Background: Baltic Germans & Conflicts of Empires

Baltic Germans as economic elites

By the end of the 12th century, Indo-European Balts and Finno-Ugric tribes living in the territory of contemporary Latvia and Estonia were the last pagans in Europe (Kasekamp, 2010, Piirimae, 1997). During the following centuries, these territories experienced an intense interaction with the neighboring powers – Germans, Swedes, Poles, Danes and Russians – and therefore became a "heterogeneous, multi-ethnic space, homeland, and emotional place of belonging for many ethnic groups, including Germans" (Wezel, 2017a).

The Baltic Germans arrived in the 13th century when the territory of contemporary Latvia and South Estonia was conquered by German crusaders. At the same time, Danes and Swedes participated in the Christianization of North Estonia. Nevertheless, when North Estonia was sold to the Teutonic Order in the mid-fourteenth century after a short period of Danish rule, Baltic Germans became the dominant power in the region. They established the feudal-based Livonian Confederation, where native people (the Undeutschen) where subordinated to German colonizers (the Baltischen, the Balten). Although initially some local rulers were co-opted as vassals of the Livonian Confederation, they were soon assimilated by German nobility (Kasekamp, 2010; Piirimae, 1997).

Baltic German elites, initially consisting of 200-300 knights along with noble men, clergymen and merchants, remained an integral part of local societies in the contemporary territory of Latvia and Estonia from the 12th century until 1939-1941, when they were resettled by Nazi Germany. Although the proportion of Baltic Germans rarely exceeded 8%, for about 600 years Baltic German landed nobility, town elite and clergymen dominated the economic, political and cultural life of the region. They owned large portions of lands, leased state estates, controlled municipal governments and dominated craft organizations as well as the Lutheran church (Plakans, 1974; Kasekamp, 2010; Raudkivi, 2011; Raun, 1991; Bolin & Douglas, 2017).

However, being a member of the Baltic German community was primarily an indicator of social status, not ethnicity. The German-speaking elite assimilated Danes, Swedes, English, Scots, Poles, Hungarians, Jews and others. Until the end of the nineteenth century, cultural Germanization was also a phenomenon signaling upward social mobility for Latvians and Estonians (Wezel, 2017a; Wezel, 2017b; Bolin & Douglas, 2017; Plath, 2017). The relationship among these ethnic groups was always tense, because the locals viewed Baltic Germans as masters and oppressors. Nevertheless, due to their wealth, education and influence, Baltic Germans left a significant impact. German culture and language was admired and held prestigious by the local population, as the transfer of customs and linguistic borrowing confirms (Alenius, 2002). Acquiring German language and culture was an integral part of gaining a higher social status. Even the first generation of Latvian and Estonian nationalists communicated with each other in German (Wezel, 2017b; O'Connor, 2003; Kasekamp, 2010).

The Lutheran church also played an important role in the development of education in the region. During the Swedish period (17th-18th century), elementary schools were established for peasants and the first books (Lutheran religious texts) were published in Estonian and Latvian (Piirimae, 1997). These educational efforts led to a high literacy rates in the Lutheran regions, reaching 92% in Latvia and 96% in Estonia in 1897, whereas in Catholic Lettgallia, a former territory of the Polish-Lithuanian

commonwealth, the literacy rate was only 58% (Kasekamp, 2010). Moreover, among Baltic German pastors and tutors were to be found the first critics of serfdom, helping to spread the ideas of Enlightenment in the Baltic region, as well as the first promoters of local cultures, thus preparing the grounds for to the national awakening in the second half of the 19th century (Raun, 1999).

Border Changes in the Baltics

Although initially being parts of the same political entity, i.e. the Livonian Confederation, the four regions of the Baltics – Estland, Livonia, Courland and Lettgallia – followed a different historical route later on (Figure 1). These turbulent times shaped distinct historical institutions and hence led to differences across local cultures.

Figure 1: Historical regions of the Baltics: Estland, Livonia, Courland and Lettgallia

Source: Own maps. Borders of governorates, towns and districts in 1898 and borders of sub-municipal units (in Latvia) and municipalities (in Estonia) today.

The Livonian Confederation, which lasted from the 13th till the 16th century, was well integrated in European economic life by producing grain, wax, furs, flax and timber. In the mid-13th century German and Scandinavian merchants established the Hanseatic League that fostered international trade, leading to a trade relationship with more than 100 towns and outposts two centuries later (O'Connor, 2003). When Reformation ideas reached the Baltics at the beginning of the 15th century,

Lutheranism became the leading religion in Livonian territories. However, economic and social life in the Baltics did not modernize along with that of Western Europe, as the enserfment of local population occurred in the 15th and 16th centuries and continued till the 18th century (O'Connor, 2003; Kasekamp, 2010; Oberlender, 2012).

The Livonian Confederation lasted till the mid-16th century. The once economically prosperous Livonia gradually became a loose religious-political union with weak administration, regular peasant revolts and persistent conflicts between the Livonian branch of the Teutonic Order, Livonian Bishops, the Hanseatic cities and vassals. The Lutheran reformation contributed to the collapse of the confederation as part of the Teutonic Order remained sympathetic to Catholicism. Finally, the Livonian Confederation dissolved during the Livonian Wars, which started with the Muscovite expansion in 1558 (O'Connor, 2003; Kasekamp, 2010; Jacobson, 2011).

In 1561, most of Livonia came under Polish-Lithuanian rule, with the exception of North Estonia, which placed itself under Swedish protection, and Øsel (Saaremaa), which remained under Danish rule until 1645. From 1558 to 1721 Muscovy, Sweden and Poland-Lithuania competed for domination in the Baltic region (O'Connor, 2003: Kasekamp, 2010; Piirimae, 1997; Raun, 1991). Table 1 outlines the ruling regimes in the Baltic regions from the 13th century until 1918.

Table 1: Imperial rule in the Baltics

Region	**13th – 16th century**	**The Swedish, Polish and Danish rule**	**The Russian Empire**	**Present**
North Estonia	Duchy of Estonia (Danish Estonia) *1219-1346* Livonian Confederation *1346-1561*	Swedish Estonia *1561-1721*	Governorate of Estland *1721-1918*	Estonia
South Estonia	Livonian Confederation *1346-1561*	Livonia* *1561-1629* Swedish Livonia *1629-1721* Danish Ösel/Saarema *1559–1645*	Governorate of Livonia *1721-1918*	
Livonia				Latvia (Vidzeme)
Lettgallia		Polish Livonia *1562–1772*	(Part of) Vitebsk governorate *1772-1918*	Latvia (Latgale)
Courland		Duchy of Courland* *1562-1795*	Courland governorate *1795-1918*	Latvia (Kurzeme and Zemgale)

Notes: *Vassals to the Polish-Lithuanian Commonwealth

With the Peace of Altmark in 1629, the north-east Livonian territories (contemporary Estonia and Vidzeme in Latvia) also became a part of the Swedish realm and experienced a modernization in political, economic and social life. Despite the protests of the local nobility, the Swedish realm

attempted repeatedly to install its own political, judicial and social order in Livonia. The agrarian legislation developed differently to that in other parts of the former Livonian Confederation, returning more than a half of the arable land to the realm. The rights of the nobility were restricted, improving the regulation of the relationship between the landlords and the peasants. The Swedish realm also announced the abolition of serfdom, but this reform did not have sufficient time to be implemented. As a result, education was the most important Swedish heritage in the area, with the establishment of elementary schools and the foundation of a teachers' seminary and a university in Dorpat (Tartu) being the most prominent achievements. Moreover, expansion of education contributed significantly to the development of a written Latvian and Estonian language with German and in the case of Estonian – also Swedish – influence (Kasekamp, 2010; Oberlender, 2012; Piirimae, 1997).

However, modernization attempts in Estonia and Vidzeme came to an end after a century. At the beginning of the 18th century, Russia attempted to conquer Livonia again. The Great Northern War resulted in Russia's annexation of Livonia and Estonia and an end to Swedish rule (Lewitter, 1968). The Peace Treaty of Nystad (Uusikaupunki) in 1721 confirmed Russian domination in the Baltic provinces. The estates continued to be run by German nobles, as Peter I provided vast privileges to the Baltic Germans. However, from the reign of Catherine II (1762-1796) on, the state begun to force its own interests more actively (Seppel, 2009).

At the same time, the Duchy of Courland as well as the southeastern parts of Livonia (Lettgallia) remained parts of the Polish-Lithuanian Commonwealth (Kasekamp, 2010). Polish rule in Courland was formal, as the area was widely autonomous. During the reign of Duke Jakob (1642-1682), Courland owned an impressive navy, a merchant fleet and manufacturing facilities. It even acquired two colonies, one in Africa (Gambia) and one in the Caribbean (Tobago) (Kasekamp, 2010; Jekabsons, 2012). Despite these achievements, the Duchy of Courland stagnated. It did not experience any significant modernization due to a constant political power dispute between the duke and the nobility. There was also no external pressure to modernize, unlike that under the strong influence that Swedish rule had over Estland and Livonia (Oberlender, 2012). The German nobility maintained its rights with German remaining the leading language (Kamusella, 2013). Finally, the Duchy of Courland, a fief of the Polish-Lithuanian Commonwealth, requested annexation to the Russian Empire in 1795 (Plakans, 1974).

Turning to the south of the Baltics, Lettgallia became a part of the Polish-Lithuanian Commonwealth in 1562 when the local elite swore allegiance to the Polish-Lithuanian crown in fear of Ivan the Terrible. Unlike Courland, Polish Livonia (also called the Inflanty Voivodeship) was

integrated in the Commonwealth and remained under Polish influence for four centuries. It developed an identity distinct from the rest of the former Livonian territories, becoming mainly a Catholic province. Religion played an important role in shaping the ethnic character of its inhabitants. For example, in Letgallian literature priests are portrayed very positively as kind-hearted advisors, unlike in other Latvian regions. Letgallians are also characterized by a higher degree of collectivism, which is linked to their Catholic heritage. The nobility in Polish Livonia was more mixed, as it included Polish, Lithuanian, German and Eastern Slavic landed nobility. The population consisted of substantial Russian, Belorussian, Polish and Jewish minorities and Polish was the language of the educated class. Moreover, a written language in Polish Livonia was developed by Jesuit fathers through the prism of the Polish language. Thus, written Latgallian dialect uses the letters y and w, which are not used in the written Latvian language (Kasekamp, 2010; Ivanovs and Soms, 2008; Plakans, 2011; Jekabsons, 2012). The Polish-Lithuanian Commonwealth collapsed at the end of the 18th century, with Polish Livonia becoming part of the Russian Empire as a result of the First Partition of the Polish-Lithuanian Commonwealth in 1772 (Plakans, 1974).

At the end of the 18th century all the territories of the contemporary Baltic states were incorporated into the Russian empire. In the governorates of Courland, Livonia and Estland, German nobles retained their traditional rights. However, Baltic peasants were granted personal freedom as serfdom was abolished in 1816 in the Governorate of Estland, in 1817 in Courland and in 1819 in Livonia. Lutheranism remained the dominant religion and German the dominant language in the region. In return, the German nobility showed loyalty to Russian rule. They often took high posts in the Russian administration, especially in the military and diplomatic corps (Plakans, 1974; Kasekamp, 2010).

A different situation occurred in the former Polish-Lithuanian Commonwealth territory (Lettgallia) that was seized by the Russians and became part of the Vitebsk Governorate. As Poles and Lithuanians rebelled twice against Tsarist rule in the first half of the 19th century, the Russian government introduced harsh Russification measures, establishing the use of the Russian language and promoting conversion to Orthodoxy. In 1864, the use of the Latin alphabet was prohibited when writing in Lithuanian or Latgallian as a symbolic gesture. However, it was still possible to use the Latin alphabet for Polish texts. Serfdom was abolished in 1861, much later than in the rest of the Baltic territories (O'Connor, 2003; Kasekamp, 2010; Kamusella, 2013).

Furthermore, Estonia and the rest of contemporary Latvian territory (Governorates of Courland, Livonia and Estland) experienced attempts at Russification due to Russian authorities fearing that

Latvians and Estonians may become Germanized. From 1867 on, all official documentation in the Baltic territories had to be written in Russian. In 1887, Russian was made the official language of instruction, except for the lowest years in primary school. However, the national awakening in the mid-19th century had created a fertile soil for national self-confidence that resulted in resistance to Russification efforts, a liberation from the Baltic German cultural world and, finally, the establishment of independence in the Baltic States after the First World War and the collapse of the Russian Empire (O'Connor, 2003; Kasekamp, 2010; Raun, 1991).

III. Data & Empirical Strategy

Data

We use three main sources of data: state data (including census) and data from official registries, survey data and geographic data. The choice of the data is strongly influenced by the need to match current statistical indicators with historical units (governorates and districts) of the Russian Empire. These units do not comply with contemporary administrative divisions. Hence, we have to use the highest possible level of aggregation that is statistically available (sub-municipal- or municipal-level data), assign each unit to a historical district and governorate, and then recalculate the statistical indicators into the historical units. GDP per capita is available only at the regional level. Therefore, we measure income by using the average wage, for which data is available at a sub-municipal level.

State data & data from official registries: In Estonia measures of number of population, income, the higher education level, nationality and literacy at the municipal level (213 units) come from the official website of Statistics of Estonia. In Latvia we use specially requested 2000 and 2011 census data from the Central Statistical Bureau Latvia to measure education level, nationality and literacy at the sub-municipal level (587 units). Last but not least, to calculate the proportions of nationalities in 1897, we use data from the First General Census of the Russian Empire of 1897 (breakdown of population by mother tongue) in 58 districts covering the territories of contemporary Latvia and Estonia.

Data on population and income at the sub-municipal level in Latvia comes from the Latvian regional development indicators module. To construct the monthly average income level at the sub-municipal level, we use data on personal income tax collected in each sub-municipal unit and the average effective tax rate of the personal income tax (13%), which is calculated as the proportion of collected personal income tax and the average gross income in Latvia. To measure the unemployment level, we use data on unemployed persons at the municipal (in Estonia) or sub-municipal level (in Latvia) from the Estonian Unemployment Insurance Fund in Estonia and the Employment State

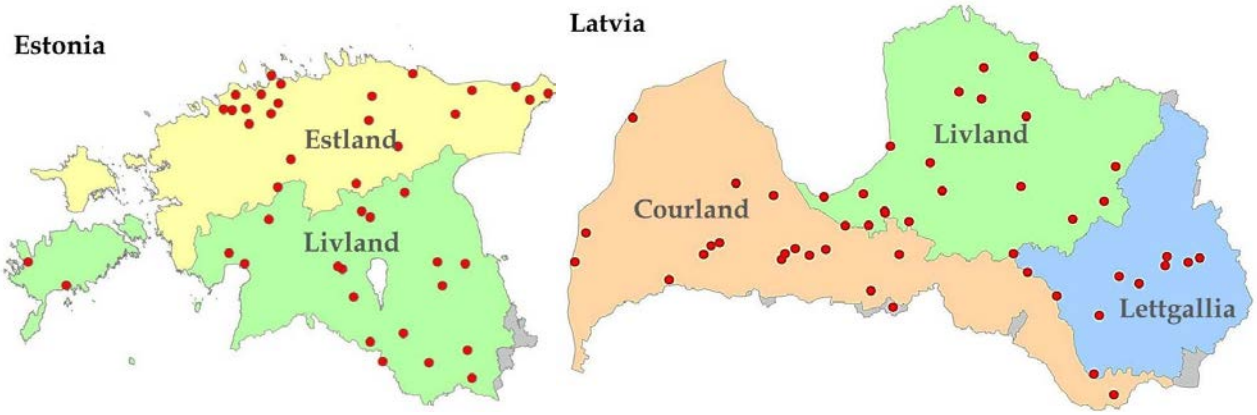
Agency in Latvia, respectively. The reason why we use sub-municipal data for Latvia and municipal data for Estonia is the size of those units. Latvia has only 119 municipalities and they do not comply with the borders of the former districts of the Russian Empire. In contrast, in Estonia the municipalities are much smaller and their borders do comply with the borders of the former districts of the Russian Empire. Furthermore, municipalities in Estonia and sub-municipalities in Latvia are similar in terms of size and number of inhabitants.

The number of Lutheran churches is based on the information on the Lutheran congregations published in the websites of the Evangelical Lutheran Church of Latvia and the Estonian Evangelical Lutheran Church. The election data of the last parliamentary elections comes from the Estonian National Electoral Committee and the State Electoral Office in Estonia (24 electoral units) and the Central Election Commission of Latvia (municipality level). We use only the voting data for the parties that entered the parliament in the last parliamentary elections in Latvia (2014) and Estonia (2015). As the majority of voters in Estonia and Latvia vote for center-right parties, we create two indicators that show the share of votes for center-left and the share of votes for the right-wing parties to illustrate the differences in political orientation.

Survey data: We use individual-level responses from the Life in Transition Survey III (LiTS III) to construct measures of values and attitudes. The LiTS III is a household and attitudinal survey conducted between 2015 and 2016 in 34 countries. The survey includes more than 1400 households in 48 sample points in Latvia and 42 sample points in Estonia (Figure 2). Firstly, we use responses to several questions of the survey to measure such values as trust, individualism, independence, risk taking and self-initiative. The measure of trust is based on responses to the question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" (4.03). Respondents give answers on a 5-point scale, with -2 meaning complete distrust and 2 meaning complete trust. To measure individualism and independence, we analyze responses to the following statements: "People should obey the law without exception (10 points) / There are times when people have good reasons to break the law (1 point)" (4.17d) and "In our country today, we should show more respect for our authorities (10 points) / As citizens, we should be more active in questioning the actions of our authorities (1 point)" (4.17e). And to measure self-initiative, we analyze responses to the following statements: "Willingness to take risks: Very much willing to take risks (10 points) / Not willing to take risks at all (1 point)" (4.28). Secondly, we construct two measures to evaluate the attitudes toward market economy and democracy. These measures are based on the responses to the following statements: "A market economy is preferable to any other form of economic

system (1 point) / Under some circumstances, a planned economy may be preferable to a market economy (-1 point) / For people like me, it does not matter whether the economic system is organized (0 points)" (4.11) and "Democracy is preferable to any other form of political system (1 point) / Under some circumstances, an authoritarian government may be preferable to a democratic one (-1 point) / For people like me, it does not matter whether a government is democratic or authoritarian (0 points)" (4.12). Last but not least, we create a measure to evaluate attitude towards inequality. This measure is based on the responses to the following statement: "The gap between the rich and poor in our country should be reduced" (4.01h). Respondents give answers on a 5-point scale, with -2 meaning strongly disagree and 2 meaning strongly agree. The localization of respondents is available at a sub-municipal level. We use individual-level data and also aggregate these measures to the level of districts of the Russian Empire in 1898. Data of 41 from 58 districts are available in this survey.

Figure 2: Historical regions of Latvia and Estonia and the LiTS III locations



Source: Own maps. Borders in 1898, borders of countries today, and location of the observations in the LiTS III dataset in Latvia and Estonia.

Geographical data: We use a historical map of the governorates of Livonia, Estland and Courland produced in Riga in 1898 from the 1900 Map Collection to create digital maps of the governorates and districts of the Russian Empire in the territory of contemporary Latvia and Estonia (figure 3). The map also partly includes geographical data on the Vitebsk governorate, thus covering the full territory of contemporary Latvia.

Figure 3: Historical map of the Russian Empire governorates of Livonia, Estland and Courland in 1898

Source: The 1900 Map Collection, www.discusmedia.com

We assign each municipality (in contemporary Estonia) or sub-municipal unit (in contemporary Latvia) to one of the 57 districts and 4 governorates (Courland, Livonia, Estland and Vitebsk) of the Russian Empire. An exception is the district of Schlock, which has been merged with the Riga district as Schlock town became part of Jurmala town and separate statistics on this unit does not exist. The opposite has been done with Walk town that became a twin town of Valka (in Latvia) and Valga (in Estonia). If the municipality (in Estonia) or sub-municipal unit (in Latvia) is located in a territory of several districts of

the Russian Empire, we assign it to the district that corresponds to the largest part of the territory. We assign those municipalities or sub-municipal units that were parts of other Russian empire districts than the ones included in the governorates of Livonia, Estland, Courland and Vytebsk to the neighboring districts (3 units in Latvia and 3 units in Estonia). This strategy allows us to recalculate the contemporary statistical data into the historical units of the Russian Empire. Table 2 summarizes the basic information with respect to variables, units of measurement and data sources. The descriptive statistics and the correlation matrix of the annual observations are depicted in Tables 3 and 4.

Table 2: Data description and sources

Variable	Unit	Period	Data source	Notes
Trust (general)	Index (-2; 2)	2015-2016	Life in Transition Survey III	Question: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" (4.03)
Risk taking	Index (1; 10)	2015-2016	Life in Transition Survey III	Statement: "Willingness to take risks: Very much willing to take risks (10 points) / Not willing to take risks at all (1 point)" (4.28)
Obedience to law	Index (1; 10)	2015-2016	Life in Transition Survey III	Statement: "People should obey the law without exception (10 points) / There are times when people have good reasons to break the law (1 point)" (4.17d)
Respect for authorities	Index (1; 10)	2015-2016	Life in Transition Survey III	Statement: "In our country today, we should show more respect for our authorities (10 points) / As citizens, we should be more active in questioning the actions of our authorities (1 point)" (4.17e)
Trust in government	Index (-2; 2)	2015-2016	Life in Transition Survey III	Question: "To what extent do you trust the following institutions? The government/ cabinet of ministers (4.04b)
Prefer market to planned economy	Index (0; 1)	2015-2016	Life in Transition Survey III	Statement: "A market economy is preferable to any other form of economic system (1 point) / Under some circumstances, a planned economy may be preferable to a market economy (-1 point)" (4.11)
Prefer democracy to autocracy	Index (-1; 1)	2015-2016	Life in Transition Survey III	Statement "Democracy is preferable to any other form of political system (1 point) / Under some circumstances, an authoritarian government may be preferable to a democratic one (-1 point)" (4.12)
Prefer more income equality	Index (-2; 2)	2015-2016	Life in Transition Survey III	Statement "The gap between the rich and poor in our country should be reduced" (4.01h)
Religion	%	2015-2016	Life in Transition Survey III	Question "What is your religion?" (9.22)
Number of Lutheran churches	-	2016	Evangelical Lutheran Church of Latvia, Estonian Evangelical Lutheran Church	
Votes for center-left parties	%	2014 (Latvia) 2015 (Estonia)	Estonian National Electoral Committee and the State Electoral Office (Estonia) Central Election Commission of Latvia	Social Democratic Party (Estonia) Social Democratic Party "Harmony" (Latvia)
Votes for right-wing parties	%			Conservative People's Party (Estonia) National Alliance, For Latvia From The Heart (Latvia)
Proportion of Germans and other nationalities	%	1897	First General Census of the Russian Empire	Number of German (or other language) speaking persons / total number of persons
Average monthly gross income per employee	Euro	2014 2015 2016	Statistics Estonia, Regional development indicators module (Latvia)	In Latvia: personal income tax received in the territorial unit / effective tax rate (0,13) /12
Higher education	%	2011 (Latvia) 2012 (Estonia)	Statistics Estonia, Central Statistical Bureau Latvia	Persons with tertiary education / all surveyed persons
Literacy	%	2011 (Latvia) 2000 (Estonia)	Statistics Estonia, Central Statistical Bureau Latvia	Literate persons / all surveyed persons
Unemployment level	%	2016	Employment State Agency (Latvia), Estonian Unemployment Insurance Fund (Estonia)	Number of unemployed persons / number of inhabitants
Ethnic minority	%	2011	Statistics Estonia, Central Statistical Bureau Latvia	Non-Latvians or Non-Estonians / all surveyed persons

Table 3: Descriptive statistics

Variable	Full sample					Latvia					Estonia				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Trust	2788	-2.00	2.00	-0.05	1.08	1874	-2.00	2.00	-0.12	1.07	914	-2.00	2.00	0.10	1.09
Risk taking	2745	1.00	10.00	4.42	2.56	1843	1.00	10.00	4.57	2.56	902	1.00	10.00	4.11	2.53
Obedience to law	2698	1.00	10.00	7.09	2.95	1803	1.00	10.00	6.99	2.95	895	1.00	10.00	7.27	2.93
Respect for authorities	2654	1.00	10.00	3.29	2.58	1779	1.00	10.00	3.25	2.52	875	1.00	10.00	3.37	2.71
Trust in government	2709	-2.00	2.00	-0.61	1.13	1829	-2.00	2.00	-0.72	1.08	880	-2.00	2.00	-0.38	1.19
Prefer market to planned economy	2565	-1.00	1.00	0.00	0.76	1716	-1.00	1.00	-0.01	0.76	849	-1.00	1.00	0.01	0.77
Prefer democracy to autocracy	2609	-1.00	1.00	0.24	0.80	1749	-1.00	1.00	0.18	0.82	860	-1.00	1.00	0.36	0.75
Prefer more income equality	2729	-2.00	2.00	1.25	0.72	1839	-2.00	2.00	1.27	0.74	890	-2.00	2.00	1.21	0.68
Catholic	2815	0.00	1.00	0.13	0.33	1897	0.00	1.00	0.18	0.39	918	0.00	1.00	0.01	0.10
Lutheran	2815	0.00	1.00	0.28	0.45	1897	0.00	1.00	0.31	0.46	918	0.00	1.00	0.22	0.41
Orthodox Christian	2815	0.00	1.00	0.24	0.43	1897	0.00	1.00	0.20	0.40	918	0.00	1.00	0.34	0.47
Atheist	2815	0.00	1.00	0.29	0.45	1897	0.00	1.00	0.24	0.43	918	0.00	1.00	0.37	0.48
Number of Lutheran churches	800	0	24	0.57	1.11	588	0	24	0.49	1.16	212	0	10	0.78	0.91
Votes for center-left parties	143	0.01	0.69	0.13	0.13	119	0.01	0.69	0.13	0.14	24	0.06	0.29	0.16	0.05
Votes for right-wing parties	143	0.03	0.04	0.24	0.08	119	0.09	0.38	0.27	0.06	24	0.03	0.20	0.09	0.04
Income (2016)	800	317.23	1504.98	734.75	202.30	588	317.23	1460.33	644.89	142.73	212	749.15	1504.98	983.98	115.69
Income (2015)	800	276.88	1442.50	683.87	197.71	588	276.88	1370.22	595.34	138.62	212	650.29	1442.50	929.43	110.19
Income (2014)	800	226.94	1279.06	620.49	155.10	588	226.94	1279.06	567.46	137.87	212	554.71	1227.52	767.56	92.97
Higher education	800	0.04	0.50	0.15	0.06	588	0.04	0.41	0.13	0.05	212	0.07	0.50	0.20	0.07
Literacy	800	0.91	1.00	1.00	0.01	588	0.91	1.00	1.00	0.01	212	0.92	1.00	1.00	0.01
Unemployment	800	0.00	0.21	0.05	0.03	588	0.01	0.21	0.06	0.04	212	0.00	0.05	0.02	0.01
Ethnic minority	800	0.00	0.95	0.18	0.20	588	0.02	0.91	0.20	0.19	212	0.00	0.95	0.13	0.21
Germans	58	0.21	36.85	10.04	10.60	39	0.21	36.85	10.73	11.56	19	0.67	26.03	8.62	8.38
Jews	58	0.00	59.68	9.30	14.78	39	0.28	59.68	13.32	16.60	19	0.00	6.21	1.04	1.64
Russians	58	0.10	36.01	7.76	9.89	39	0.10	36.01	9.22	11.48	19	0.36	15.98	4.79	4.22
Poles	58	0.00	37.38	2.32	5.79	39	0.00	37.38	3.30	6.87	19	0.01	1.55	0.31	0.42
Swedes	58	0.00	5.81	0.18	0.80	39	0.00	0.05	0.00	0.01	19	0.00	5.81	0.53	1.35

Notes: SD is standard deviation.

Table 4A: Correlation matrix (district level data)

	(1) Trust	*(2) Risk taking*	*(3) Obedience to law*	*(4) Respect for authorities*	*(5) Trust in government*	*(6) Prefer market to planned economy*	*(7) Prefer democracy to autocracy*	*(8) Prefer more income equality*	*(9) Catholic*	*(10) Lutheran*	*(11) Orthodox Christian*	*(12) Atheist*
(1) Trust	1	-0.226	0.435**	-0.107	0.570**	0.316*	0.277	0.058	-0.400**	-0.110	-0.081	0.628**
(2) Risk taking	-0.226	1	-0.123	-0.022	-0.338*	-0.200	-0.302	0.068	0.300	-0.329*	0.398*	-0.272
(3) Obedience to law	0.435**	-0.123	1	-0.410**	.0487**	0.247	0.342*	-0.224	-0.360*	0.001	0.097	0.317*
(4) Respect for authorities	-0.107	-0.022	-0.410**	1	0.012	-0.119	-0.381*	0.053	-0.049	0.091	0.070	-0.085
(5) Trust in government	0.570**	-0.338*	0.487**	0.012	1	0.664**	0.614**	-0.330*	-0.653**	0.100	-0.309*	0.687**
(6) Prefer market to planned economy	0.316*	-0.200	0.247	-0.119	0.664**	1	0.756**	-0.295	-0.623**	0.360*	-0.527**	0.527**
(7) Prefer democracy to autocracy	0.277	-0.302	0.342*	-0.381*	0.614**	0.756**	1	-0.364*	-0.562**	0.319*	-0.445**	0.475**
(8) Prefer more income equality	0.058	0.068	-0.224	0.053	-0.330*	-0.295	-0.364*	1	0.149	-0.064	0.066	-0.005
(9) Catholic	-0.400**	0.300	-0.360*	-0.049	-0.653**	-0.623**	-0.562**	0.149	1	-0.504**	0.290	-0.680**
(10) Lutheran	-0.110	-0.329*	0.001	0.091	0.100	0.360*	0.319*	-0.064	-0.504**	1	-0.611**	-0.020
(11) Orthodox Christian	-0.081	0.398*	0.097	0.070	-0.309*	-0.527**	-0.445**	0.066	0.290	-0.611**	1	-0.366*
(12) Atheist	0.628**	-0.272	0.317*	-0.085	0.687**	0.527**	0.475**	-0.005	-0.680**	-0.020	-0.366*	1
(13) Number of Lutheran churches	0.018	-0.236	-0.057	-0.003	0.138	0.096	0.147	-0.026	-0.246	0.228	-0.222	0.193
(14) Income (2016)	0.611**	-0.058	0.342*	-0.039	0.545**	0.420**	0.463**	0.145	-0.651**	0.109	-0.132	0.680**
(15) Higher education	0.452**	0.011	0.307	-0.049	0.364*	0.110	0.254	0.105	-0.364*	-0.231	0.226	0.425**
(16) Literacy	-0.176	0.104	-0.211	0.211	-0.161	-0.095	-0.131	0.091	0.181	-0.205	0.164	-0.174
(17) Unemployment	-0.500**	0.212	-0.286	-0.111	-0.531**	-0.427**	-0.378*	0.049	0.791**	-0.402**	0.289	-0.623**
(18) Ethnic minority	-0.108	0.303	-0.037	-0.075	-0.361*	-0.638**	-0.436**	0.032	0.495**	-0.640**	0.803**	-0.446**
(19) Germans	0.009	0.205	0.030	0.182	-0.019	0.080	0.044	0.068	-0.165	0.066	0.135	-0.012
(20) Jews	-0.105	0.192	-0.026	-0.015	-0.350*	-0.466**	-0.413**	-0.133	0.542**	-0.433**	0.408**	-0.389*
(21) Russians	-0.115	0.356*	0.054	-0.254	-0.380*	-0.553**	-0.416**	0.061	0.693**	-0.645**	0.556**	-0.443**
(22) Poles	-0.037	0.211	0.051	-0.235	-0.325*	-0.554**	-0.366*	-0.136	0.554**	-0.433**	0.408**	-0.413**
(23) Swedes	0.398*	-0.010	0.175	-0.056	0.303	0.215	0.281	0.067	-0.254	0.153	-0.184	0.269

Notes: ** p<0.01, * p<0.05

Table 4B: Correlation matrix (district level data)

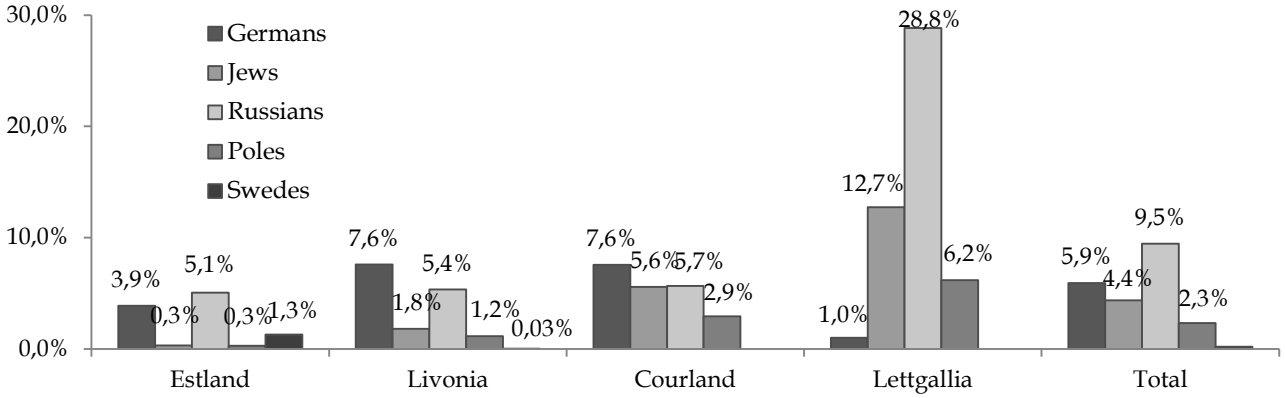
	(13) Number of Lutheran churches	*(14) Income (2016)*	*(15) Higher education*	*(16) Literacy*	*(17) Unemployment*	*(18) Ethnic minority*	*(19) Germans*	*(20) Jews*	*(21) Russians*	*(22) Polish*	*(23) Swedes*
(1) Trust	0.018	0.611**	0.452**	-0.176	-0.500**	-0.108	0.009	-0.105	-0.115	-0.037	0.398*
(2) Risk taking	-0.236	-0.058	0.011	0.104	0.212	0.303	0.205	0.192	0.356*	0.211	-0.010
(3) Obedience to law	-0.057	0.342*	0.307	-0.211	-0.286	-0.037	0.030	-0.026	0.054	0.051	0.175
(4) Respect for authorities	-0.003	-0.039	-0.049	0.211	-0.111	-0.075	0.182	-0.015	-0.254	-0.235	-0.056
(5) Trust in government	0.138	0.545**	0.364*	-0.161	-0.531**	-0.361*	-0.019	-0.350*	-0.380*	-0.325*	0.303
(6) Prefer market to planned economy	0.096	0.420**	0.110	-0.095	-0.427**	-0.638**	0.080	-0.466**	-0.553**	-0.554**	0.215
(7) Prefer democracy to autocracy	0.147	0.463**	0.254	-0.131	-0.378*	-0.436**	0.044	-0.413**	-0.416**	-0.366*	0.281
(8) Prefer more income equality	-0.026	0.145	0.105	0.091	0.049	0.032	0.068	-0.133	0.061	-0.136	0.067
(9) Catholic	-0.246	-0.651**	-0.364*	0.181	0.791**	0.495**	-0.165	0.542**	0.693**	0.554**	-0.254
(10) Lutheran	0.228	0.109	-0.231	-0.205	-0.402**	-0.640**	0.066	-0.433**	-0.645**	-0.433**	0.153
(11) Orthodox Christian	-0.222	-0.132	0.226	0.164	0.289	0.803**	0.135	0.408**	0.556**	0.408**	-0.184
(12) Atheist	0.193	0.680**	0.425**	-0.174	-0.623**	-0.446**	-0.012	-0.389*	-0.443**	-0.413**	0.269
(13) Number of Lutheran churches	1	0.205	-0.007	-0.207	-0.200	-0.100	-0.448**	-0.413**	-0.300*	-0.196	0.148
(14) Income (2016)	0.205	1	0.792**	-0.112	-0.758**	-0.115	0.121	-0.342**	-0.315*	-0.319*	0.271*
(15) Higher education	-0.007	0.792**	1	0.181	-0.491**	0.280*	0.258	-0.056	0.056	-0.058	0.076
(16) Literacy	-0.207	-0.112	0.181	1	0.086	0.029	0.486**	0.312*	-0.027	-0.261*	-0.339**
(17) Unemployment	-0.200	-0.758**	-0.491**	0.086	1	0.368**	-0.227	0.379**	0.639**	0.310*	-0.179
(18) Ethnic minority	-0.100	-0.115	0.280*	0.029	0.368**	1	-0.075	0.346**	0.695**	0.515**	-0.070
(19) Germans	-0.448**	0.121	0.258	0.486**	-0.227	-0.075	1	0.102	-0.168	-0.119	-0.134
(20) Jews	-0.413**	-0.342**	-0.056	0.312*	0.379**	0.346**	0.102	1	0.424**	0.352**	-0.139
(21) Russians	-0.300*	-0.315*	0.056	-0.027	0.639**	0.695**	-0.168	0.424**	1	0.613**	-0.113
(22) Poles	-0.196	-0.319*	-0.058	-0.261*	0.310*	0.515**	-0.119	0.352**	0.613**	1	-0.085
(23) Swedes	0.148	0.271*	0.076	-0.339**	-0.179	-0.070	-0.134	-0.139	-0.113	-0.085	1

Notes: ** p<0.01, * p<0.05

Historical German presence in the Baltic region

At the end of the 19th century, 2.9 million inhabitants lived in the Baltics, of whom 170 thousand or 5.9% were Germans. The highest share of Germans was in Livonia and Courland (7.6%), whereas in Lettgallia the share of Germans was as low as 1%. Other significant minorities in the Baltics were the Russians (9.5%), Jews (4.4%) and Poles (2.3%). The Russian minority concentrated in Lettgallia, where their share reached 28.8%. Jews and Poles were present in higher numbers in Lettgallia (12.7% and 6.2%) and Courland (5.6% and 2.9%). There was also a Swedish minority of 1.3% in Estland. Figure 3 gives detailed information on minorities in the Baltics at the end of the 19th century.

Figure 3: National Minorities in the Baltic Regions of the Russian Empire

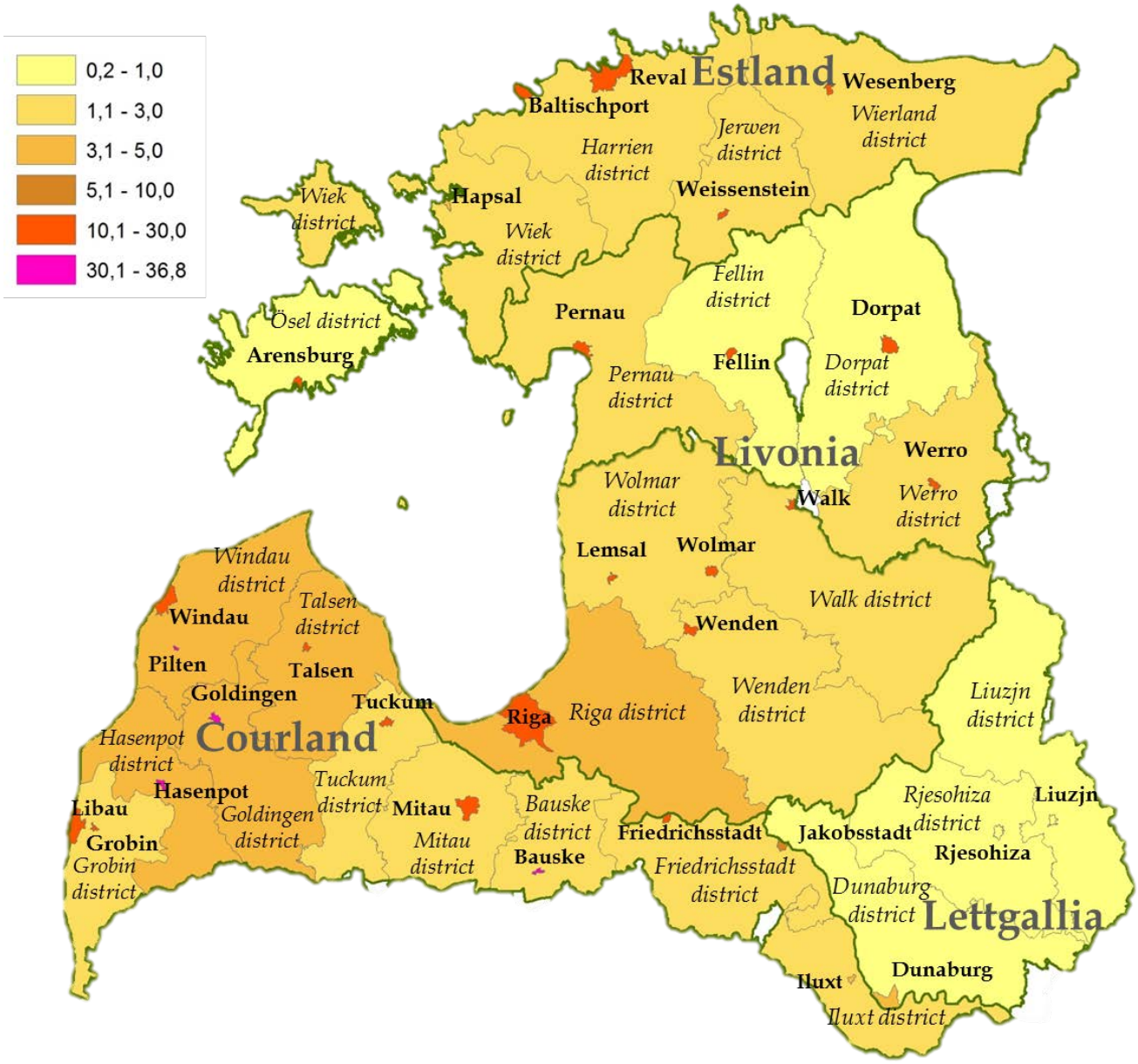


Source: Own graphs. Data from the First General Census of the Russian Empire in 1897.

As the results of the first general census of the Russian Empire in 1897 indicate, Germans as a ruling class were concentrated in towns, with 79 percent of them being urban. The share of German town elite, merchants and artisans in the Baltic towns reached on average 19.4 percent. In four towns of Western Latvia (Courland), the German minority accounted for more than 30 percent (Pilten, Bauske, Hasenpot and Goldingen). Towns such as Mitau, Windau and Libau in Courland, as well as Arensburg and Riga in Livonia had a German share of 20-30 percent. The population of most towns in the Baltics consisted of 10-20 percent Germans. An exception was Lettgallia in Southeast Latvia, where only 3.7 percent of the town's inhabitants were Germans, corresponding to their lowest share in the whole Baltic region. In absolute numbers, the highest German population concentration was observed in the largest towns of the Baltics. Riga had 67.3, Libau 15.4, Reval 10.4 and Mitau 9.7 thousand German inhabitants.

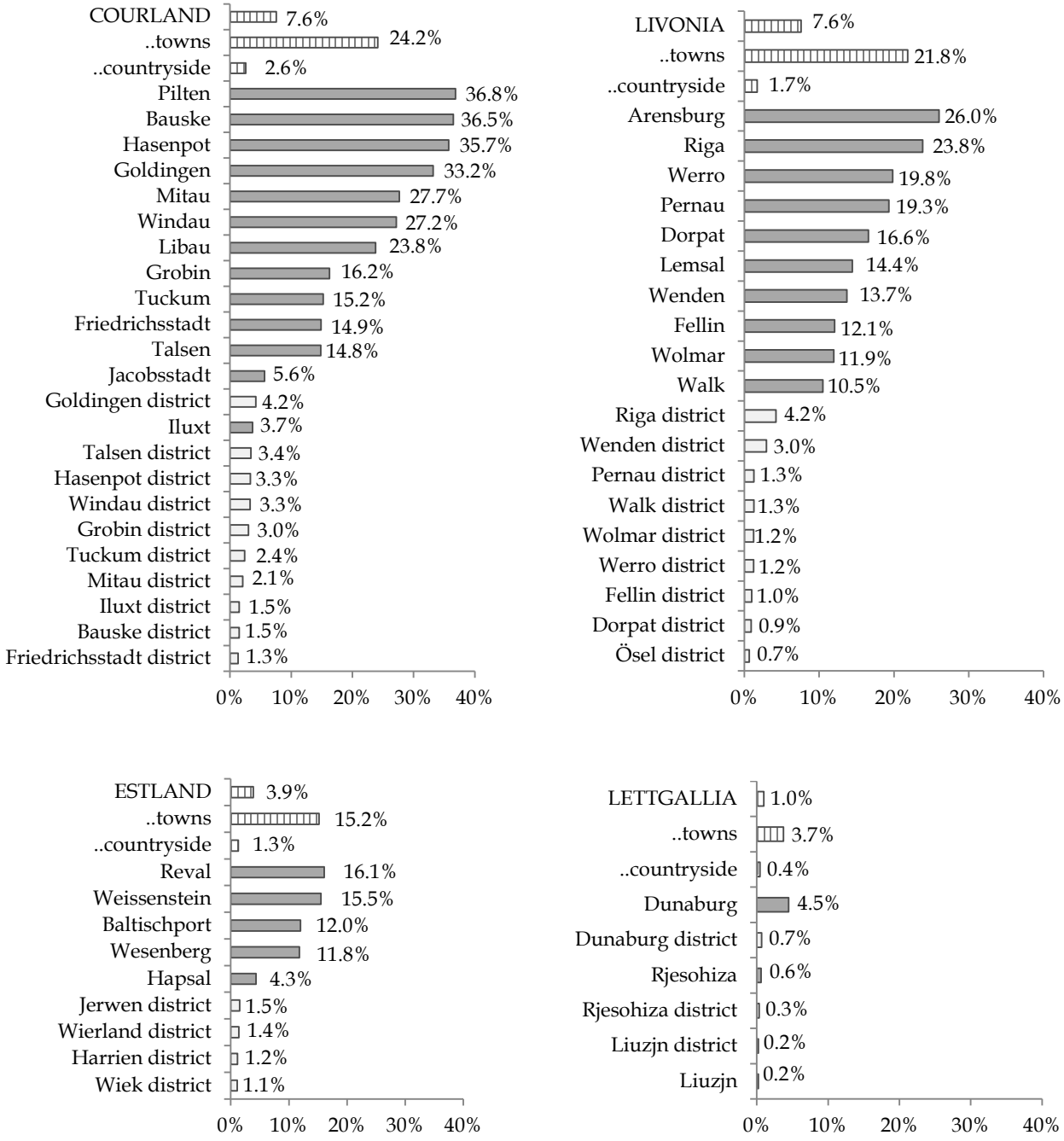
In the countryside, the German minority was formed by the landed nobility, local clergymen and teachers, accounting for 1.6 percent overall. Again, there was a higher share of Germans in the Courland districts that surrounded the towns of Goldingen, Talsen, Hasenpot, Windau, Grobin, Tuckum and Mitau, as well as the Riga district and the Wended district in Livonia, accounting for 2-4 percent of rural inhabitants. Figures 4-5 show a detailed distribution of the German minority in the Baltic districts of the Russian Empire.

Figure 4: Share of Germans in the Russian Empire Districts in 1897



Source: Own maps. Data from the First General Census of the Russian Empire in 1897. Borders of governorates, towns and districts in 1898

Figure 5: The Distribution of the German Minority in the Historic Baltic Regions in 1897



Notes: Grey columns indicate towns, while white columns rural areas. Striped columns show average indicators for the region, towns and the countryside.
Source: Own graphs. Data from the First General Census of the Russian Empire in 1897.

Empirical Strategy

OLS and IV Approach

Our research objective is two-fold. First, we intend to identify the long-run effect of the historical German population on contemporary socioeconomic development in the Baltics. We measure socioeconomic development at the sub-municipal level as average income level (average wage) for the years 2016 and 2015, while providing lags for 2015 and 2014, respectively. We also use literacy rates and the share of people with higher education as dependent variables, while conditioning for the spread of Lutheran Churches, the distance from Riga/Reval (historical name of Tallinn), the respective governorate (Courland, Lettgallia, Livonia, Estland) and the overall diversity share of non-Latvians/non-Estonians in any historical district based on the 1897 general census of the Russian Empire. The analysis is performed on the level of Russian Empire districts, as it is the most detailed level where historical statistics on German presence are available. We use the following regression:

$$Outcome_i = \alpha GermanShare_i + \beta X_i + \varepsilon_i ,$$

where *Outcome* indicates a contemporary outcome variable, X is the vector of control variables, i denotes the Baltic district of the Russian Empire, and ε is an error term. After performing our OLS estimations, we instrument the German share in each historical district with the distance to Riga or Reval/Tallinn; for Courland and Lettgallia we use the distance to Riga, for Estland the distance to Reval, and for Livonia we split the sample into two components and use the distance to Riga or the distance to Reval, depending on which one is shorter. In this way, we use the distance to either of the two major urban areas in the Baltic region in order to generate exogenous variation on the long-run economic effects of German historical presence. Big cities are usually significant magnets of economic and financial activity and this has certainly been the case for Riga and Reval/Tallinn, and was also before the Treaty of Nystad.

Standard and Robust RDD approach

After the collapse of the Livonian Confederation, the Baltic regions experienced different cultural-historical treatments under Polish and Swedish imperial rule, and after the Great Northern War, under the Russian Empire. This allows us to use quasi-experimental methods to identify differences in communities that were divided by a "political" border. We focus on the following three internal borders within contemporary Latvia and Estonia: Estland/Livonia, Courland/Livonia and Lettgallia/Livonia. To estimate whether affiliation with the historical regions of Estland, Livonia, Courland and Lettgallia has a lasting effect on socioeconomic development, personal values, political

and religious preferences, we follow the empirical strategy of Grosfeld and Zhuravskaya (2015) and use a one-dimensional regression discontinuity model:

$$Outcome_i = \alpha_1 \text{Region}_i + \delta_1 \text{Distance}_i + \delta_2 \text{Region}_i \text{Distance}_i + \delta_3 X_i + \varepsilon_i ,$$

where *Outcome* indicates a contemporary outcome variable. *Region* is a dummy indicating whether the unit belongs to Estland/Courland/Lettgallia, depending on the particular data sample, with Livonia always being the comparison group. *Distance* is the distance from the center of the territorial unit to the border. *X* are control variables and ε is an error term. We use a sample of territorial units located within the immediate proximity of the border (60 km on both sides of the historical borders) thus ensuring that the territories are similar in terms of climate conditions, natural resources, infrastructure and economic opportunities. As a robustness check, we also use a wider band of 100 km (Figures A.1 and A.2 in the Appendix).

The outcome variables include socioeconomic development indicators as the level of income (average wage), (log) unemployment and the share of people with higher education, as well as individual values and political preferences – general trust, risk taking, obedience to law, respect for authorities, trust in government and attitudes toward market economy, democracy and inequality. We also include the share of voters for center-left or right-wing parties and religious affiliation. The choice of controls depends on the level of analysis. For the analysis of values and political preferences, the Life in Transition Survey III allows us to use individual-level analysis, covering up to 863 individuals in the case of the Courland/Livonia border, 668 individuals in the case of the Estland/Livonia border and 296 individuals in the case of the Lettgallia/Livonia border. Individual-level controls include higher education, gender, age, ethnicity (Latvian, Estonian or ethnic minority) and religious affiliation (Lutheran, Catholic, Orthodox Christian or atheist).

Socioeconomic and political development indicators are also available at the level of counties in Estonia and sub-municipalities in Latvia. That allows us to compare 42 territorial units around the Courland/Livonia border, 22 territorial units around the Lettgallia/Livonia border and 17 territorial units around the Estland/Livonia border. Our methodology implies that former imperial borders prior to the Treaty of Nystad (1721), which transformed all these provinces into territories of the Russian Empire, drive the statistically significant discontinuous jumps in the political and socioeconomic variables of interest across the provinces of contemporary Latvia and Estonia. Tables A1 and A2 provide an overview of the historical development of locality names and institutions in Courland, Livonia, Lettgallia and Estland.

IV. Results

Baltic Germans & Socioeconomic development

Becker and Woessmann (2010) argue for the existence of a Protestant effect on primary school supply in 19th century Prussia. Based on the 1897 general census of the Russian Empire and sub-national data from Latvia and Estonia, we identify the existence of a German effect on contemporary socioeconomic development. The German effect holds in its bivariate relationship with current income, and its quantitative effect remains unchanged when we add geographic, cultural and historical controls such as distance from the capital city (Riga or Reval/Tallinn), the 1561 pre-Nystad region dummy, the number of Lutheran churches and the degree of diversity, which captures the multiplicity of language/ethnic minorities in a given municipal/sub-municipal unit. We observe that the statistical significance of the German effect on wealth is strengthened as our proposed OLS specifications become more detailed (Table 5). When we change the dependent variable from log average monthly wage as a proxy for current income to literacy rate, the German effect persists at the 1 percent level. This captures explicitly the association between Baltic Germans and urban location, where the higher rates of literacy are observed.

Table 5: Baltic Germans and current income

	OLS			IV		
	1	2	3	4	5	6
German share %	0.004	0.004	0.005	0.026	0.029	0.020
	[0.002]*	[0.002]**	[0.002]***	[0.009]***	[0.011]***	[0.009]**
Distance to Riga/Reval km		-0.001	-0.001			
		[0.0003]***	[0.0003]**			
Lettgallia			-0.209			-0.055
			[0.053]***			[0.132]
Estland			0.062			0.154
			[0.039]			[0.047]***
Courland			-0.149			-0.165
			[0.032]***			[0.048]***
Number of Lutheran Churches		0.003	0.002	0.018	0.020	0.013
		[0.002]	[0.002]	[0.006]***	[0.008]**	[0.006]**
Diversity index %			0.004		0.006	0.004
			[0.001]***		[0.004]	[0.002]**
Constant	6.489	6.607	6.605	6.130	6.070	6.271
	[0.030]***	[0.057]***	[0.062]***	[0.132]***	[0.173]***	[0.147]***
Observations	58	58	58	58	58	58
R-squared	0.074	0.349	0.631	0.106	0.086	0.074
F-statistic of instrument in 1st stage				7.98	5.89	3.36
Distance to Riga/Reval km				-0.053	-0.047	-0.047
(Coefficient from 1st stage)				[0.019]***	[0.019]**	[0.026]*

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity

index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

The highly significant effect of the German historical presence in Table 6 shows that the high literacy levels of Baltic Germans created an entrepreneurial and intellectual milieu that persisted after the relocation of Baltic Germans in the 1940s and the Sovietization of Latvian and Estonian economies in the 1950s. This explains also why the diversity index is continuously significant in Tables 5-7 at the 1 and 5 percent levels; the strong long-run German effect on Baltic development corroborates the positive effect of diversity on economic performance and implies that the resilience of imperial economies depended on their capacity to be managed by and facilitate the financial and intellectual development of minorities. The association between the historical German share of 1897 and contemporary higher education rates implies that Baltic Germans facilitated the accumulation of an institutional endowment that not only differentiated Estonia and Latvia from Lithuania, whose ethnic composition was much less diverse and did not experience any Baltic German presence, but also set the conditions for economic growth. The Borcan, Olsson and Puttermann paper (2018) on the relationship between state history and economic growth also serves as an explanatory pattern for the treatment of Baltic Germans as an enhancing factor of both state history and diversity.

Table 6: Baltic Germans and current literacy

	OLS			IV		
	1	2	3	4	5	6
German share %	0.0001	0.0001	0.002	0.0001	0.0001	0.020
	[0.00002]***	[0.00002]***	[0.001]***	[0.00005]**	[0.011]***	[0.009]**
Distance to Riga/Reval km		-1.68e-06	-0.0002			
		[2.40e-06]	[0.0001]*			
Lettgallia			-0.031			0.004
			[0.021]			[0.002]**
Estland			0.044			0.0003
			[0.024]*			[0.001]
Courland			-0.068			-0.0002
			[0.013]***			[0.001]
Number of Lutheran Churches		-3.96e-06	0.0002	0.00002	0.00005	0.0001
		[0.00002]	[0.001]	[0.00004]	[0.00004]	[0.0001]
Diversity index %			0.002		0.0001	4.95e-06
			[0.001]**		[0.00002]***	[0.00001]
Constant	0.977	0.998	0.218	0.977	0.996	0.994
	[0.0003]***	[0.001]***	[0.024]***	[0.001]***	[0.001]***	[0.002]***
Observations	58	58	58	58	58	58
R-squared	0.236	0.240	0.578	0.106	0.086	0.074
F-statistic of instrument in 1st stage				7.98	5.89	3.36
Distance to capital city (Riga/Reval) km				-0.053	-0.047	-0.047
(Coefficient from 1st stage)				[0.019]***	[0.019]**	[0.026]*

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity

index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share.

Instrumental-variable specification with distance to Riga/Reval as instrument

Both Becker and Woessmann (2009, 2010) and Cantoni (2012) use the distance to Wittenberg as an instrument to explain the concentric spread of Protestantism. In particular, Becker and Woessmann (2009, 2010) link it to the cost of traveling and the speed of informational diffusion through space. What we do here is instrument the German share of 1897 with the distance to one of the two capital cities in the Baltic region, Riga or Reval (Tallinn). The underlying logic for the selection of this instrument is the specific cultural profile of Baltic Germans, which would influence their selection of settlement with respect to the biggest city of their area. Riga and Reval were certainly the first-choice locational destinations for Baltic Germans. Contrary to other minorities such as Poles, Swedes, Russians and Lithuanians, Baltic Germans showed the highest inclination toward urbanization and occupations that involved activity in big cities. This is why the selection of the distance from the respective capital as an instrument accounts for an exogenous variation to the dispersion of Baltic Germans without the interference of general socioeconomic considerations. While the statistical significance of distance to Riga/Reval remains unstable in the OLS specifications, the opposite is observed in the IV specifications, where both the distance to Riga/Reval and the German share are statistically significant (see Tables 5-7).

Table 7: Baltic Germans and current higher education

	OLS			IV		
	1	2	3	4	5	6
German share %	0.002	0.001	0.002	0.008	0.010	0.007
	[0.001]*	[0.001]	[0.001]***	[0.004]**	[0.004]***	[0.003]***
Distance to Riga/Reval km		-0.0004	-0.0002			
		[0.0002]**	[0.0001]*			
Lettgallia			-0.031			0.018
			[0.021]			[0.044]
Estland			0.044			0.073
			[0.024]*			[0.022]***
Courland			-0.068			-0.073
			[0.013]***			[0.017]***
Number of Lutheran Churches		-0.0005	0.0002	0.005	0.006	0.004
		[0.001]	[0.001]	[0.002]*	[0.003]*	[0.002]*
Diversity index %			0.002		0.003	0.002
			[0.001]***		[0.002]**	[0.001]**
Constant	0.183	0.238	0.218	0.079	0.044	0.111
	[0.010]***	[0.032]***	[0.024]***	[0.053]	[0.068]	[0.048]**
Observations	58	58	58	58	58	58
R-squared	0.067	0.189	0.578	0.106	0.086	0.074
F-statistic of instrument in 1st stage				7.98	5.89	3.36
Distance to Riga/Reval km				-0.053	-0.047	-0.047

(Coefficient from 1st stage)	[0.019]***	[0.019]**	[0.026]*

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share.

Evidence from the Anderson-Rubin Wald test and Stock-Wright LM test (see the F-statistic in Tables 5-7) suggests that the German share is a relevant factor to explain contemporary socioeconomic outcomes in Latvia and Estonia. Hence, distance to Riga/Reval appears to be a robust instrument for historical German dispersion in the Baltics, which does not explain the spread of other minorities and it is not directly linked to educational attainment or wealth. The German effect stays positively significant throughout the IV specifications of Tables 5-7, while the controls for the number of Protestant churches (not only Germans were Protestant) and ethno-linguistic diversity corroborate the strength of the German effect on the Baltics nowadays. The same observation holds when we replace current income of 2016 with the respective data for 2015 and 2014; the results remain more or less unchanged (see Tables A.3-A.4 in the Appendix). Each kilometer distance from Riga or Reval is associated with a German share that is 5 percent lower. Furthermore, the areas that used to have a higher share of Germans in the 1897 census have between 0.01 percent and 2 percent higher literacy and university graduate rates (Table 6 and 7), while the same observation holds for 0.2 to 0.3 log-income units in the historical German-populated areas in contemporary Latvia and Estonia (Table 5).

To further check the robustness of the instrumented German share, we replace it with the remaining key minority shares of the 1897 general census of the Russian Empire: Jewish, Swedish, Russian and Polish (Tables A.8-A.19 in the Appendix). Although Baltic Jews were also rather urban and more educated than the respective Latvians or Estonians, there is no positive and statistically significant Jewish effect on contemporary socioeconomic development. The same observation holds for the Swedish share, particularly when we instrument it with distance to Riga or Reval. The Russian and Polish shares appear to have a negative effect on current socioeconomic performance. Nevertheless, this effect is neither consistent nor always statistically significant. The long-run economic significance of the historical German population in the Baltic region is therefore also corroborated with respect to other major cultural groups: the Jews who shared a similar socioeconomic profile with Baltic Germans, the Poles and the Swedes as the carriers of the two competing imperial legacies before the Treaty of Nystad, and the Russians as the subsequent colonizing Empire.

Robust Regression Discontinuity

To show the persistence of imperial legacies in contemporary Latvia and Estonia, we implement the robust regression discontinuity method introduced by Calonico, Cattaneo and Titiunik (2014, 2015,

2017); the key assumption underpinning this approach is that the political borders that emerged in the Baltics in the aftermath of the collapse of the Livonian Confederation were exogenously defined. There are four borders to be tested: the Livonia-Courland border, the Livonia-Estland border, the Lettgallia-Livonia border and the Lettgallia-Courland border. Due to a highly limited set of observations in the LiTS III, the short Lettgallia-Courland border is excluded from the analysis. Moreover, we report results with officially registered income, higher education and literacy only for the Livonia-Courland border; the rest of the outcome variables that drive the results come from the LiTS III. While Lettgallia represents Polish imperial rule in the pre-Nystad historical context, Estland and Livonia provide evidence for the persistence of the Swedish imperial legacy. Courland is a more complex case because, on the one hand, it was independent until its inclusion into the Russian Empire in 1795 and, on the other hand, it was a nominal vassal of the Polish-Lithuanian Commonwealth. To be able to estimate the discontinuous jump across the borders for our outcome variables, we follow the Grosfeld and Zhuravskaya (2015) approach and select a bandwidth of 60 km on both sides of the border. The assumption is that if differences in prior imperial rule do not exist, no discontinuous jump will be observed.

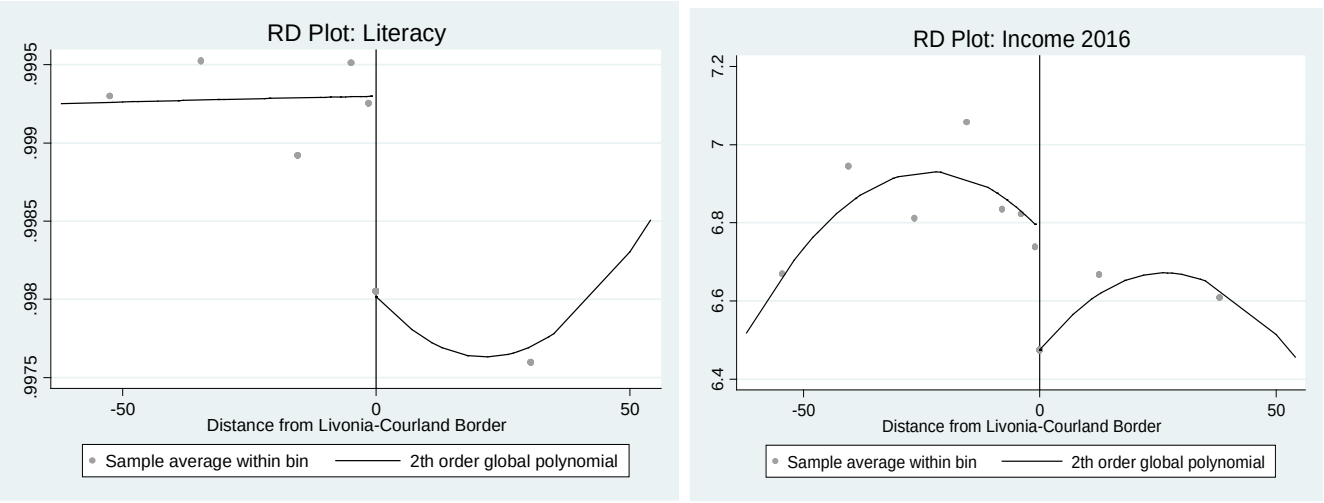
Table 8: RD results with robust bias-corrected CIs: Courland vs. Livonia (1561 borders)

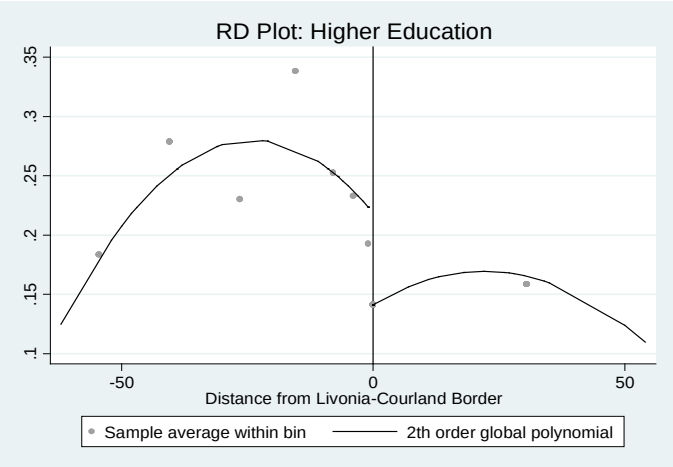
Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	0.106	0.281	0.38	-0.446	0.657
	Bias-Corrected	1.259***	0.281	4.48	-0.708	1.810
	Robust	1.259	0.965	1.31	-0.632	3.149
Income (Official Statistics)	Conventional	-0.360***	0.061	-5.86	-0.480	-0.239
	Bias-Corrected	-0.292***	0.061	-4.75	-0.412	-0.172
	Robust	-0.292***	0.072	-4.03	-0.434	-0.150
Higher Education (LiTS III)	Conventional	-0.004	0.092	-0.05	-0.186	0.177
	Bias-Corrected	0.271***	0.092	2.93	0.090	0.452
	Robust	0.271	0.316	0.86	-0.349	0.891
Higher Education (Official Statistics)	Conventional	-0.098***	0.021	-4.65	-0.139	-0.057
	Bias-Corrected	-0.065***	0.021	-3.11	-0.107	-0.024
	Robust	-0.065**	0.027	-2.47	-0.117	-0.013
Literacy	Conventional	-0.001***	0.0004	-2.97	-0.002	-0.0004
	Bias-Corrected	-0.001***	0.0004	-3.27	-0.002	-0.001
	Robust	-0.001***	0.0005	-2.98	-0.002	-0.0005
Trust in Government	Conventional	0.209	0.210	1.00	-0.202	0.621
	Bias-Corrected	0.334	0.210	1.59	-0.077	0.745
	Robust	0.334	0.845	0.40	-1.322	1.991
Market Economy	Conventional	-0.180	0.166	-1.08	-0.507	0.146
	Bias-Corrected	-0.673***	0.166	-4.04	-0.999	-0.347
	Robust	-0.673	0.611	-1.10	-1.870	0.525
Democracy	Conventional	-0.243	0.191	-1.27	-0.616	0.131
	Bias-Corrected	-0.293	0.191	-1.53	-0.666	0.081
	Robust	-0.293	0.730	-0.40	-1.724	1.139
Income equality	Conventional	-0.312***	0.171	-1.83	-0.647	0.023

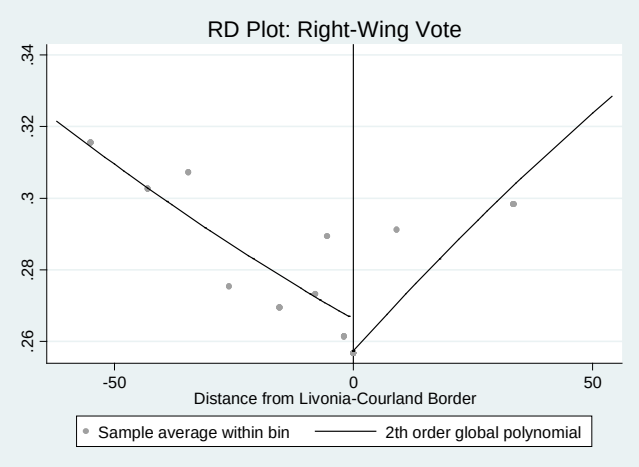
	Bias-Corrected	-1.927***	0.171	-11.28	-2.262	-1.592
	Robust	-1.927***	0.598	-3.22	-3.099	-0.754
Competition	Conventional	-0.990*	0.539	-1.83	-2.047	0.068
	Bias-Corrected	1.082**	0.539	2.01	0.025	2.140
	Robust	1.082	2.159	0.50	-3.150	5.315
Center-Left Vote	Conventional	-0.059	0.039	-1.53	-0.135	0.017
	Bias-Corrected	-0.051	0.039	-1.30	-0.127	0.026
	Robust	-0.051	0.055	-0.92	-0.158	0.057
Right-wing Vote	Conventional	-0.008	0.015	-0.57	-0.038	0.021
	Bias-Corrected	-0.010	0.015	-0.70	-0.040	0.020
	Robust	-0.010	0.020	-0.51	-0.050	0.029
Respect for Authority	Conventional	1.704***	0.537	3.17	0.651	2.757
	Bias-Corrected	3.729***	0.537	6.94	2.675	4.782
	Robust	3.729*	2.077	1.79	-0.343	7.800
Law Obedience	Conventional	-1.782***	0.609	-2.93	-2.975	-0.588
	Bias-Corrected	2.709***	0.609	4.45	1.515	3.902
	Robust	2.709	2.571	1.05	-2.331	7.749
Generalized Trust	Conventional	0.258	0.213	1.21	-0.160	0.677
	Bias-Corrected	-1.136***	0.213	-5.32	-1.554	-0.717
	Robust	-1.136	0.841	-1.35	-2.784	0.512

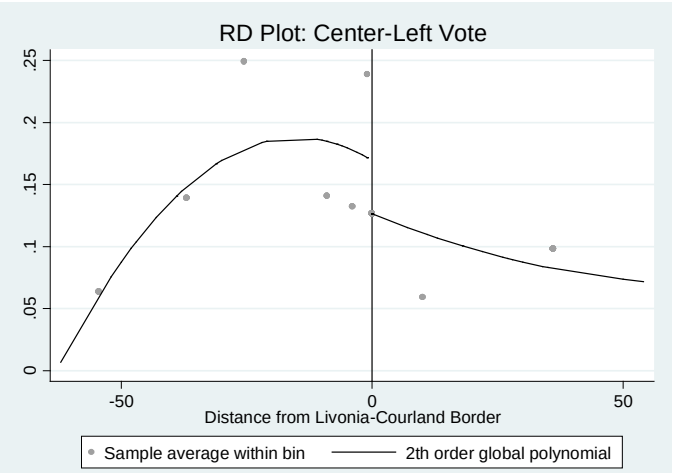
Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 60 km.

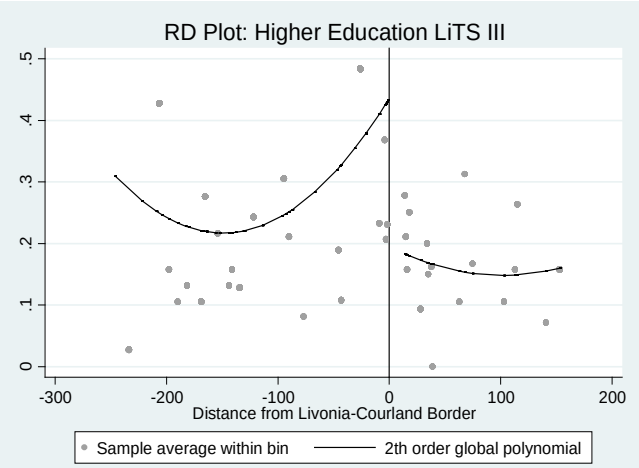
Figure 6: RD results with robust bias-corrected CIs: Courland vs. Livonia (1561 borders)

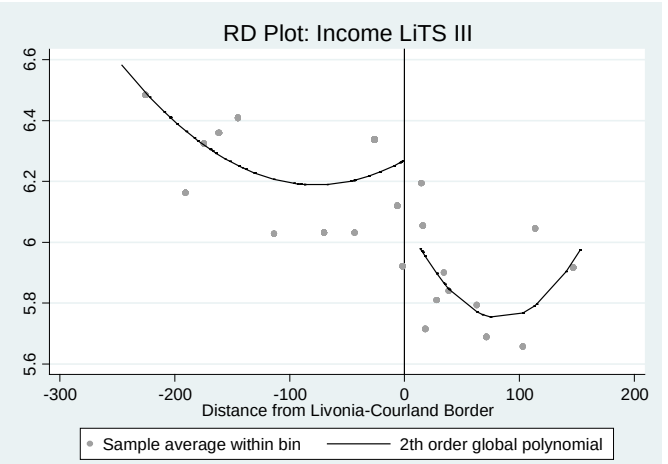


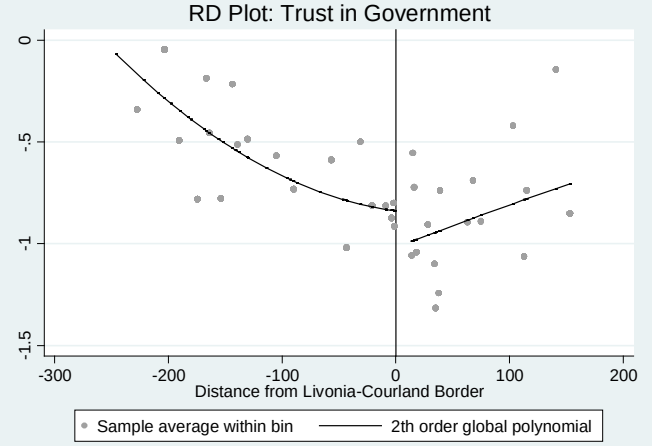

RD Plot: Higher Education
.1
.15
.2
.25
.3
.35
-50
0
50
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

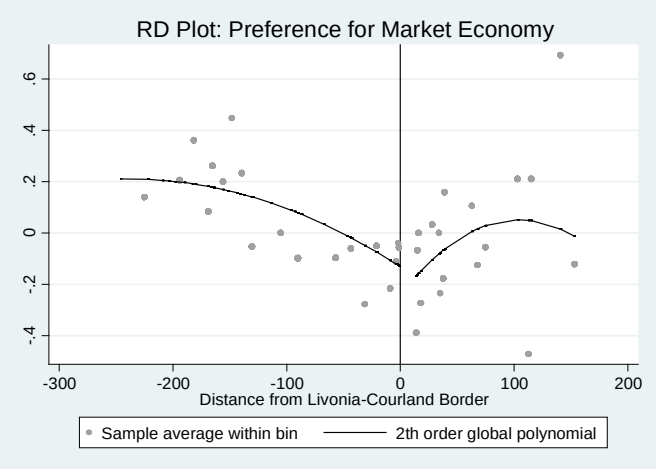

RD Plot: Right-Wing Vote
.26
.28
.3
.32
.34
-50
0
50
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

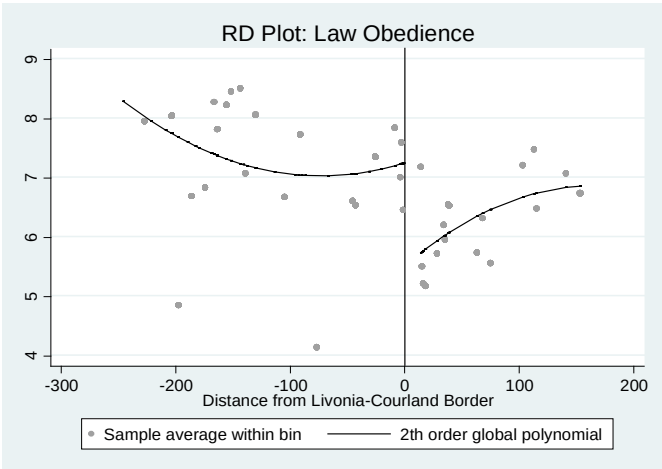

RD Plot: Center-Left Vote
0
.05
.1
.15
.2
.25
-50
0
50
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

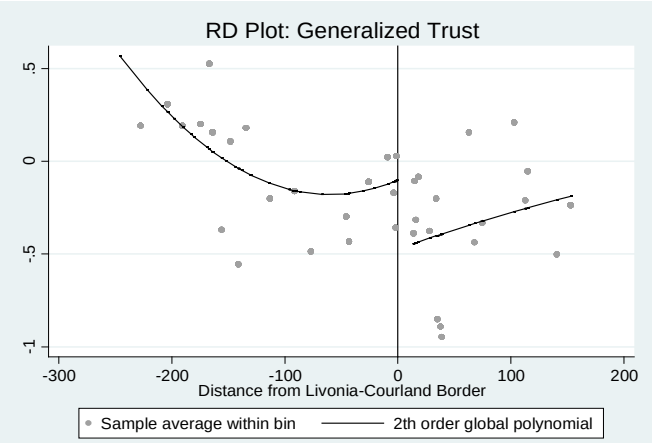

RD Plot: Higher Education LiTS III
0
.1
.2
.3
.4
.5
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

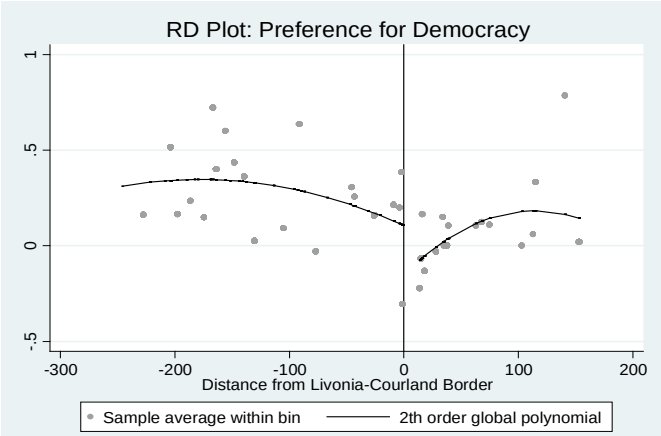

RD Plot: Income LiTS III
5.6
5.8
6
6.2
6.4
6.6
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

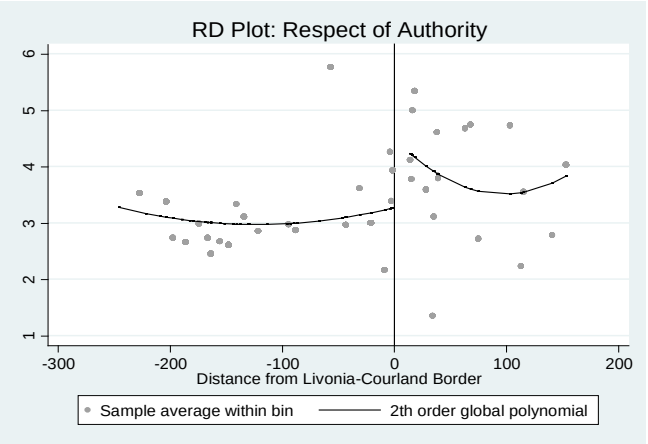

RD Plot: Trust in Government
-1.5
-1
-.5
0
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

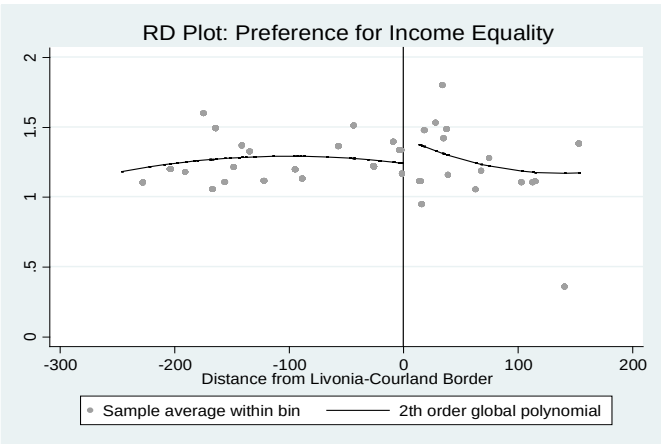

RD Plot: Preference for Market Economy
-.4
-.2
0
.2
.4
.6
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial

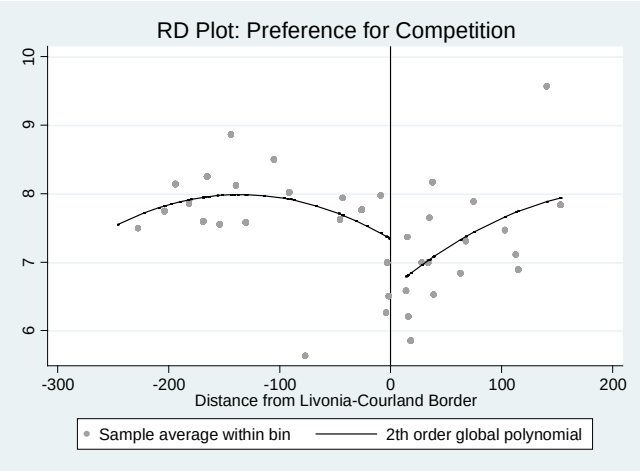

RD Plot: Law Obedience
4
5
6
7
8
9
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial


RD Plot: Generalized Trust
-1
-.5
0
.5
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial


RD Plot: Preference for Democracy
-.5
0
.5
1
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial


RD Plot: Respect of Authority
1
2
3
4
5
6
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial


RD Plot: Preference for Income Equality
0
.5
1
1.5
2
-300
-200
-100
0
100
200
Distance from Livonia-Courland Border
Sample average within bin
2th order global polynomial



As Table 8 and Figure 6 indicate, the Livonia-Courland border appears to be the strongest of the three. The outcome variables of officially reported income, higher education and literacy are statistically significant mostly at the 1 percent level, while the income and literacy coefficients are statistically significant at the 1 percent level with both bias-corrected and robust confidence intervals (CIs). Higher education (officially reported statistics) appears to be significantly higher in former Livonian rather than in former Courland territories by an average mean difference of -0.065, which is statistically significant at the 1 percent level with a bias-corrected CI and at the 5 percent level with a robust CI. Furthermore, the historical border between Swedish-dominated Livonia and formally Polish, but in reality independent, Courland, seems to persist also when it comes to preferences for income equality and respect for authority. Respondents in former Livonian territories are much more inclined toward income equality and rejection of authority, whereas the opposite holds for respondents in former Courland areas. Preference for income equality persists significantly more with a difference of 1.927 (with both bias-corrected and robust CIs at the 1 percent level), whereas respect for authority persists significantly less with a difference of 3.729 (with a bias-corrected CI at the 1 percent level and a robust CI at the 10 percent level) in the former Livonian region.

It is obvious that the Livonia-Courland political border has generated long-run differences in socioeconomic development in favor of Livonia, which was under Swedish imperial rule. This is also reflected in the preferences for generalized trust and market economy, which generate statistically significant differences across the border at the 1 percent level. Using the robust regression discontinuity approach of Calonico, Cattaneo and Titiunik (ibid.), we find that Baltic territories across the former Livonia-Courland border are wealthier, more progressive and with higher levels of socioeconomic development, if they happened to be Livonian and therefore under Swedish imperial rule; the mean difference in generalized trust is -1.136 and is significant at the 1 percent level with a bias-corrected CI,

while the mean difference in preference for market economy is -0.673 and also significant at the 1 percent level with a bias-corrected CI.

Table 9 and Figure 7 report and graph the results of robust regression discontinuity across the former Livonia-Lettgallia border. The imperial legacies were also different across this 1561 border. Sweden hallmarked the modernization and economic performance of Livonia, whereas Lettgallia was part of Poland. While there were not enough observations on officially reported income, higher education and literacy across the border, the third wave of the Life in Transition Survey (LiTS III) facilitated a sufficient set of observations for our analysis. There is an average mean difference in law obedience of -12.179, which is statistically significant at the 1 percent level with both a bias-corrected and a robust CI. This implies a higher commitment level to institutions in the former Livonian rather than Lettgallian territories of the Baltic region. Similarly, strong preferences for democracy and market economy are more likely to be observed on the Livonian side of the Livonia-Lettgallia border. Preference for market economy scores are higher in Livonia than in Lettgallia with a difference of 1.695, which is significant at the 1 percent level with a bias-corrected CI only, while the mean difference in preference for democracy is -0.995, which is statistically significant at the 1 percent level with a bias-corrected CI as well. A statistically significant difference in trust in government across the border confirms the existence of a more advanced institutional and infrastructural legacy on the Livonian side of the border, which is due to Swedish imperial rule prior to the Treaty of Nystad.

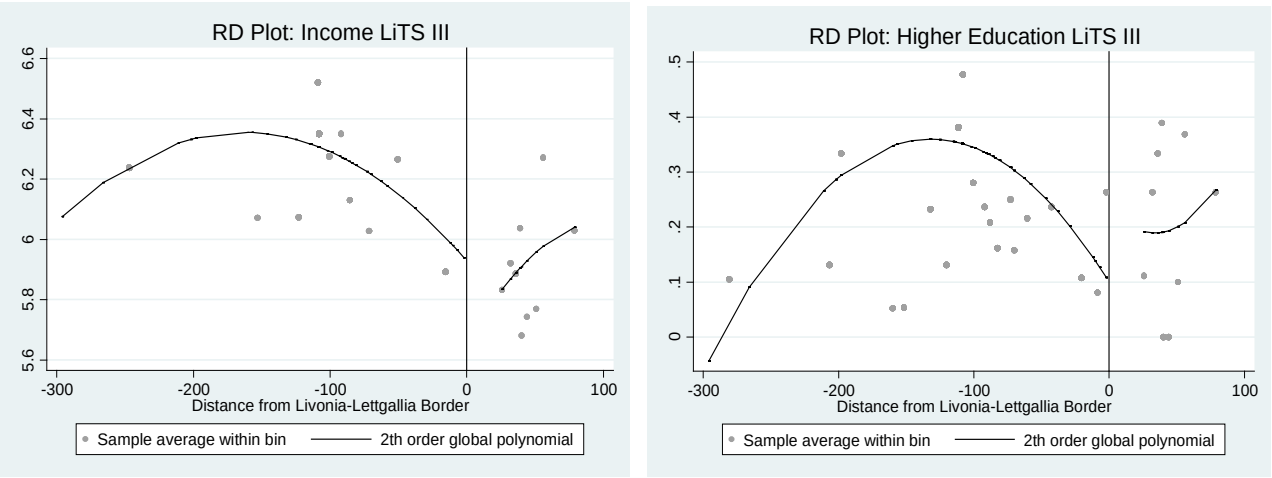
Table 9: RD results with robust bias-corrected CIs: Livonia vs. Lettgallia (1561 borders)

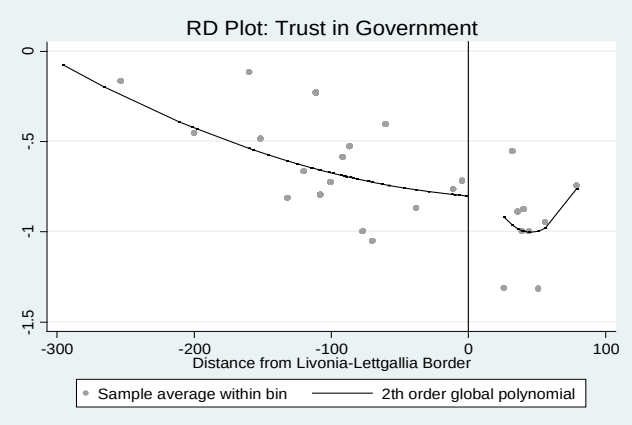
Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	-0.065	0.340	-0.19	-0.732	0.602
	Bias-Corrected	-0.319	0.340	-0.94	-0.986	0.348
	Robust	-0.319	1.105	-0.29	-2.484	1.846
Higher Education (LiTS III)	Conventional	0.087	0.176	0.49	-0.259	0.432
	Bias-Corrected	-0.498***	0.176	-2.82	-0.844	-0.152
	Robust	-0.498	0.695	-0.72	-1.861	0.865
Trust in Government	Conventional	-0.285	0.517	-0.55	-1.298	0.729
	Bias-Corrected	-2.994***	0.517	-5.79	-4.008	-1.980
	Robust	-2.994	2.003	-1.49	-6.921	0.932
Market Economy	Conventional	-0.452	0.381	-1.19	-1.198	0.294
	Bias-Corrected	-1.695***	0.381	-4.45	-2.442	-0.949
	Robust	-1.695	1.488	-1.14	-4.661	1.221
Democracy	Conventional	0.177	0.426	0.42	-0.658	1.012
	Bias-Corrected	-0.995***	0.426	-2.33	-1.830	-0.160
	Robust	-0.995	1.582	-0.63	-4.095	2.106
Income equality	Conventional	0.043	0.261	0.16	-0.469	0.555
	Bias-Corrected	0.314	0.261	1.20	-0.198	0.827
	Robust	0.314	1.096	0.29	-1.834	2.463
Competition	Conventional	2.206*	1.187	1.86	-0.121	4.533

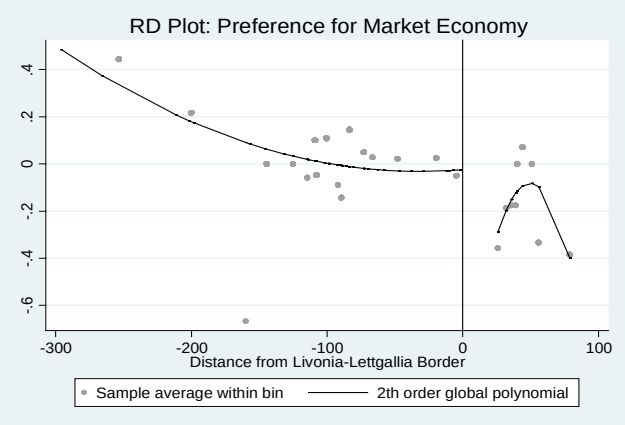
	Bias-Corrected	-0.704	1.187	-0.59	-3.030	1.623
	Robust	-0.704	4.684	-0.15	-9.885	8.477
Respect for Authority	Conventional	-0.279	1.199	-0.23	-2.629	2.071
	Bias-Corrected	-4.320***	1.199	3.60	1.970	6.670
	Robust	-4.320	4.741	0.91	4.972	13.612
Law Obedience	Conventional	-3.124***	1.273	-2.45	-5.619	-0.628
	Bias-Corrected	-12.179***	1.273	-9.57	-14.675	-9.684
	Robust	-12.179***	4.857	-2.51	-21.698	-2.661
Generalized Trust	Conventional	-0.056	0.436	-0.13	-0.911	0.799
	Bias-Corrected	-0.278	0.436	-0.64	-1.134	0.576
	Robust	-0.278	1.622	-0.17	-3.458	2.900

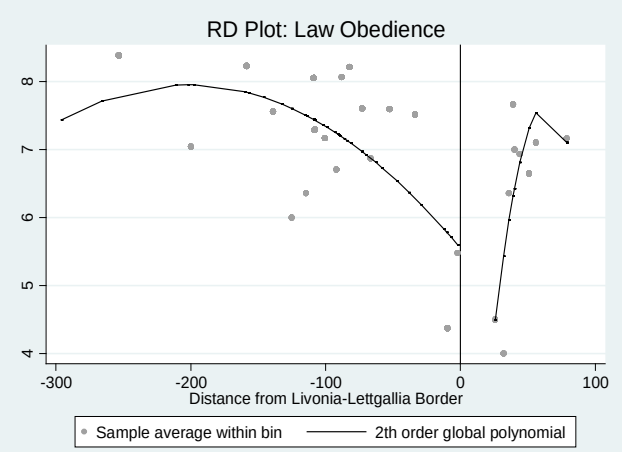
Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 60 kms.

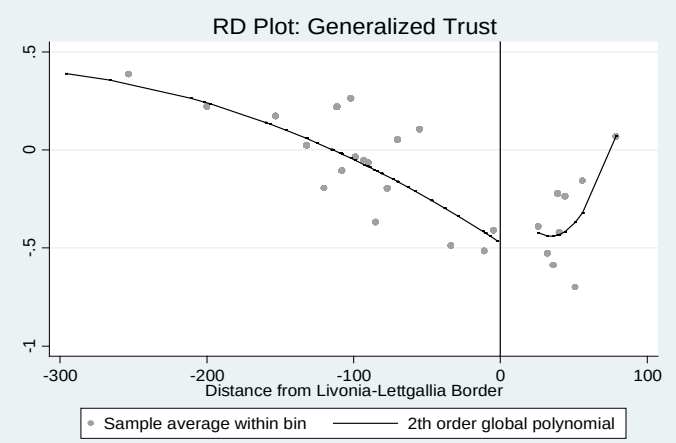
Figure 7: RD results with robust bias-corrected CIs: Livonia vs. Lettgallia (1561 borders)

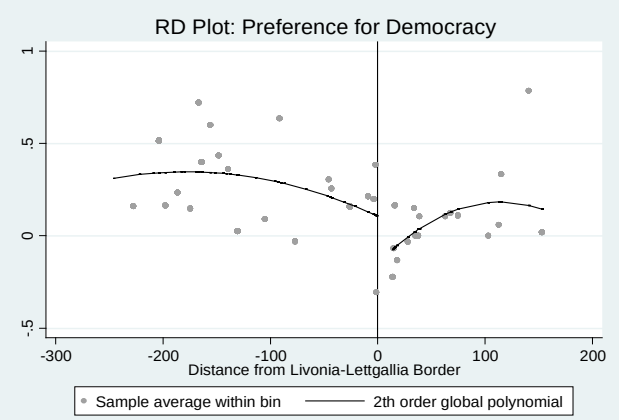


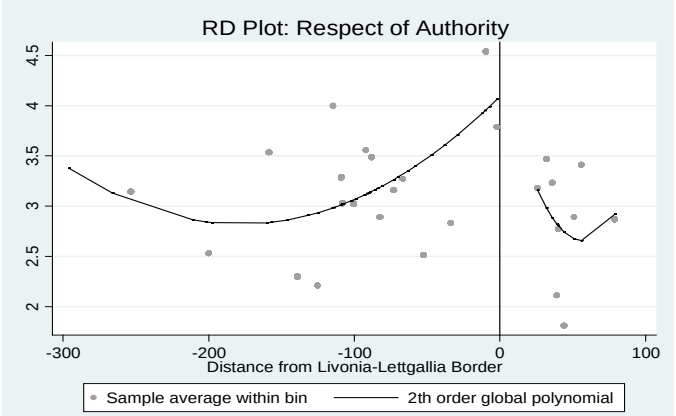

RD Plot: Trust in Government
0
-.5
-1
-1.5
-300
-200
-100
0
100
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial

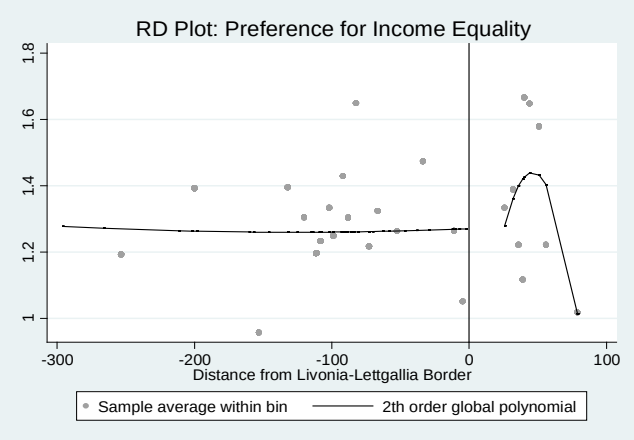

RD Plot: Preference for Market Economy
.4
.2
0
-.2
-.4
-.6
-300
-200
-100
0
100
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial

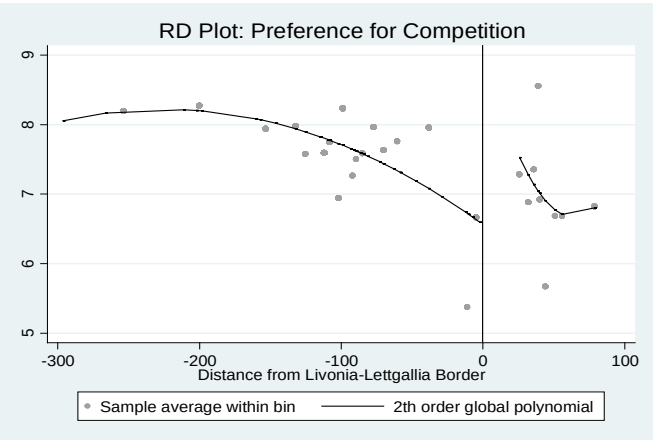

RD Plot: Law Obedience
8
7
6
5
4
-300
-200
-100
0
100
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial


RD Plot: Generalized Trust
.5
0
-.5
-1
-300
-200
-100
0
100
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial


RD Plot: Preference for Democracy
1
.5
0
-.5
-300
-200
-100
0
100
200
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial


RD Plot: Respect of Authority
4.5
4
3.5
3
2.5
2
-300
-200
-100
0
100
Distance from Livonia-Lettgallia Border
Sample average within bin
2th order global polynomial





The Livonia-Estland border reveals only low levels of statistical significance, which is explained by the fact that both Livonia and Estland were under the influence of Swedish imperial rule. For our theory of exogenous imperial borders to hold, this border is expected to have been the least significant, because both of its sides share the same imperial legacy (see Table 10 and Figure 8 below). There is a mean difference of 0.729, which is statistically significant at the 1 percent level with a bias-corrected CI and shows that respondents in Estland reveal a stronger preference for democracy than respondents in Livonia. Similarly, there is a mean difference of 0.370, which is statistically significant at the 5 percent level with a bias-corrected CI and shows that respondents in Estland are wealthier than those in Livonia. However, we do not find any robust evidence for the long-run persistence of the Livonia-Estland border. Both Estland and Livonia were parts of the Swedish Empire and this explains the limited – if any – significance of this imperial border for contemporary socioeconomic development in the Baltic region.

To confirm the validity of our results, we perform several robustness checks. As Tables A.20-A.22 indicate (see the Appendix), when we add controls in the robust regression discontinuity approach such as big city and capital agglomeration dummies, then our current results are significantly strengthened. On the Livonia-Courland border, the mean differences of 2.767 and -2.151 for respect for authority and law obedience, respectively, become statistically significant at the 1 percent level with a robust CI, with respondents on the Livonian side of the border being more likely to abide by law than respondents on the Courland side of the border. The opposite holds when it comes to respect for authority. Nevertheless, generalized trust scores higher on the Courland rather than on the Livonian side of the border, with a mean difference of 0.577, which is statistically significant at the 10 percent level with a robust CI. Hence, we corroborate the finding that former Swedish imperial rule is largely

more conducive to contemporary socioeconomic development in the Baltic region than *de-facto* independent status and Polish imperial rule.

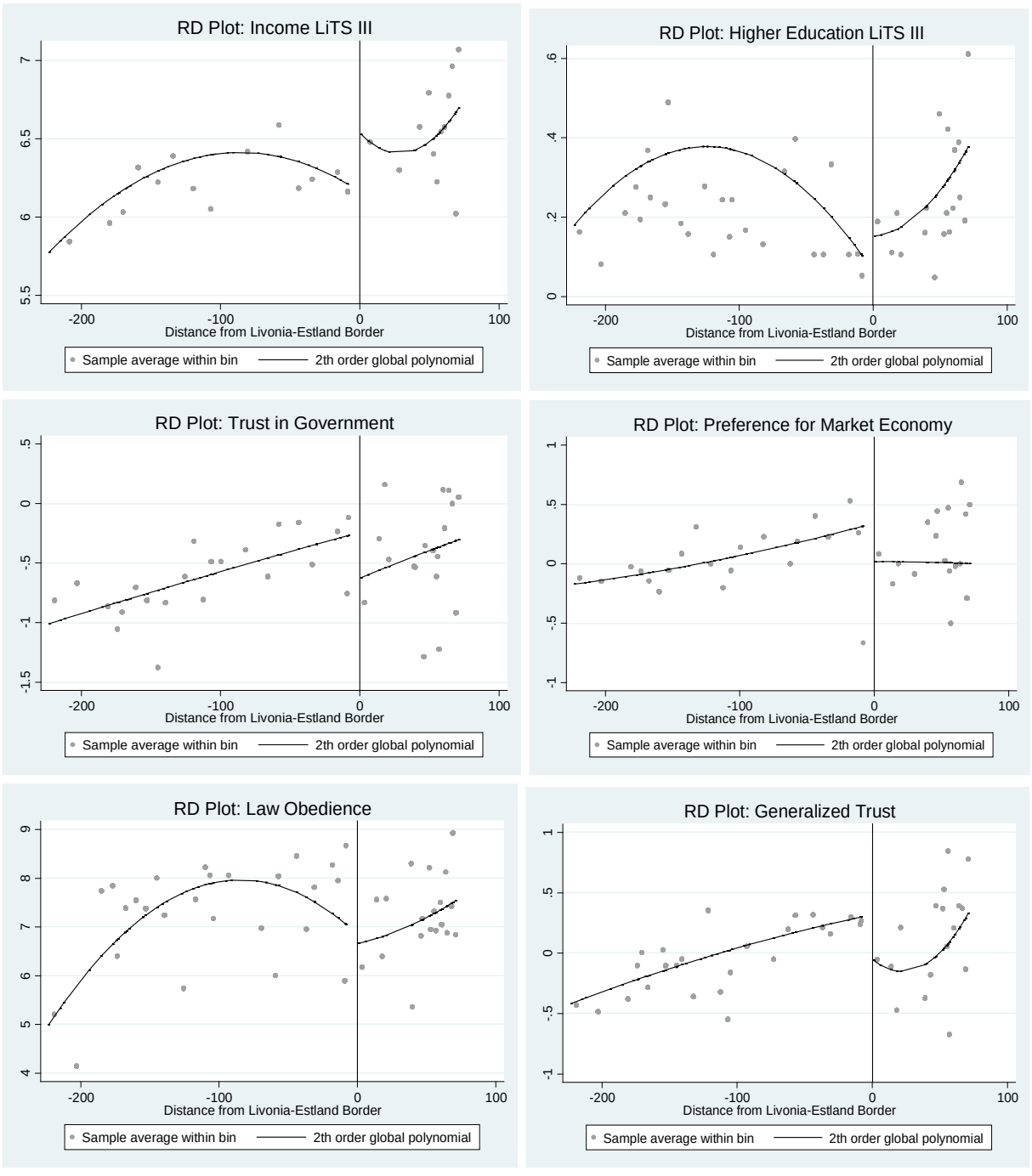
The Livonia-Lettgallia border also appears to be persistent when it comes to law obedience and preference for market economy, with Swedish imperial legacy generating a higher level of preference for market economy and enforcement institutions. Furthermore, the statistical significance of the Estland-Livonia border withers away when we add the controls of city agglomeration and big city dummies. Only the mean differences of 0.397 and 0.511 are robustly significant at the 10 and 1 percent levels respectively, when it comes to income and preference for democracy. Given the difference in the duration of Swedish imperial rule between Estland and Livonia (see Table 1), Estland reveals higher levels of socioeconomic development than Livonia, which is consistent with our initial hypothesis that former Swedish imperial rule is more conducive to socioeconomic development and progressive political preferences than former Polish imperial rule or an intermediate independent status.

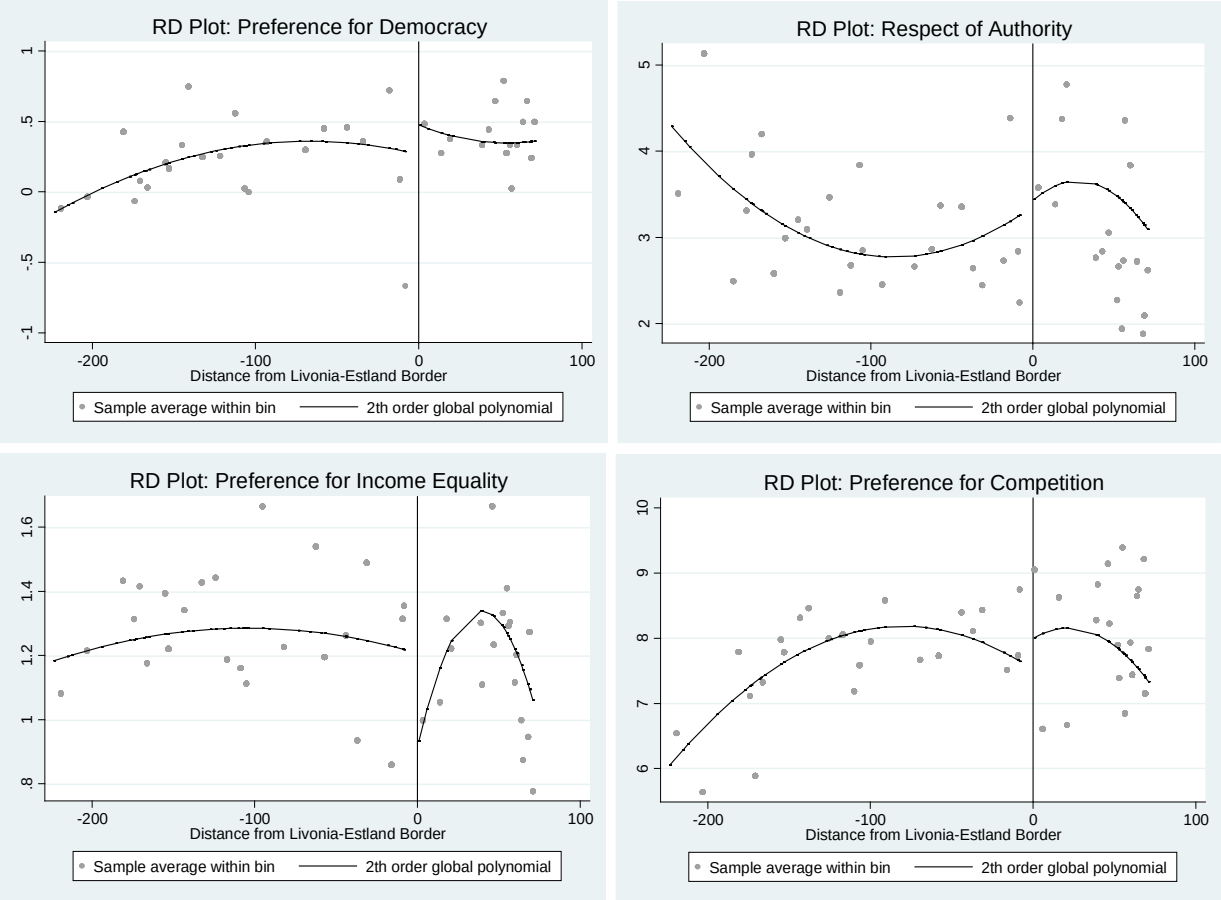
Table 10: RD results with robust bias-corrected CIs: Estland vs. Livonia (1561 borders)

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	0.350**	0.174	2.01	0.009	0.691
	Bias-Corrected	0.370**	0.174	2.12	0.029	0.712
	Robust	0.370	0.266	1.39	-0.151	0.891
Higher Education (LiTS III)	Conventional	0.109	0.072	1.51	-0.032	0.250
	Bias-Corrected	0.197***	0.072	2.73	0.029	0.338
	Robust	0.197	0.120	1.63	-0.151	0.432
Trust in Government	Conventional	-0.031	0.248	-0.12	-0.517	0.456
	Bias-Corrected	-0.440*	0.248	-1.77	-0.927	0.047
	Robust	-0.440	0.375	-1.17	-1.174	0.294
Market Economy	Conventional	-0.246	0.155	-1.58	-0.551	0.058
	Bias-Corrected	-0.088	0.155	-0.56	-0.392	0.217
	Robust	-0.088	0.251	-0.35	-0.580	0.405
Democracy	Conventional	0.395***	0.154	2.57	0.094	0.697
	Bias-Corrected	0.729***	0.154	4.74	0.428	1.031
	Robust	0.729	0.247	2.96	0.246	1.212
Income equality	Conventional	-0.166	0.143	-1.16	-0.448	0.115
	Bias-Corrected	-0.214	0.143	-1.49	-0.495	0.067
	Robust	-0.214	0.215	-0.99	-0.635	0.207
Competition	Conventional	0.234	0.445	0.53	-0.638	1.107
	Bias-Corrected	0.638	0.445	1.43	-0.235	1.510
	Robust	0.638	0.654	0.98	-0.643	1.918
Respect for Authority	Conventional	0.931*	0.480	1.94	-0.010	1.873
	Bias-Corrected	0.164	0.480	0.34	-0.778	1.105
	Robust	0.164	0.735	0.22	-1.276	1.603
Law Obedience	Conventional	-0.413	0.684	-0.60	-1.754	0.927
	Bias-Corrected	-0.352	0.684	-0.51	-1.692	0.989
	Robust	-0.352	1.092	-0.32	-2.491	1.788
Generalized Trust	Conventional	-0.325	0.210	-1.55	-0.737	0.087
	Bias-Corrected	-0.165	0.210	-0.79	-0.578	0.247
	Robust	-0.165	0.330	-0.50	-0.812	0.481

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 60 kms.

Figure 8: RD results with robust bias-corrected CIs: Estland vs. Livonia (1561 borders)





V. Conclusions

In this paper, we have explored the effects of diversity on Baltic development with a focus on the effect of the German minority on contemporary socioeconomic development in Latvia and Estonia. Furthermore, we have analyzed the persistence of the territorial partition in the aftermath of the collapse of the Livonian Confederation in 1561. We have found significant results in both directions. By instrumenting the German population share of the 1897 general census of the Russian Empire with the distance to Riga/Reval, we find that higher shares of German population have a long-run positive effect on economic performance and human development in the Baltic regions, with the German effect persisting even when we replace in our OLS and IV estimations the German minority share with the Jewish, Swedish, Russian and Polish ones. The predisposition of the historical German population to spread toward the two main cities in the Baltic region underpins the positive German effect on contemporary socioeconomic outcomes, similar to Becker and Woessmann (2010) on Protestantism and Prussian economic development.

The Treaty of Nystad (1721), which annexed the Baltic region to the Russian Empire in the aftermath of the Great Northern War, designated Russia as the successor of two prior imperial legacies,

Swedish and Polish imperial rule. Introducing a robust regression discontinuity approach, we find that the Livonia-Lettgallia and Livonia-Courland borders are much more persistent than that of Estland-Livonia, mainly due to the different imperial legacies underpinning the first two borders. Swedish-led Livonia displays higher levels of socioeconomic development than Polish-led Lettgallia, while the Polish imperial legacy generates stronger preferences for authority and centralized governance. The differences in development and political preferences become more acute at the Livonia-Courland border. Despite its independence status, respondents in former Courland territories have political and socioeconomic preferences closer to respondents in former Lettgallian rather than in former Livonian or Estland territories. The Swedish imperial legacy, which explains the socioeconomic and political preponderance of Livonia over Courland and Lettgallia, also captures the higher levels of political openness and wealth in Estland compared to Livonia. The longer duration of Swedish imperial rule in Estland thus validates our initial hypothesis about the lasting effects of imperial borders, which is also supported by Grosfeld and Zhuravskaya (2015).

Diversity and empire have both generated positive legacies for long-run economic performance, social capital and political progress in the Baltic region. Rather than treating diversity and empire as mutually exclusive terms, we argue that they have produced phenomenal levels of growth and institutional development when complementary to each other. The British and Ottoman Empires are pertinent paradigms of this phenomenon, as opposed to the Russian and French ones. But this is the focus of another study.

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Appendix

Table A.1: Correspondence table of historical and contemporary names of places

Country today	Historical region	Historical name	Modern name
LATVIA	Courland	Mitau	Jelgava
	Courland	Bauske	Bauska
	Courland	Windau	Ventspils
	Courland	Pilten	Piltene
	Courland	Hasenpot	Aizpute
	Courland	Goldingen	Kuldiga
	Courland	Grobin	Grobina
	Courland	Libau	Liepaja
	Courland	Iluxt	Ilukste
	Courland	Talsen	Talsi
	Courland	Tuckum	Tukums
	Courland	Friedrichsstadt	Jaunjelgava
	Courland	Jacobsstadt	Jekabpils
	Livonia	Riga	Riga
	Livonia	Walk	Valka
LATVIA	Livonia	Wenden	Cesis
	Livonia	Wolmar	Valmiera
	Lettgallia	Dunaburg	Daugavpils
	Lettgallia	Liuzjn	Ludza
	Lettgallia	Rjesohiza	Rezekne
ESTONIA	Livonia	Werro	Voru
	Livonia	Pernau	Parnu
	Livonia	Dorpat	Tartu
	Livonia	Arensburg	Kuressaare
	Livonia	Fellin	Viljandi
	Estland	Reval	Tallinn
	Estland	Baltischport	Paldiski
	Estland	Wesenberg	Rakvere
	Estland	Weissenstein	Paide
	Estland	Hapsal	Haapsalu

Table A.2: Main differences of the historical institutions in the Baltic regions

Historical name	Estland	Livonia	Courland	Lettgallia
Region today	North Estonia	Vidzeme (Latvia) and South Estonia	Kurzeme and Zemgale (Latvia)	Latgale (Latvia)
Ruling powers until Russian rule	Baltic Germans Sweden Denmark	Baltic Germans Sweden Denmark (Saaremaa) Poland-Lithuania	Baltic Germans Poland-Lithuania	Baltic Germans Poland-Lithuania
Main religion	Lutheran	Lutheran	Lutheran Catholic	Catholic Orthodox
Literacy rate (1897)	95%	95%	92%	58%
Governance during Swedish/Polish rule	Modernized legislation, restrictions of nobility, rapid development of education during the Swedish reign		No significant modernization	
Russification in the Russian Empire	Milder measures, Russian as a language for official documentation (from 1867) and instruction (1887)			Harsh measures, conversion to Orthodoxy, prohibition of the Latin alphabet (1864)
Abolition of serfdom	1816	1819	1817	1861

Table A.3: Baltic Germans and current income (2015)

	OLS			IV		
	1	2	3	4	5	6
German share %	0.003	0.003	0.005	0.025	0.026	0.010
	[0.002]	[0.003]	[0.002]**	[0.010]**	[0.012]**	[0.007]
Distance to Riga/Reval km		-0.001	-0.0002			
		[0.0005]***	[0.0003]			
Lettgallia			-0.293			-0.239
			[0.060]***			[0.104]**
Estland			0.147			0.180
			[0.053]***			[0.048]***
Courland			-0.218			-0.223
			[0.041]***			[0.040]***
Number of Lutheran Churches		0.003	0.002	0.018	0.019	0.006
		[0.003]	[0.002]	[0.007]**	[0.009]**	[0.004]
Diversity index %			0.002		0.002	0.002
			[0.001]		[0.004]	[0.001]
Constant	6.653	6.770	6.735	6.290	6.268	6.617
	[0.039]***	[0.086]***	[0.081]***	[0.151]***	[0.191]***	[0.112]***
Observations	58	58	58	58	58	58
R-squared	0.022	0.203	0.665	0.106	0.086	0.074
F-statistic of instrument in 1st stage				7.98	5.89	3.36
Distance to Riga/Reval km				-0.053	-0.047	-0.047
(Coefficient from 1st stage)				[0.019]***	[0.019]**	[0.026]*

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2015 average monthly wage at the sub-municipal/municipal level.

Table A.4: Baltic Germans and current income (2014)

	OLS			IV		
	1	2	3	4	5	6
German share %	0.003	0.004	0.005	0.025	0.026	0.009
	[0.003]	[0.003]	[0.002]***	[0.011]**	[0.013]**	[0.006]
Distance to Riga/Reval km		-0.001	-0.0002			
		[0.0005]**	[0.0003]			
Lettgallia			-0.319			-0.280
			[0.062]***			[0.103]***
Estland			0.157			0.181
			[0.053]***			[0.049]***
Courland			-0.225			-0.229
			[0.041]***			[0.040]***
Number of Lutheran Churches		0.003	0.002	0.018	0.019	0.005
		[0.003]	[0.002]	[0.007]**	[0.009]**	[0.004]
Diversity index %			0.003		0.003	0.003
			[0.001]**		[0.004]	[0.001]**
Constant	6.585	6.701	6.661	6.225	6.197	6.575
	[0.040]***	[0.089]***	[0.080]***	[0.153]***	[0.195]***	[0.110]***
Observations	58	58	58	58	58	58
R-squared	0.101	0.197	0.672	0.106	0.086	0.074
F-statistic of instrument in 1st stage				7.98	5.89	3.36
Distance to Riga/Reval km				-0.053	-0.047	-0.047
(Coefficient from 1st stage)				[0.019]***	[0.019]**	[0.026]*

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2014 average monthly wage at the sub-municipal/municipal level.

Table A.5: RD results with robust bias-corrected CIs: Courland vs. Livonia (1561 borders) – Bandwidth of 100 km

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	-0.124	-0.72	0.38	-0.461	0.213
	Bias-Corrected	0.306*	1.78	4.48	-0.031	0.642
	Robust	0.306	0.77	1.31	-0.470	1.082
Income (Official Statistics)	Conventional	-0.379***	0.060	-6.35	-0.496	-0.262
	Bias-Corrected	-0.303***	0.060	-5.07	-0.420	-0.186
	Robust	-0.303***	0.072	-4.21	-0.444	-0.162
Higher Education (LiTS III)	Conventional	-0.181***	0.063	-2.86	-0.306	-0.057
	Bias-Corrected	0.099	0.063	1.56	-0.026	0.223
	Robust	0.099	0.125	0.79	-0.147	0.345
Higher Education (Official Statistics)	Conventional	-0.106***	0.020	-5.22	-0.146	-0.066
	Bias-Corrected	-0.073***	0.020	-3.61	-0.113	-0.033
	Robust	-0.073***	0.026	-2.85	-0.123	-0.023
Literacy	Conventional	-0.001***	0.0004	-2.93	-0.002	-0.0004
	Bias-Corrected	-0.001***	0.0004	-3.00	-0.002	-0.0004
	Robust	-0.001***	0.0005	-2.93	-0.002	-0.0004
Trust in Government	Conventional	-0.051	0.142	1.00	-0.330	0.228
	Bias-Corrected	0.409***	0.142	2.87	0.129	0.688
	Robust	0.409	0.290	1.41	-0.159	0.976
Market Economy	Conventional	-0.123	0.110	-1.12	-0.339	0.092
	Bias-Corrected	-0.262***	0.110	-2.38	-0.477	-0.046
	Robust	-0.262	0.229	-1.14	-0.710	0.186
Democracy	Conventional	-0.226*	0.128	-1.77	-0.476	0.024
	Bias-Corrected	-0.280**	0.128	-2.19	-0.530	-0.030
	Robust	-0.280	0.259	-1.08	-0.788	0.228
Income equality	Conventional	0.016	0.110	0.15	-0.200	0.232
	Bias-Corrected	0.561***	0.110	-5.10	-0.776	-0.345
	Robust	0.561**	0.231	-2.43	-1.014	-0.108
Competition	Conventional	-0.931***	0.343	-2.71	-1.603	-0.258
	Bias-Corrected	1.194***	0.343	-3.48	-1.866	-0.521
	Robust	1.194	0.773	-1.54	-2.708	0.321
Center-Left Vote	Conventional	-0.066*	0.037	-1.77	-0.139	0.007
	Bias-Corrected	-0.045	0.037	-1.22	-0.118	0.027
	Robust	-0.045	0.049	-0.94	-0.141	0.050
Right-wing Vote	Conventional	-0.008	0.014	-0.58	-0.036	0.020
	Bias-Corrected	-0.009	0.014	-0.67	-0.037	0.018
	Robust	-0.009	0.018	-0.51	-0.046	0.027
Respect for Authority	Conventional	1.266***	0.345	3.67	0.589	1.942
	Bias-Corrected	2.116***	0.345	6.13	1.439	2.792
	Robust	2.116***	0.789	2.68	0.568	3.662
Law Obedience	Conventional	-1.731***	0.395	-4.39	-2.505	-0.958
	Bias-Corrected	-2.011***	0.395	-5.10	-2.784	-1.237
	Robust	-2.011**	0.872	-2.31	-3.719	-0.302
Generalized Trust	Conventional	-0.217	0.146	-1.48	-0.503	0.070
	Bias-Corrected	0.561***	0.146	3.84	0.274	0.847
	Robust	0.561*	0.294	1.91	-0.016	1.137

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A.6: RD results with robust bias-corrected CIs: Livonia vs. Lettgallia (1561 borders) – Bandwidth of 100 km

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	-0.134	0.225	-0.60	-0.575	0.307
	Bias-Corrected	-0.122	0.225	-0.54	-0.563	0.319
	Robust	-0.122	0.595	-0.21	-1.287	1.044
Higher Education (LiTS III)	Conventional	0.010	0.100	0.10	-0.185	0.205
	Bias-Corrected	0.104	0.100	1.04	-0.091	0.299
	Robust	0.104	0.315	0.33	-0.513	0.720
Trust in Government	Conventional	-0.338	0.258	-1.31	-0.843	0.168
	Bias-Corrected	-0.050	0.258	-0.20	-0.556	0.455
	Robust	-0.050	0.932	-0.05	-1.878	1.777
Market Economy	Conventional	0.010	0.188	0.05	-0.359	0.379
	Bias-Corrected	-0.964***	0.188	-5.12	-1.333	-0.595
	Robust	-0.964	0.664	-1.45	-2.265	0.337
Democracy	Conventional	0.251	0.213	1.18	-0.166	0.668
	Bias-Corrected	0.093	0.213	0.44	-0.324	0.509
	Robust	0.093	0.734	0.13	-1.347	1.532
Income equality	Conventional	0.428**	0.194	2.21	0.048	0.808
	Bias-Corrected	-0.464**	0.194	-2.39	-0.845	-0.084
	Robust	-0.464	0.483	-0.96	-1.411	0.483
Competition	Conventional	1.388*	0.699	1.99	0.018	2.758
	Bias-Corrected	3.041	0.699	4.35	1.671	4.411
	Robust	3.041	2.155	1.41	-1.182	7.264
Respect for Authority	Conventional	-1.188*	0.640	-1.86	-2.442	0.065
	Bias-Corrected	0.330	0.640	0.52	-0.923	1.584
	Robust	0.330	2.130	0.16	-3.843	4.504
Law Obedience	Conventional	-0.529	0.724	-0.73	-1.948	0.890
	Bias-Corrected	-6.286***	0.724	-8.68	-7.705	-4.867
	Robust	-6.286***	2.276	-2.76	-10.747	-1.825
Generalized Trust	Conventional	-0.284	0.230	-1.24	-0.734	0.166
	Bias-Corrected	0.340	0.230	1.48	-0.110	0.790
	Robust	0.340	0.826	0.41	-1.279	1.959

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A.7: RD results with robust bias-corrected CIs: Estland vs. Livonia (1561 borders) – Bandwidth of 100 km

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	0.296**	0.148	2.00	0.005	0.587
	Bias-Corrected	0.420***	0.148	2.83	0.129	0.711
	Robust	0.420*	0.218	1.93	-0.006	0.846
Higher Education (LiTS III)	Conventional	0.036	0.060	0.60	-0.082	0.155
	Bias-Corrected	0.192***	0.060	3.17	0.073	0.310
	Robust	0.192**	0.091	2.12	0.014	0.369
Trust in Government	Conventional	-0.122	0.208	-0.59	-0.529	0.285
	Bias-Corrected	-0.047	0.208	-0.23	-0.455	0.360
	Robust	-0.047	0.300	-0.16	-0.634	0.540
Market Economy	Conventional	-0.275	0.126	-2.18	-0.523	-0.028
	Bias-Corrected	-0.226	0.126	-1.79	-0.474	0.022
	Robust	-0.226	0.193	-1.17	-0.604	0.151
Democracy	Conventional	0.278**	0.126	2.20	0.030	0.697
	Bias-Corrected	0.527***	0.126	4.18	0.280	1.031
	Robust	0.527***	0.189	2.79	0.157	0.898
Income equality	Conventional	-0.046	0.121	-0.38	-0.282	0.191
	Bias-Corrected	-0.252**	0.121	-2.09	-0.488	-0.016
	Robust	-0.252	0.176	-1.43	-0.597	0.093
Competition	Conventional	0.285	0.381	0.75	-0.461	1.031
	Bias-Corrected	0.203	0.381	0.53	-0.543	0.949
	Robust	0.203	0.527	0.39	-0.830	1.236
Respect for Authority	Conventional	0.793*	0.411	1.93	-0.013	1.598
	Bias-Corrected	0.759*	0.411	1.85	-0.046	1.565
	Robust	0.759	0.578	1.31	-0.374	1.893
Law Obedience	Conventional	-0.590	0.553	-1.07	-1.675	0.494
	Bias-Corrected	-0.186	0.553	-0.34	-1.270	0.899
	Robust	-0.186	0.842	-0.22	-1.836	1.465
Generalized Trust	Conventional	-0.463***	0.174	-2.66	-0.803	0.122
	Bias-Corrected	-0.198	0.174	-1.14	-0.538	0.143
	Robust	-0.198	0.259	-0.76	-0.706	0.310

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A.8: Baltic Jews and current income

	OLS			IV		
	1	2	3	4	5	6
Jewish share %	0.002	-0.001	0.003	-0.050	11.952	0.032
	[0.0008]***	[0.0008]	[0.001]**	[0.062]	[2678.871]	[0.030]
Distance to Riga/Reval km		-0.001	-0.001			
		[0.0003]***	[0.0003]***			
Lettgallia			-0.299			-0.699
			[0.042]***			[0.427]
Estland			0.038			0.162
			[0.041]			[0.07]**
Courland			-0.165			-0.429
			[0.040]***			[0.252]*
Number of Lutheran Churches		-0.003	-0.0004	-0.033	6.296	0.014
		[0.002]	[0.002]	[0.043]	[1410.199]	[0.011]
Diversity index %			0.002		-12.506	-0.024
			[0.001]*		[2802.945]	[0.027]
Constant	6.551	6.714	6.702	7.256	-127.554	6.390
	[0.025]***	[0.040]***	[0.052]***	[0.888]***	[30044.56]	[0.178]***
Observations	58	58	58	58	58	58
R-squared	0.046	0.298	0.584	0.014	3.465e-07	0.019
F-statistic of instrument in 1st stage				0.63	0.00002	1.08
Distance to Riga/Reval km				-0.027	-0.0001	-0.028
(Coefficient from 1st stage)				[0.034]	[0.026]	[0.027]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.9: Baltic Jews and current literacy

	OLS			IV		
	1	2	3	4	5	6
Jewish share %	0.00003	0.00003	0.00002	-0.0002	0.055	0.0004
	[8.16e-06]***	[9.17e-06]***	[0.00001]**	[0.0003]	[12.379]	[0.0004]
Distance to Riga/Reval km		-6.38e-06	-0.00001			
		[2.51e-06]**	[3.56e-06]***			
Lettgallia			-0.001			-0.004
			[0.001]			[0.006]
Estland			-0.001			0.0004
			[0.0006]*			[0.001]
Courland			-0.0001			-0.004
			[0.001]			[0.003]
Number of Lutheran		-0.00003	-0.00005	-0.0001	0.029	0.0001
Churches		[0.00002]	[0.00002]**	[0.0002]	[6.516]	[0.0001]
Diversity index %			-0.00001		-0.058	-0.0003
			[0.00002]		[12.952]	[0.0003]
Constant	0.998	0.999	1.000	1.001	0.378	0.996
	[0.0002]***	[0.0004]***	[0.0007]***	[0.004]***	[138.832]***	[0.002]***
Observations	58	58	58	58	58	58
R-squared	0.097	0.157	0.578	0.014	0.086	0.074
F-statistic of instrument in 1st stage				0.63	0.00002	1.08
Distance to capital city (Riga/Reval) km (Coefficient from 1st stage)				-0.027	-0.0001	-0.028
				[0.034]	[0.026]	[0.027]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share.

Table A.10: Baltic Jews and current higher education

	OLS			IV		
	1	2	3	4	5	6
Jewish share %	0.0002	0.0001	0.001	-0.016	4.151	0.012
	[0.0004]	[0.001]	[0.001]*	[0.020]	[930.670]	[0.012]
Distance to Riga/Reval km		-0.0004	-0.0003			
		[0.0002]***	[0.0001]**			
Lettgallia			-0.071			-0.214
			[0.019]***			[0.159]
Estland			0.032			0.076
			[0.026]			[0.036]
Courland			-0.074			-0.168
			[0.015]***			[0.092]*
Number of Lutheran Churches		-0.001	-0.001	-0.012	2.186	0.004
		[0.001]	[0.001]	[0.014]	[489.919]	[0.004]
Diversity index %			0.001		-4.343	-0.008
			[0.001]		[973.774]	[0.010]
Constant	0.201	0.264	0.265	0.442	-46.369	0.154
	[0.011]***	[0.025]***	[0.025]***	[0.291]	[10437.81]	[0.065]
Observations	58	58	58	58	58	58
R-squared	0.003	0.163	0.508	0.014	0.086	0.074
F-statistic of instrument in 1st stage				0.63	0.00002	1.08
Distance to Riga/Reval km				-0.027	-0.0001	-0.028
(Coefficient from 1st stage)				[0.034]	[0.026]	[0.027]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share.

Table A.11: Baltic Swedes and current income

	OLS			IV		
	1	2	3	4	5	6
Swedish share %	0.040	0.025	0.005	0.957	0.965	-0.522
	[0.016]**	[0.010]**	[0.007]	[0.638]	[0.662]	[0.566]
Distance to Riga/Reval km		-0.001	-0.001			
		[0.0003]***	[0.0002]***			
Lettgallia			-0.265			-0.311
			[0.052]***			[0.058]***
Estland			0.022			0.619
			[0.045]			[0.357]*
Courland			-0.143			-0.133
			[0.037]***			[0.051]***
Number of Lutheran Churches		-0.001	-0.002	-0.010	-0.010	0.006
		[0.002]	[0.002]	[0.018]	[0.018]	[0.003]*
Diversity index %			0.004		0.0004	0.004
			[0.001]***		[0.002]	[0.001]***
Constant	6.523	6.695	6.702	6.437	6.435	6.552
	[0.021]***	[0.042]***	[0.052]***	[0.062]***	[0.071]***	[0.050]***
Observations	58	58	58	58	58	58
R-squared	0.041	0.305	0.560	0.011	0.010	0.015
F-statistic of instrument in 1st stage				2.36	2.22	0.79
Distance to Riga/Reval km				-0.001	-0.001	0.002
(Coefficient from 1st stage)				[0.0009]	[0.0001]	[0.002]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.12: Baltic Swedes and current literacy

	OLS			IV		
	1	2	3	4	5	6
Swedish share %	-0.0007	-0.0007	-0.0005	0.004	0.004	0.004
	[0.0001]***	[0.0001]***	[0.0001]***	[0.004]	[0.004]	[0.004]
Distance to Riga/Reval km		-6.46e-06	-0.00001			
		[2.50e-06]**	[3.55e-06]***			
Lettgallia			0.001			0.0007
			[0.001]*			[0.0007]
Estland			-0.0008			0.006
			[0.001]			[0.004]
Courland			0.0001			0.0002
			[0.001]			[0.0007]
Number of Lutheran Churches		-0.00005	-0.00005	-0.0001	-0.0001	0.00005
		[0.00002]**	[0.00002]***	[0.0001]	[0.0001]	[0.00004]
Diversity index %			6.22e-06		0.00003	0.00002
			[0.00002]		[0.00002]**	[0.00002]
Constant	0.998	0.999	1.000	0.998	0.998	0.998
	[0.0002]***	[0.0003]***	[0.0007]***	[0.0004]***	[0.0004]***	[0.0007]***
Observations	58	58	58	58	58	58
R-squared	0.115	0.194	0.258	0.011	0.010	0.015
F-statistic of instrument in 1st stage				2.36	2.22	0.79
Distance to Riga/Reval km				-0.001	-0.001	0.002
(Coefficient from 1st stage)				[0.0009]	[0.0001]	[0.002]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.13: Baltic Swedes and current higher education

	OLS			IV		
	1	2	3	4	5	6
Swedish share %	0.006	-0.003	0.012	0.309	0.335	-0.188
	[0.010]	[0.007]	[0.007]*	[0.217]	[0.239]	[0.187]
Distance to Riga/Reval km		-0.0004	-0.0003			
		[0.0002]***	[0.0001]**			
Lettgallia			-0.059			-0.074
			[0.021]***			[0.021]***
Estland			0.042			0.241
			[0.030]			[0.119]**
Courland			-0.065			-0.061
			[0.015]***			[0.018]***
Number of Lutheran Churches		-0.001	-0.001	-0.004	-0.004	0.001
		[0.0009]	[0.001]*	[0.006]	[0.006]	[0.001]
Diversity index %			0.002		0.001	0.002
			[0.001]***		[0.0009]	[0.001]***
Constant	0.198	0.262	0.272	0.178	0.171	0.213
	[0.009]***	[0.025]***	[0.024]***	[0.021]***	[0.026]***	[0.020]***
Observations	58	58	58	58	58	58
R-squared	0.006	0.164	0.500	0.011	0.010	0.015
F-statistic of instrument in 1st stage				2.36	2.22	0.79
Distance to Riga/Reval km				-0.001	-0.001	0.002
(Coefficient from 1st stage)				[0.0009]	[0.0001]	[0.002]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.14: Baltic Russians and current income

	OLS			IV		
	1	2	3	4	5	6
Russian share %	-0.005	-0.002	-0.0003	-0.025	-0.034	-0.083
	[0.002]***	[0.002]	[0.003]	[0.011]**	[0.018]*	[0.158]
Distance to Riga/Reval km		-0.001	-0.001			
		[0.0003]***	[0.0003]***			
Lettgallia			-0.260			1.380
			[0.082]***			[3.246]
Estland			0.028			0.105
			[0.043]			[0.166]
Courland			-0.143			-0.186
			[0.037]***			[0.239]
Number of Lutheran Churches		-0.0009	-0.002	-0.005	-0.005	-0.013
		[0.002]	[0.002]	[0.005]	[0.005]	[0.024]
Diversity index %			0.004		0.018	0.017
			[0.001]***		[0.013]	[0.025]
Constant	6.572	6.708	6.702	6.767	6.793	7.156
	[0.025]***	[0.043]***	[0.052]***	[0.110]***	[0.145]***	[1.091]***
Observations	58	58	58	58	58	58
R-squared	0.116	0.308	0.560	0.114	0.077	0.007
F-statistic of instrument in 1st stage				5.37	3.30	0.26
Distance to Riga/Reval km				0.055	0.040	0.011
(Coefficient from 1st stage)				[0.024]**	[0.022]*	[0.022]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.15: Baltic Russians and current literacy

	OLS			IV		
	1	2	3	4	5	6
Russian share %	-4.48e-06	-5.21e-06	-0.00006	-0.0001	-0.0002	-0.001
	[0.00003]	[0.00003]	[0.00005]	[0.00007]	[0.0001]	[0.002]
Distance to Riga/Reval km		-5.19e-06	-0.00001			
		[2.74e-06]*	[3.55e-06]***			
Lettgallia			0.002			0.022
			[0.001]*			[0.040]
Estland			-0.001			-0.0004
			[0.0007]*			[0.003]
Courland			0.00005			-0.0005
			[0.00005]			[0.003]
Number of Lutheran Churches		-0.0001	-0.00007	-0.00007	-0.00007	-0.0002
		[0.00003]**	[0.00002]***	[0.00003]**	[0.00003]**	[0.0003]
Diversity index %			0.00001		0.0001	0.0002
			[0.00001]		[0.00008]	[0.0003]
Constant	0.998	0.999	6.702	1.000	1.000	1.006
	[0.0003]***	[0.0004]***	[0.052]***	[0.0006]***	[0.0008]***	[0.013]***
Observations	58	58	58	58	58	58
R-squared	0.001	0.083	0.256	0.114	0.077	0.007
F-statistic of instrument in 1st stage				5.37	3.30	0.26
Distance to Riga/Reval km (Coefficient from 1st stage)				0.055	0.040	0.011
				[0.024]**	[0.022]*	[0.022]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.16: Baltic Russians and current higher education

	OLS			IV		
	1	2	3	4	5	6
Russian share %	0.0004	0.001	0.002	-0.008	-0.012	-0.030
	[0.0009]	[0.0010]	[0.002]	[0.005]	[0.008]	[0.062]
Distance to Riga/Reval km		-0.001	-0.0004			
		[0.0002]***	[0.0001]***			
Lettgallia			-0.101			0.535
			[0.040]**			[1.272]
Estland			0.026			0.056
			[0.023]			[0.075]
Courland			-0.064			-0.080
			[0.015]***			[0.091]
Number of Lutheran Churches		-0.001	-0.001	-0.003	-0.003	-0.006
		[0.0008]	[0.0008]*	[0.002]	[0.002]	[0.010]
Diversity index %			0.001		0.008	0.006
			[0.0004]***		[0.006]	[0.010]
Constant	0.196	0.259	0.265	0.284	0.295	0.430
	[0.009]***	[0.022]***	[0.025]***	[0.054]***	[0.069]***	[0.426]
Observations	58	58	58	58	58	58
R-squared	0.003	0.205	0.528	0.114	0.077	0.007
F-statistic of instrument in 1st stage				5.37	3.30	0.26
Distance to Riga/Reval km				0.055	0.040	0.011
(Coefficient from 1st stage)				[0.024]**	[0.022]*	[0.022]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.17: Baltic Poles and current income

	OLS			IV		
	1	2	3	4	5	6
Polish share %	-0.007	-0.003	0.002	-0.063	-0.106	-0.058
	[0.003]**	[0.003]	[0.002]	[0.028]**	[0.058]*	[0.048]
Distance to Riga/Reval km		-0.001	-0.0009			
		[0.0003]***	[0.0003]***			
Lettgallia			-0.266			-0.280
			[0.051]***			[0.164]*
Estland			0.029			0.065
			[0.043]			[0.058]
Courland			-0.139			-0.014
			[0.037]***			[0.060]
Number of Lutheran Churches		-0.0006	-0.002	-0.005	-0.004	-0.002
		[0.002]	[0.002]	[0.004]	[0.005]	[0.003]
Diversity index %			0.004		0.035	0.024
			[0.002]***		[0.020]*	[0.015]
Constant	6.546	6.702	6.726	6.717	6.736	6.390
	[0.021]***	[0.042]***	[0.052]***	[0.068]***	[0.094]***	[0.178]***
Observations	58	58	58	58	58	58
R-squared	0.067	0.303	0.563	0.049	0.021	0.024
F-statistic of instrument in 1st stage				5.62	3.16	1.41
Distance to Riga/Reval km				0.022	0.013	0.016
(Coefficient from 1st stage)				[0.009]**	[0.007]*	[0.013]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.18: Baltic Poles and current literacy

	OLS			IV		
	1	2	3	4	5	6
Polish share %	-0.00007	-0.00008	-0.0001	-0.0003	-0.0005	-0.0007
	[0.00004]*	[0.00004]*	[0.00003]***	[0.0002]	[0.0003]	[0.0006]
Distance to Riga/Reval km		-3.77e-06	-9.83e-06			
		[2.68e-06]	[3.41e-06]***			
Lettgallia			0.001			0.001
			[0.0005]**			[0.002]
Estland			-0.001			-0.0009
			[0.0006]*			[0.0008]
Courland			0.0004			0.002
			[0.0005]			[0.0009]**
Number of Lutheran Churches		-0.00006	-0.00006	-0.00007	-0.00007	-0.00007
		[0.00003]**	[0.00002]***	[0.00003]**	[0.00003]**	[0.00003]**
Diversity index %			0.00005		0.0002	0.0003
			[0.00001]***		[0.0001]*	[0.0002]
Constant	0.998	0.999	0.999	0.999	0.999	0.999
	[0.025]***	[0.0004]***	[0.0007]***	[0.0005]***	[0.0006]***	[0.0007]***
Observations	58	58	58	58	58	58
R-squared	0.068	0.155	0.350	0.049	0.021	0.024
F-statistic of instrument in 1st stage				5.62	3.16	1.41
Distance to Riga/Reval km (Coefficient from 1st stage)				0.022	0.013	0.016
				[0.009]**	[0.007]*	[0.013]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.19: Baltic Poles and current higher education

	OLS			IV		
	1	2	3	4	5	6
Polish share %	-0.0006	0.0003	0.0008	-0.021	-0.037	0.032
	[0.0008]	[0.0009]	[0.0008]	[0.012]*	[0.024]	[0.030]
Distance to Riga/Reval km		-0.0004	-0.0003			
		[0.0002]***	[0.0001]**			
Lettgallia			-0.058			-0.063
			[0.022]**			[0.057]
Estland			0.027			0.041
			[0.026]			[0.031]
Courland			-0.067			-0.019
			[0.015]***			[0.030]
Number of Lutheran Churches		-0.001	-0.002	-0.003	-0.003	-0.002
		[0.0009]	[0.0008]**	[0.002]*	[0.002]	[0.001]
Diversity index %			0.001		0.013	0.009
			[0.0006]**		[0.008]	[0.006]
Constant	0.200	0.263	0.277	0.268	0.275	0.250
	[0.009]***	[0.025]***	[0.025]***	[0.035]***	[0.044]***	[0.025]***
Observations	58	58	58	58	58	58
R-squared	0.003	0.164	0.486	0.049	0.021	0.024
F-statistic of instrument in 1st stage				5.62	3.16	1.41
Distance to Riga/Reval km				0.022	0.013	0.016
(Coefficient from 1st stage)				[0.009]**	[0.007]*	[0.013]

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Russian Empire district level regression. Livonia is the reference group for Lettgallia, Estland and Courland. Robust standard errors are in parentheses. The diversity index is composed of the German, Jewish, Russian, Polish, Swedish and Lithuanian shares of the 1897 general census divided by the respective Latvian or Estonian share. Current income corresponds to the log-version of the 2016 average monthly wage at the sub-municipal/municipal level.

Table A.20: Covariate-adjusted RD results with robust bias-corrected CIs: Courland vs. Livonia (1561 borders)

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	0.121	0.155	-0.78	-0.425	0.184
	Bias-Corrected	0.216	0.155	1.39	-0.088	0.521
	Robust	1.216	0.366	0.59	-0.501	0.933
Income (Official Statistics)	Conventional	-0.216***	0.038	-5.65	-0.290	-0.141
	Bias-Corrected	-0.186***	0.038	-4.87	-0.261	-0.111
	Robust	-0.186***	0.045	-4.11	-0.274	-0.097
Higher Education (LiTS III)	Conventional	-0.104	0.064	-1.62	-0.230	0.022
	Bias-Corrected	0.040	0.064	0.62	0.086	0.166
	Robust	0.040	0.128	0.31	-0.211	0.291
Higher Education (Official Statistics)	Conventional	-0.054***	0.014	-3.78	-0.081	-0.025
	Bias-Corrected	-0.054***	0.014	-2.66	-0.065	-0.010
	Robust	-0.038**	0.017	-2.24	-0.071	-0.005
Literacy	Conventional	-0.002***	0.0004	-4.06	-0.002	-0.0004
	Bias-Corrected	-0.002***	0.0004	-3.27	-0.002	-0.001
	Robust	-0.002***	0.0005	-2.98	-0.002	-0.0005
Trust in Government	Conventional	-0.034	0.142	-0.24	-0.312	0.244
	Bias-Corrected	0.423***	0.142	2.98	0.145	0.700
	Robust	0.423	0.286	1.48	-0.137	0.983
Market Economy	Conventional	-0.107	0.110	-0.97	-0.324	0.109
	Bias-Corrected	-0.244**	0.110	-2.21	-0.461	-0.028
	Robust	-0.244	0.229	-1.07	-0.692	0.204
Democracy	Conventional	-0.088	0.128	-0.69	-0.338	0.163
	Bias-Corrected	-0.176	0.128	-1.38	-0.426	0.074
	Robust	-0.176	0.260	-0.68	-0.686	0.334
Income equality	Conventional	0.167	0.106	1.58	-0.040	0.374
	Bias-Corrected	-0.391***	0.106	-3.70	-0.598	-0.184
	Robust	-0.391*	0.223	-1.75	-0.828	0.046
Competition	Conventional	-1.063***	0.336	-3.17	-1.721	-0.405
	Bias-Corrected	-1.712***	0.336	-5.10	-2.369	-1.054
	Robust	-1.712**	0.760	-2.25	-3.202	-0.221
Center-Left Vote	Conventional	-0.015	0.027	0.58	-0.068	0.038
	Bias-Corrected	-0.022	0.027	0.43	-0.075	0.032
	Robust	-0.022	0.035	0.53	-0.090	0.046
Right-wing Vote	Conventional	-0.013	0.010	-1.29	-0.033	0.007
	Bias-Corrected	-0.009	0.010	-0.92	-0.029	0.011
	Robust	-0.009	0.012	-0.80	-0.032	0.014
Respect for Authority	Conventional	1.585***	0.327	4.85	0.945	2.226
	Bias-Corrected	2.767***	0.327	8.47	2.127	3.407
	Robust	2.767***	0.742	3.73	1.313	4.221
Law Obedience	Conventional	-1.512***	0.372	-4.07	-2.240	-0.784
	Bias-Corrected	-2.151***	0.372	-5.79	-2.879	-1.423
	Robust	-2.151***	0.830	-2.59	-3.778	-0.525
Generalized Trust	Conventional	-0.101	0.146	-0.69	-0.388	0.185
	Bias-Corrected	0.577***	0.146	3.95	0.291	0.864
	Robust	0.577*	0.295	1.96	-0.0001	1.155

Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 100 km. Covariates include big city and capital city agglomeration dummies.

Table A.21: Covariate-adjusted RD results with robust bias-corrected CIs: Lettgallia vs. Livonia (1561 borders)

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	-0.068	0.218	-0.31	-0.496	0.359
	Bias-Corrected	-0.181	0.218	-0.83	-0.608	0.247
	Robust	-0.181	0.585	-0.31	-1.328	0.996
Higher Education (LiTS III)	Conventional	0.089	0.094	0.95	-0.095	0.273
	Bias-Corrected	-0.018	0.094	-0.20	0.203	0.166
	Robust	-0.018	0.280	-0.07	-0.567	0.530
Trust in Government	Conventional	-0.306	0.250	-1.23	-0.795	0.183
	Bias-Corrected	-0.097	0.250	-0.39	-0.586	0.392
	Robust	-0.097	0.897	-0.11	-1.854	1.661
Market Economy	Conventional	-0.035	0.190	-0.19	-0.409	0.338
	Bias-Corrected	-0.877***	0.190	-4.60	-1.250	-0.503
	Robust	-0.877	0.673	-1.30	-2.196	0.442
Democracy	Conventional	0.296	0.217	1.36	-0.129	0.721
	Bias-Corrected	0.012	0.217	0.06	-0.413	0.437
	Robust	0.012	0.750	0.02	-1.458	1.482
Income equality	Conventional	0.268	0.190	1.41	-0.105	0.640
	Bias-Corrected	-0.227	0.190	-1.19	-0.600	0.146
	Robust	-0.227	0.476	-0.48	-1.160	0.706
Competition	Conventional	2.086***	0.683	3.05	0.747	3.425
	Bias-Corrected	1.892***	0.683	2.77	0.553	3.231
	Robust	1.892	2.181	0.87	-2.383	6.166
Respect for Authority	Conventional	-1.495**	0.587	-2.55	-2.646	-0.344
	Bias-Corrected	0.821	0.587	1.40	-0.330	1.972
	Robust	0.821	2.166	0.38	-3.423	5.066
Law Obedience	Conventional	-0.185	0.664	-0.28	-1.486	1.117
	Bias-Corrected	-6.823***	0.664	-10.27	-8.125	-5.521
	Robust	-6.823***	2.057	-3.32	-10.854	-2.792
Generalized Trust	Conventional	-0.155	0.228	-0.68	-0.603	0.292
	Bias-Corrected	0.166	0.228	0.73	-0.282	0.613
	Robust	0.166	0.839	0.20	-1.478	1.809

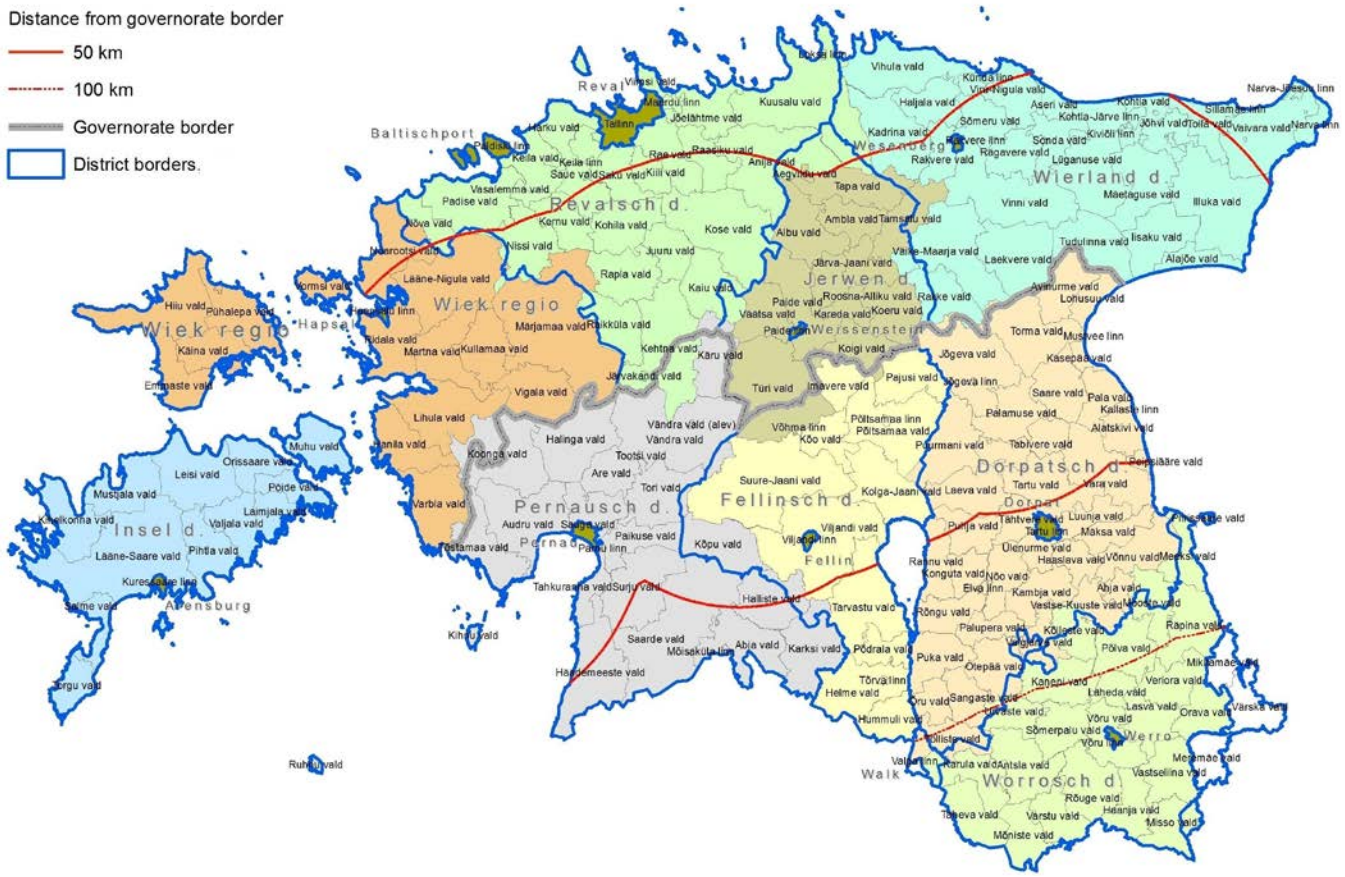
Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 100 km. Covariates include big city and capital city agglomeration dummies.

Table A.22: Covariate-adjusted RD results with robust bias-corrected CIs: Estland vs. Livonia (1561 borders)

Outcome Variable	Method	Coefficient	Std. Err.	z	95% Confidence Interval	
Income (LiTS III)	Conventional	0.330**	0.144	2.30	0.048	0.611
	Bias-Corrected	0.397***	0.144	2.76	0.116	0.679
	Robust	0.397*	0.207	1.92	-0.007	0.802
Higher Education (LiTS III)	Conventional	0.078	0.058	1.34	-0.036	0.192
	Bias-Corrected	0.139*	0.058	2.39	0.025	0.253
	Robust	0.139	0.087	1.61	-0.030	0.309
Trust in Government	Conventional	-0.078	0.199	-0.39	-0.469	0.312
	Bias-Corrected	-0.102	0.199	-0.51	-0.492	0.289
	Robust	-0.102	0.283	-0.36	-0.657	0.453
Market Economy	Conventional	-0.287**	0.125	-2.29	-0.532	-0.042
	Bias-Corrected	-0.193	0.125	-1.54	-0.438	0.052
	Robust	-0.193	0.191	-1.01	-0.567	0.181
Democracy	Conventional	0.301**	0.118	2.55	0.070	0.533
	Bias-Corrected	0.511***	0.118	4.32	0.279	0.742
	Robust	0.511***	0.176	2.90	0.165	0.856
Income equality	Conventional	-0.042	0.116	-0.36	-0.268	0.185
	Bias-Corrected	-0.259**	0.116	-2.24	-0.486	-0.032
	Robust	-0.259	0.170	-1.52	-0.593	0.075
Competition	Conventional	0.268	0.340	0.79	-0.399	0.935
	Bias-Corrected	0.281	0.340	0.82	-0.386	0.948
	Robust	0.281	0.469	0.60	-0.639	1.200
Respect for Authority	Conventional	0.838**	0.387	2.17	0.080	1.596
	Bias-Corrected	0.670*	0.387	1.73	-0.088	1.428
	Robust	0.670	0.535	1.25	-0.378	1.717
Law Obedience	Conventional	-0.471	0.513	-0.92	-1.477	0.534
	Bias-Corrected	-0.341	0.513	-0.67	-1.347	0.664
	Robust	-0.341	0.773	-0.44	-1.857	1.174
Generalized Trust	Conventional	-0.468***	0.170	-2.75	-0.801	-0.134
	Bias-Corrected	-0.179	0.170	-1.05	-0.512	0.155
	Robust	-0.179	0.253	-0.71	-0.675	0.318

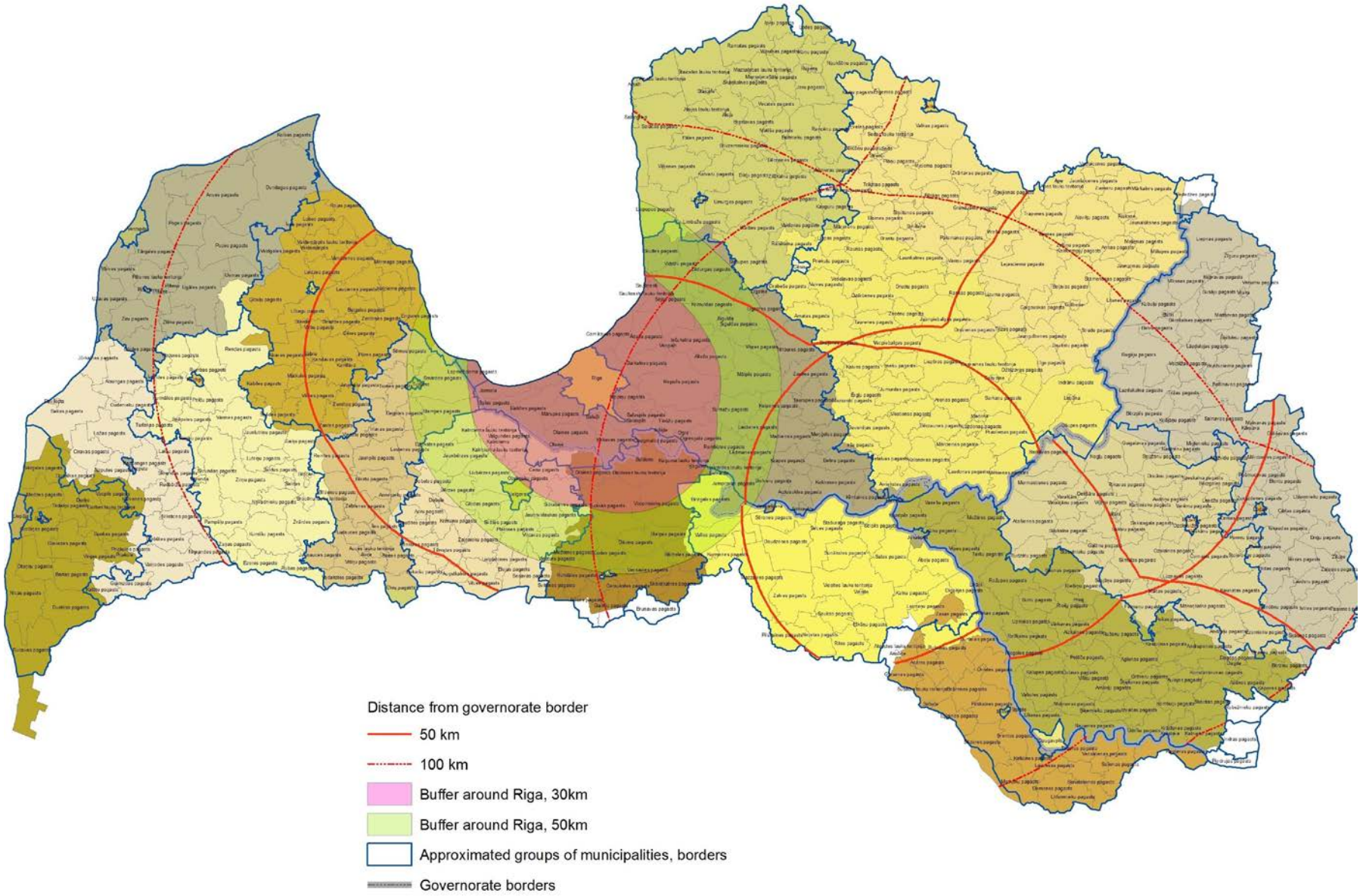
Note: Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Bandwidth is 100 km. Covariates include big city and capital city agglomeration dummies.

Figure A.1: Estland/Livonia border with a bandwidth of 50 and 100 km



Source: Own maps. Borders of governorates, towns and districts in 1898 and borders of sub-municipal units (in Latvia) and municipalities (in Estonia) today.

Figure A.2: Courland/Livonia and Lettgallia/Livonia borders with a bandwidth of 50 and 100 km



Source: Own maps. Borders of governorates, towns and districts in 1898 and borders of sub-municipal units (in Latvia) and municipalities (in Estonia) today.

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