# PERSISTENT ANTI-MARKET CULTURE:

# A LEGACY OF THE PALE OF SETTLEMENT AND OF THE HOLOCAUST [*]

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## Abstract

We investigate the long-term effects of the important presence of Jews in Eastern Europe before the Second World War and their disappearance during the Holocaust. The Pale of Settlement, the area which Jewish residents were confined to in the Russian Empire is used as a source of exogenous variation in the size of Jewish population before the Second World War. Based on election and survey data, we find that current residents of the Pale, compared to their counterparts outside the Pale, vote more for socialist anti-market parties, have lower support for market economy and democracy, are less engaged in entrepreneurship, but exhibit higher levels of trust. At the same time, the Pale has no lasting effects on average consumption, income, and education levels. We show that the effect of the Pale is related to the former presence of Jews rather than the inflow of new migrant population into the formerly-Jewish areas. We suggest two mechanisms behind the effect: the development of persistent anti-market culture and bonding trust among non-Jewish population rooted in ethnic hatred, and the disappearance of the middle class. Regression discontinuity at the Pale border helps identification.

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## *1. Introduction*

Eastern Europe in the 20th century experienced one of the most drastic changes of ethnic and religious composition of its population in the history of mankind. Many dramatic events such as the Holocaust, multiple redrawing of the map of Europe after each of the two world wars, and Stalin's deportations of entire ethnic groups contributed to this. Yet, by far the biggest change was caused by the mass murder of 5.6 to 6 million Jews during the Second World War. Before the war Jews accounted for over 30 percent of the Eastern European urban population whereas they are hardly present in the territory nowadays.

A large body of historical evidence suggests that Jews as a group in Eastern Europe were performing a particular social function in urban areas where they were allowed to live (e.g., Dubnow 1920; Slezkine 2004; Botticini and Eckstein 2005). In contrast to the non-Jewish (Gentile) population, the vast majority of whom were engaged in farming and unskilled work, Jews had predominantly white collar occupations. In places were Jews were present, such activities as trading and the provision of services as market intermediaries and financiers were traditionally Jewish. The proportion of entrepreneurs and self-employed among Jews was also a lot higher than among representatives of the non-Jewish population (Slezkine, 2004, p. 47). Overall, historians agree that modernity is rooted in traditionally-Jewish social functions and attribute to Jews of 18$^{th}$-20$^{th}$ century Eastern Europe a role as a driving force of capitalism and market development (e.g., Sombart 1913; Jacobs 1919; Veblen 1919; Slezkine 2004; Botticini and Eckstein 2005, Muller 2010).[1]

Given the important differences in culture, traditional occupations, and the particular social role of Jews compared to non-Jewish groups that lived in these territories side-by-side with Jews, and to migrants who replaced the Jews after the Second World War one should expect to see important

[1] "Most of the Jews in the Pale of Settlement …continued to pursue traditional service occupations as middlemen between the overwhelmingly agricultural Christian population and various urban markets. Most of the Jewish middlemen bought, shipped, and resold local produce; provided credit …leased and managed estates…kept taverns and inns…supplied manufactured goods… provided professional services… and served as artisans" (Slezkine 2004 p. 106, quoting among others Nathans 2002 and Abramowicz 1999). Also see Kahan (1983).

social, political, and economic effects of the Jewish presence in Eastern Europe for several centuries and their abrupt disappearance in the Second World War. Consistent with this hypothesis, a recent paper by Acemoglu, Hassan, and Robinson (2010) shows that areas within Russia, that had a higher percentage of Jews before the war and were under German occupation during the war, and therefore, were more affected by the Holocaust, have grown slower after the war and have a larger political support for the Communist Party of Russia after transition. Acemoglu et al. (2010) explain these results by the disappearance of the middle class–which was predominantly Jewish–from the social structure of the population in these areas. As acknowledged and discussed in Acemoglu et al. (2010), causal identification of the effects of the Holocaust is a difficult task due to serious endogeneity problems. The choice of location of residence by particular ethnic groups may depend on characteristics of localities which, in turn, may be correlated with development paths as well as with reasons for German occupation, which could be problematic for the difference-in-differences methodology used in Acemoglu et al. (2010). This paper also aims at estimating the long-run effects of the former presence and subsequent disappearance of Jews. We use the Pale of Settlement—the area of the Russian Empire outside which Jews were not allowed to live— as an arguably exogenous source of variation of Jewish presence in Eastern Europe before the war.

The Pale of Settlement was instituted at the end of the eighteenth century after the Russian Empire acquired a vast territory of Polish-Lithuanian Commonwealth, where Jews have been living since the fourteenth century. In order to keep Jews, alien to Orthodox Russia, away from the center, Catherine the Great made a list of western provinces (*gubernii*) of the Empire (subsequently called the Pale) allowing Jewish residence only in urban settlements and only within these territories. Historical sources point out that, despite the fact that the Pale allowed Jews in the Russian Empire in areas of historical Jewish residence, the Pale border within the Russian Empire was arbitrary, binding, and enforced (e.g., Klier 1986).

In this paper, we analyze the long-run effect of the Pale of Settlement on the political, social, and economic development of present-day Eastern Europe. Since the Pale defined the pattern of

Jewish residency for over a century, which largely persisted after the revolution of 1917, the binding border of the Pale helps identification of the long run effect of the former presence of Jews on one side of the border. The Holocaust had removed the whole social strata (i.e., Jews) from the urban areas inside the Pale, while leaving the social structure of the population outside the Pale practically intact, as Jewish presence outside the Pale in the Russian Empire was not substantial. Our strategy is to examine discontinuity in contemporary voting patterns, attitudes of residents, and some economic outcomes on the two sides of the Pale border. Importantly, after the war, ethnic and religious composition of the population on the two sides of the border became indistinguishable, and therefore, the effects of the Pale that we observe today cannot be driven by the differences in the ethnic and religious mix of the population. In addition, we control for a wide range of possible co-determinants of political views and aspirations. Even though our analysis relies on cross-sectional geographic variation which inherently leaves room for an omitted variable bias, our focus primarily is on the estimation of a discontinuous jump at the Pale border, which helps causal identification.

The first step in our analysis aims at establishing the effect of the Pale; as the second step, we study two potential channels of influence; and lastly, suggest plausible mechanisms explaining our results. We find that current residents of the Pale area (if compared to their counterparts outside the Pale) vote less for political parties with pro-market liberal ideology and more for anti-market parties with socialist or communist ideology, express lower support for market and democracy, are less satisfied with the state of the economy and its progress during transition, are less engaged in entrepreneurship, and exhibit higher levels of trust. At the same time, we find no effect of the Pale on such economic outcomes as consumption, income, and education. These basic results are robust across a wide range of specifications: we estimate discontinuity at the Pale border, average effect of the Pale, the effect of the share of Jews in the total population in the Russian Empire instrumented by the Pale. All approaches reveal the same pattern in the data.

The next step in our analysis is to test between the two possible channels of influence. In particular, the Pale can have a long-run effect either because Jews used to live there before the

Second World War or because there was an inflow of new migrant population into the areas where Jews used to live to fill in the empty space after the Second World War. We test for the effect of "new population" as a potential channel and reject it by showing that residents of the areas that experienced substantial renewal of the non-Jewish population after the Second World War, which was unrelated to the Holocaust, do not exhibit similar attitudes, political preferences, or self-employment penetration as residents of the Pale. We conclude that the Pale matters because Jews used to live there.

Finally, we suggest two plausible mechanisms that can explain the evidence on the long-run effects of the Pale. First, we argue that the non-Jewish population developed a special anti-market culture and bonding trust among representatives of their own group at the time when Jews and Gentiles lived side-by-side in towns and shtetls inside the Pale. Historical sources document hostility, rivalry, and little social interaction beyond market transactions between Jews and Gentiles (Hoffman 1997, Slezkine 2004). The presence of a rival group in close proximity with alien religion, traditions and language and with a very specific social role as a market intermediary created a pressure on the non-Jewish population to unite against the Jews. This social pressure had two important consequences for the non-Jewish population within the Pale. First, ethnic antagonism between the two groups led to the development of within-group solidarity and trust. As this kind of trust developed in opposition to and against the rival group, it is often referred to as "bonding" as opposed to "bridging" social capital (Fukuyama 1995; Putnam 2000), or "limited" as opposed to "generalized" morality (Tabellini 2008).[2] Second, since Jews as a group represented a liberal pro-market force by their distinct traditional occupations, ethnic hostility of the non-Jewish population against Jews triggered the development of an anti-market culture among the non-Jewish population as anti-market sentiment was equated with anti-Jewish sentiment. We argue that both the anti-market culture and within-group bonds have persisted among descendants of the Gentile population who lived in the Pale

[2] The literature defines bridging social capital as connectedness formed across diverse social groups, whereas bonding capital is restricted to homogenous groups.

with the Jews up to the present day.[3] The bonding trust manifests itself in higher percentage of people who trust others as the enemy group disappeared, while the anti-market culture manifests itself in political support for communist parties, opposition to market reforms, and lower entrepreneurship inside the Pale. We provide some suggestive illustrative evidence that the trust observed inside the Pale is bonding in nature as membership in civic non-political non-governmental organizations is smaller inside than outside the Pale, and there is no difference in trust in such institutions as banks and foreign investors. The lack of data, however, does not permit us to test the anti-market culture and bonding trust mechanism directly.

The second (and related) mechanism was suggested by Acemoglu et al. (2010): this is the destruction of the middle class, namely, Jews. Our results on voting patterns in the Pale and the attitudes towards the market are consistent with results presented in Acemoglu et al. (2010) despite the differences in empirical strategy and geographical area under study.[4] We illustrate the empirical relevance of the middle class mechanism by showing that the distribution functions for income and consumption have thinner tales inside the Pale compared to those calculated for residents outside the Pale. The missing middle class mechanism, however, is insufficient to explain the evidence in its entirety, as it is has no prediction about trust. Other mechanisms may also be at play. Future research needs to provide conclusive evidence on the mechanisms.

This study contributes to a growing literature on the persistent impact of culture on institutions, political and economic outcomes (e.g., Greif 1994; Guiso et al. 2003; Guiso et al. 2006; Guiso et al. 2009; Tabellini 2008; Tabellini 2009; Fernandez 2008, 2010; Algan and Cahuc 2010). It is related to the literature which links social capital to social structures (e.g., Bourdieu 1983; Putnam 1993). Our discussion of the bonding trust among Gentiles draws on the strand of this literature that distinguishes two types of social capital (Banfield 1958; Portes 1998; Putnam 2000;

[3] For intergenerational transmission of values see Bisin and Verdier (2001), Bisin, Topa and Verdier (2004), Guiso et al. (2006).

[4] Acemoglu et al. (2010) consider only Soviet Russia, excluding Ukraine, the Baltics, and Belarus. We consider the territory of much of Eastern Europe: our smallest (baseline) sample includes Latvia, Ukraine and Russia; and our largest sample includes Belarus and all of the Baltic states.

Bjornskov 2006; Tabellini 2008; Greif and Tabellini 2010). We contribute to a small but growing literature on the impact of the previous presence of Jews on long-term economic and political outcomes. For example, Pascali (2009) shows that Italian cities that had important Jewish communities in the 15th century developed complex bank institutions. Waldinger (2009) uses the dismissal of (mainly Jewish) scientists by the Nazi government as a source of exogenous variation in the peer group of scientists and shows that it affects researchers' productivity among co-authors. Our paper is also related to the literature on determinants of perceptions in transition economies: see, for instance, Alesina and Fuchs-Schündeln (2007), Aghion et al. (2009), Denisova et al. (2009), Grosjean and Senik (2010).

The rest of the paper is organized as follows. In the next section, we briefly summarize historical facts about the Pale of Settlement. Section 3 describes the data. Section 4 presents baseline results on the long-run effects of the Pale. In Section 5, we test between the two potential channels. Section 6 discusses the mechanisms. Section 7 describes results of various falsification tests. In Section 8, we conclude.

## *2. Historical overview of the Pale of Settlement*

The Russian Empire acquired the largest Jewish community in the world after the three partitions of Poland (1772, 1793, and 1795) and the Congress of Vienna (1815) by annexing territories where Jews resided since the fourteenth century.[5] Prior to this vast territorial expansion westward, Jews were present in Russia in very small numbers and were expelled repeatedly by rulers: e.g., Ivan the Terrible, Catherine I, and Anna Ioanovna.

In 1791 Catherine II (the Great) issued the first decree allowing Jewish presence in the four, at that time most western, provinces (*gubernii*) of the empire. The area was extended further to the west and south after the 2nd and 3rd partitions of Poland and to the Kingdom of Poland in 1815 by a series of decrees. In 1835, the Pale of Settlement was instituted by law, according to which Jews were

[5] The Congress of Vienna of 1815 created a new political entity from a part of the Douchy of Warsaw, namely, the Kingdom of Poland with the Russian tsar as the king.

allowed residency in urban areas only inside the Pale and were not allowed residency in rural areas throughout the Empire. Jews were also forbidden to own land. These restrictions were present until the 1917 Bolshevik revolution.[6]

According to the 1897 Russian Empire Census, 4.5 million Jews lived in the Pale, which constituted 94% of all Jewish residents of the Russian Empire. They constituted over 11% of the total Pale's population and 37% of its urban population. Table 1 presents the numbers of Jewish residents of the Pale by province.

The Pale occupied territories of much of Eastern Europe, namely, parts of contemporary Latvia, Lithuania, Poland, Russia, and Ukraine, and the whole of contemporary Belarus and Moldova. Figure 1 portrays the borders of the Pale of Settlement on the current map of Eastern Europe. Inside territories of the Russian Empire, the Pale border cut through contemporary Russia, Ukraine, and Latvia.

Despite the fact that the Pale allowed Jews in the Russian Empire in areas of historical Jewish residence, the Pale border within the Russian Empire was fairly arbitrary. Historical sources (e.g., Klier 1986) point out that Catherine the Great did not know much about the newly acquired territories and sent intelligence to learn about them, but before getting the information, she just wanted to keep the unknown and alien to the Orthodox Christian population as far away from central Russia as possible. The arbitrariness of the border of the Pale was ensured by the absence of information about local conditions on newly acquired territories through which the border cut. At the same time, historical evidence also suggests that the border was well enforced to a large extent with the help of local population outside the Pale.[7] Dubnow (1920) gives many anecdotes illustrating the binding character of the restrictions of Jewish residence.

[6] There were several exceptions to the Pale law. The most notable are as follows. "Native Jews" were allowed to stay in Courland province despite it being outside the Pale. In 1820s, Jews were evicted from several cities inside the Pale, such as Kiev, Sevastopol, and Yalta. We verify that our results are robust to excluding these places from the sample.

[7] There were several groups in the population of Russian Empire that had restricted mobility; but the restrictions for Jews were active the longest. In the fall of 1907 the third Imperial Duma passed the bill which allowed free

Table 2 presents information about the percentage of Jewish residents according to the 1897 Census in the provinces of the Russian Empire adjacent to the Pale border inside and outside the Pale. Jews constituted 37% of the urban population and 7.5% of the total population in an average province close to the Pale border inside the Pale. In contrast, they were only 4% and 0.7% of urban and total population of an average province close to the Pale border outside the Pale. The Table shows that the minimum percentages of Jews in the urban and total population among all provinces adjacent to the Pale border inside the Pale are substantially larger than the maximum figures for the provinces adjacent to the Pale border outside the Pale.

The beginning of the twentieth century was marked by mass emigration of Jews who faced severe discrimination inside the Pale in terms of double taxation and limited access to education and other public goods. Altshuler (1998) estimates that between 1897 and 1915 1.3 million Jews left Russia to the Americas, Western Europe, and Palestine.[8] Very few Jews, however, moved outside the Pale in Russia due to the very restrictive legal conditions imposed on Jews wanting to do so. For example, first-guild merchants were allowed to leave the Pale; but according to Dubnow (1920) there were only 108 Jewish first-guild merchants. Another legal condition for leaving the Pale was conversion into Christianity, which was acceptable to very few (Dubnow 1920, p.219).

After the Russian Revolution of February 1917, the Provisional Government abolished the Pale of Settlement together with the rest of the anti-Jewish restrictions present in the Russian Empire. The abolition of Pale restrictions triggered Jewish migration inside Russia. Most of this migration, however, was towards the regional centers and major cities offering economic opportunities (such as Moscow, Odessa or Saint Petersburg) and there was very little migration just across the Pale border (Stampfer 1995, Pinkus 1998). [9] This is important for our analysis as the discontinuity of the

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movement for all groups in the population except Jews: "No one shall be limited in the right of choosing his place of residence and in moving from place to place, except… the Jews who arrive in localities situated outside the Pale of Settlement" (Dubnow 1920, p. 154).

[8] Despite the emigration, Jewish population of the Pale remained large due to high birth rate and dropping mortality rate of Russia's Jews (Gitelman 2001).

[9] See also http://en.wikipedia.org/wiki/History_of_the_Jews_in_Ukraine

percentage of Jews in the urban population at the Pale border persisted up until the Second World War. According to the Soviet Census of 1939, only Moscow and Leningrad (St. Petersburg) regions displayed substantial presence of Jews among urban population outside the former Pale of Settlement (4.5 and 5.1%, respectively). Jews constituted on average 1.6% of the urban population in the Russian regions close to the Pale border outside the Pale in 1939 and 8.2% of the urban population in Russian and Ukrainian regions close to the Pale border inside the Pale.[10]

The discontinuity of religious and ethnic composition at the Pale border ended with the Holocaust as Jews were mass-murdered and the few survivors settled after the war in large metropolitan areas rather than small towns close to the Pale border. The first after-war Census of 1959 gives less than 1% of Jewish population in Russia's regions in and out of the Pale.[11]

After the Holocaust, most places where Jews used to be present in large numbers saw significant in-migration of non-Jews who came primarily from villages to neighboring towns and (former) shtetls. At the same time, most areas had significant inter-generational continuity as descendants of non-Jews who lived side-by-side with Jews before the Holocaust continued to live in the same towns.

## *3. Data sources and description of the main variables*

We rely on two types of data sources on contemporary outcomes: official electoral statistics and survey data.

### 3.1. Election data

First, we consider election results at the electoral district level. For the baseline analysis, which compares outcomes at the two sides of the Pale border within the Russian Empire, we collected results of parliamentary elections in the three countries with within-country variation in the Pale:

[10] The data from 1939 Census are less precise than the data from the 1897, as Soviet statistics report Census results at the regional level, which is substantially more aggregated than uezd-level information available for the Russian Empire Census and borders of the regions of Soviet republics do not coincide with borders of provinces in the Russian Empire.

[11] There is no disaggregated data for Ukrainian or Latvian subnational regions.

Latvia, Russia, and Ukraine. The data are available for the following elections: 1998, 2002, and 2006 in Latvia; 1995, 1999, and 2003 in Russia; and 1998, 2002, and 2006 in Ukraine. The data come from the official electoral commissions in each respective country (see Table A1 in the online Data Appendix for details). We examined the political manifestos of all parties participating in all of these elections and coded each political party according to whether it advocated: 1) anti-market, socialist/communist ideology, 2) liberal, pro-market ideology in support of liberal market reforms, or 3) neither of the above. The list of the political parties with anti-market socialist/communist and pro-market liberal ideologies is presented in the Table A2 in the online Data Appendix. We take the aggregated percentages of the total vote for each of the two groups of parties as political outcomes in our analysis.

Our main focus is on regions (subnational administrative units) in each of the three countries that have within-region variation in whether electoral districts in this region belong to the Pale. The reason for this is that variation in election results among subnational units is substantial and depends on many unobserved factors, such as, for instance, political orientation of the regional governor. In contrast, election results across different electoral districts within the same region are usually fairly similar. For each electoral district in each country in each election, we code whether the district is entirely inside the Pale, entirely outside the Pale, or the Pale border cuts through the district.[12] In addition, we collect information on which electoral districts are urban areas (i.e., located in towns) and which are located in the regional center (i.e., main regional city).

In Latvia there are three regions with within-region variation: Latgale, Vidzeme, and Zemgale with altogether 32 electoral districts outside the Pale, 8 electoral districts on the border, and 13 districts inside the Pale. In Russia, there are four regions with within-region variation: Bryanskaya, Pskovskaya, Smolenskaya, and Tverskaya regions (*oblasts*) with 91 electoral districts outside the Pale, 27 on the border, and 9 inside the Pale. In Ukraine, there are five regions with within-region variation: Donetskaya, Kharjkovskaya, Luganskaya, Sumskaya, and Ternopoljskaya regions (*oblasts*)

[12] Note that there were some (insignificant) changes in the maps of electoral districts election to election.

with 14 electoral districts outside the Pale, 21 on the border, and 14 inside the Pale.[13] Summary statistics for the vote for the "pro-market" and for the "anti-market" parties by type of district are provided in Table A3 in the online Data Appendix.

For the analysis of the channels of influence, we use data for elections in Poland in 2001, 2005, and 2007 and in Lithuania in 1996, 2000, and 2006. Details of these data and methodology are provided below; summary statistics are presented in Table A3.

### 3.2. Survey data on attitudes and economic outcomes

The second source of data on outcomes is the "Life in Transition Survey" (LiTS) of residents of transition countries of Eastern Europe and Central Asia conducted by the World Bank and the European Bank for Reconstruction and Development (EBRD) in 2006. The survey data are available at http://www.ebrd.com/russian/pages/research/analysis/publications/transition/data.shtml. The main results of the survey and its methodology are summarized in EBRD (2007). Individuals from a representative sample of 1000 individuals from 50 settlements (Primary Sampling Units, PSUs) in each transition country were asked a wide array of questions on their attitudes towards market reform, democracy, and transition as well as on socio-demographic characteristics and consumption of respondents' households.[14]

In the baseline analysis, we use data for Latvia, Ukraine, and Russia, as these three countries have within-country variation in PSUs outside and inside the Pale.[15] In addition, some of our specifications include data from other Eastern European countries (i.e., Belarus, Estonia, Lithuania, Poland, and Moldova). We focus on questions about attitudes towards market reform, democracy, satisfaction with the state of the economy (overall and compared to the pre-transition period),

[13] These numbers are given according to electoral district division for the first election in each country; they change only slightly for the subsequent elections.
[14] For details about sampling methodology in LiTS see http://www.ebrd.org/downloads/research/economics/LiTSrepo.pdf.
[15] In all specifications, we exclude Russia's PSUs in the Eastern Siberia and Far East because of their irrelevance due to large distance from the Pale border. Many of our specifications, however, confine the sample to PSUs in the immediate neighborhood of the Pale border. The inclusion of the Siberian and Far Eastern PSUs into the sample does not affect our results.

entrepreneurship measured by penetration of self-employment, and trust. In particular, we construct the following variables at the individual-level using survey responses: 1) dummy indicating respondent's preference for market over planned economy; 2) dummy indicating the respondent's preference for democracy over autocratic regime; 3) the respondent's assessment of the economic situation in her country today in comparison to 1989 on the scale from 1 to 5; 4) the respondent's general assessment of the economic situation in her country on the scale from 1 to 5; 5) dummy for whether the respondent is self-employed; and 6) dummy for trust in others. We use information on the respondent's consumption, relative income, and education both as controls in regressions for attitudes and self-employment and also as separate economic outcomes. In addition, the list of individual-level control variables in regressions for LiTS outcomes includes socio-demographic characteristics of respondents from the survey such as age, gender, labor market status, religion, and ethnic majority/minority status. The exact formulations of survey questions, definitions of all variables used in the analysis, and summary statistics separately for PSUs inside and outside the Pale are provided in the online Data Appendix (see tables A4, A5, A6).

### 3.3. Geographic data

We used a multitude of historical sources to create a digital map of the Pale of Settlement. In addition, we created digital maps of the Second Polish Republic, and the Polish-Lithuanian Commonwealth.[16] For each PSUs from the LiTS survey in our sample of countries we also collected their exact geographical coordinates.[17] Using these data, we calculate the closest distance from each PSU to the eastern border of the Pale (i.e., the land border of the Pale inside the Russian Empire).

[16] The following historical maps were used to create digital maps used in our analysis: the Russian Empire digital map from "Russia GIS project" provided by Andre Zerger (CSIRO Sustainable Ecosystems), the Pale of Settlement map from Perlmann (2006); and non-digital maps of the regions (*gubernii*) of the Russian Empire (http://maps.genealogia.ru/maps/alf.html). Additional useful information also was found at: http://rodmurmana.narod.ru/Karty.htm; http://digital.library.mcgill.ca/fishstein/images/11_06%20Pale%20of%20Settlement.jpg; http://tech2classroom.com/Edw11/image/webi/Eastern%20Front/800px-Gubernias_de_Ucrania_-_ENG.png; http://www.pseudology.org/evrei/ChertaOsed.htm.

[17] Initial information on PSU coordinates comes from Grosjean and Senik (2010).

Geographical coordinates of the PSUs also allowed us to collect additional geographical control variables, such as elevation, and average temperature, precipitation, and evaporation for the months of January and July for each PSU (all of these data come from the Global GIS dataset).

### 3.4. Demographic data

Finally, we used data from historical censuses in the Russian, German and Austro-Hungarian Empires, the Soviet Union, and contemporary censuses in the Eastern European countries from our sample to collect information about ethnic and religious composition at the end of the nineteenth and at the end of the twentieth century for all PSUs of the LiTS survey at the level of local administrative unit (analogue of county) level.[18]

## *4. The effect of the Pale*

In this section, we establish basic facts about the differences in outcomes on the two sides of the Pale border within the Russian Empire. Our focus is on the three countries of Eastern Europe which have one part of their territory outside and another part inside the Pale, i.e., Latvia, Russia, and Ukraine.

### 4.1. Election results

We start by comparing election results inside and outside the Pale for anti-market communist/socialist and pro-market liberal reform parties in these three countries. As we mentioned above, we confine our sample to regions (subnational administrative units) in each of the respective countries through which the Pale border cuts within the Russian Empire. We pool data for all elections and estimate simple OLS regressions with the percentage of total vote received by anti-market communist/socialist and by pro-market liberal political parties in electoral district as

[18] Much of this information is available online. In particular, we relied on the following sources: http://demoscope.ru/; http://www.shtetlinks.jewishgen.org/; http://www.jewishgen.org/; http://www.jewishencyclopedia.com/; http://verwaltungsgeschichte.de/; http://etno.us.org.ua/; http://www.statoids.com/; http://www.lu.lv/; http://www.csb.gov.lv/; http://www.stat.gov.lt/en/; http://www.stat.ee/; http://eja.pri.ee/; http://www.geschichteinchronologie.ch/; http://www.kresy.co.uk/; http://germanhistorydocs.ghi-dc.org/; Kozauer (1979), p. 136.

dependent variables and dummies for “inside the Pale” and “being on the Pale border” as the main explanatory variables (thus, “outside the Pale” is the comparison group). We control for whether electoral district is urban and also for the regional centers, as usually residents of urban areas and regional capitals have different political preferences compared to those of rural areas. We also control for regional and election dummies and cluster the error term by electoral district. Regional dummies control for all regional level variation, including differences in economic development, political institutions, and political affiliation of leadership. Election dummies (i.e., separate dummies for each election in each country) control for differences in political landscape and macroeconomic trends separately in each country. First, we pool data for all three countries together and then repeat the exercise separately for each of the three countries. We run three specifications for each sample and dependent variable: without any additional controls (i.e., only with region and election dummies), with controls for dummies indicating regional center and city districts; and with a control for city districts excluding regional centers from the sample. Note that our primary specification is the one excluding regional centers because regional centers usually are a lot larger than the rest of the electoral districts and since there is only one regional center in each region, there is no match for it across the Pale border.

Table 3 presents the results. The upper panel presents regressions with the vote for anti-market communist and socialist parties as dependent variable and the lower panel shows regressions for the pro-market reform vote. The Pale is associated with a significantly higher vote for communist and socialist parties in the sample of all countries pooled together and in Latvia and Russia. In an average subnational region, one part of which is in the Pale and another part is outside, political parties with communist and socialist ideology got on average 5 percentage points more of the total vote in the electoral districts inside the Pale compared to districts outside the Pale. In our baseline sample of regions through which the Pale border cuts, the mean vote for communists/socialists is 25 percent with a standard deviation of 15 percentage points. Regressions on country samples reveal that there is no significant effect of the Pale on the combined vote for the two parties of

communist/socialist ideology in Ukraine: the Communist Party of Ukraine and the Socialist Party of Ukraine. The former is known as a party of retired people as its political agenda is limited to the social support for retirees. Naturally, as the electorate of the Communist party of Ukraine, namely retirees, has equal representation in electoral districts on both sides of the Pale border, the vote for the Communist party of Ukraine is unrelated to the geographical position of electoral district vis-à-vis the Pale border. In contrast, the Socialist Party of Ukraine is a party with broader political agenda and a more diverse electorate which includes some young people. When we run regressions separately for the two parties, we find no effect of the Pale on the vote for the Communist Party (the party of retired); while the results of the vote for the Socialist Party of Ukraine are consistent with the results for Latvia and Russia: they are significantly higher in electoral districts in the Pale compared to electoral districts outside the pale. Table B1 in the online Auxiliary Results Appendix presents these findings.

The lower panel of Table 3 explores the relationship between the Pale and the percentage of vote for pro-market parties in the three countries. In the sample of three countries there is no significant effect. Country-level regressions, however, show that there is a significant negative effect of the Pale on the vote for pro-market parties in Latvia and Russia and no significant effect in Ukraine. The Pale decreases the vote for pro-market parties by 6.7 and 0.6 percentage points in Latvia and Russia, respectively, which is equal to 65% and 12% of SDs. The mean vote for pro-market parties is 31% in Latvia and 5% in Russia in the regions on the Pale border.[19] The election results are robust to including the whole countries rather than just the Pale-border regions into the sample. In addition, the results are robust to running regressions separately for each election. The results of these robustness checks are available from the authors upon request.

[19] The fact that we do not find significant results for Ukrainian pro-market parties deserves a note. The pro-market liberal reform parties in Ukraine are *Narodnyi Rukh*, *Our Ukraine*, and *Timoshenko blok*. These parties are substantially less ideological then their counterparts in Latvia and Russia, as they built their agendas on political support for concrete political leaders rather than policy issues (Tarnauski 2005, pp. 55-56).

### 4.2. Attitudes

Using the Life in Transition Survey, we estimate discontinuity in attitudes of the population and in economic outcomes comparing settlements at both sides of the border of the Pale within the Russian Empire which was binding with respect to allowing Jewish presence. Let us denote an outcome of interest for individual *i* by $y_i$ ; a dummy indicator of whether the settlement where individual *i* lives is located inside the Pale by $p_i$ . For each PSU in Latvia, Russia, and Ukraine, we calculate the minimum distance to the border. We denote the distance by *d*, and set it to be positive for all PSUs inside the Pale and negative for PSUs outside the pale ( $d_i > 0$ iff $p_i = 1$; and $d_i < 0$ iff $p_i = 0$ ). Thus, we are interested in whether $y_i$ jumps discontinuously at $d = 0$ . We adopt two alternative approaches: discontinuity sample approach (Angrist and Lavy, 1999) and a parametric control function approach (Heckman and Robb, 1985).

First, we estimate a simple OLS regression on the whole sample:

$$y_i = \alpha + \beta p_i + \mathbf{x}_i'\boldsymbol{\gamma} + \varepsilon_i, \qquad (1)$$

where, as above, $y_i$ is an outcome variable; $p_i$ is "in Pale" dummy; $\mathbf{x}_i$ denotes the vector of control variables (to be described below); and $\varepsilon_i$ denotes the error term clustered by PSUs. Parameter $\beta$ estimates the average difference in outcomes between individuals inside and outside the Pale. Reduced sample approach consists in estimating equation (1) limiting the sample to PSUs in the neighborhood of the Pale border. Thus, we include in the sample only individuals *i* for whom $|d_i| < \Delta$ . We consider three alternative samples, gradually reducing the maximum allowed distance to the Pale border to 140, 70, and 35 kilometers.

Alternatively, we estimate discontinuity at the border using the RD control function method by including in the list of covariates the two fourth-order polynomials of the distance to the Pale border on both sides of the Pale:

$$y_i = \alpha + \beta p_i + f(d_i) + \mathbf{x}_i'\boldsymbol{\gamma} + \varepsilon_i, \text{ where } f(d_i) = \sum_{k=1}^{4} \delta_k d_i^k + \sum_{k=1}^{4} \phi_k d_i^k p_i. \quad (2)$$

We consider the equation (2) as our primary specification; but as we would like to make sure that the results are robust across specifications, we present the estimation results of both equations.

We do not expect to see any discontinuity at the Pale border for rural PSUs because Jews were not allowed to live in rural areas on either side of the Pale border. Thus, we estimate equations 1 and 2 separately for urban and metropolitan PSUs and for rural PSUs.

The set of controls $\mathbf{x}_i$ includes country dummies, settlement characteristics, and individual characteristics. The following settlement characteristics are in the list of covariates: dummy for metropolitan areas (in the non-rural sample), longitude, elevation, religious fractionalization (calculated using information on religion of survey respondents), and dummy for Western Ukraine whenever any of the Western Ukrainian PSUs are in the sample.[20] In baseline regressions that restrict the sample to the very few PSUs located no more than 35 kilometers from the border (11 in the urban sample and 8 in the rural sample), we exclude longitude as, otherwise, there is not enough variation to rely on. In all other baseline regressions, longitude is in the list of covariates. Section 7 addresses the issue of a possible confounding effect of longitude in a placebo experiment.

In addition, we experimented with adding latitude, temperature, precipitation and evaporation for January and/or July, and the size of the settlements as additional control variables, and found that their inclusion does not change the results and these variables themselves do not add explanatory power. We consider possible confounding effect of the Polish Lithuanian Commonwealth in the robustness section below.

[20] The electoral map of Ukraine is divided into two roughly equal-size parts: residents of Western Ukraine overwhelmingly supported the "orange" revolution and pro-western polities; in contrast, the majority of population in Eastern Ukraine supports pro-Russian policies and Victor Yanukovitch. The main distinction between the east and the west of Ukraine is the percentage of ethnic Russians in the population. We set Western Ukraine dummy equal to one if the region has below 10% of ethnic Russian population. In addition, we set Western Ukraine dummy equal to one for Kiev, despite the fact that it has 13% of ethnic Russians amongst its residents. We do this because it is the capital and vast majority of the population in Kiev is "pro-orange." It is important to note that the neighborhood of the Pale border is located entirely in the Eastern Ukraine, and therefore, the difference between east and west could not drive our results.

In regressions with individual attitudes and the self-employment dummy as dependent variables, the list of individual-level controls consists of gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. Our results are robust to controlling for relative income as well, but we exclude it from the baseline specification as it has little explanatory power beyond consumption which is always included in the set of covariates. In regressions with economic outcomes (such as consumption, relative income, and education) as dependent variables, the respective variable is excluded from the set of covariates.

Table 4 presents results for various attitudes and self-employment as dependent variables in the sample of urban and metropolitan settlements. For each dependent variable, we present 5 sets of regressions: OLS on the whole sample, OLS on the sample limited to PSUs with distance to the border of no more that 140, 70, and 35 kilometers, and the RD regression with control function (as described above).

The first (upper) panel presents regressions for the individual preference towards market and democracy in urban and metropolitan areas. Crossing the border of the Pale from the outside leads to a 16 percentage point drop in the support for market and a 20 percentage point drop in the support for democracy. The discontinuity at the border equals to about 0.3 and 0.4 of the standard deviations of these variables in the considered sample, respectively.

The second panel presents regressions for the individual assessment of economic progress during transition and of the overall state of the economy. We find that residents on the Pale side of the border agree significantly less with the statement that the economic situation in their respective countries is better today than before transition started in 1989 and they assess the state of the economy significantly less positively. The magnitudes of the discontinuous drop at the border equal to one half and one third of standard deviations of these variables respectively.

The third (lower) panel of Table 4 presents results on self-employment and on trust. The probability that a resident in urban areas is self-employed is significantly smaller in urban and

metropolitan settlements inside the Pale compared to similar settlements outside the Pale. The magnitude is as follows: crossing the Pale border into the Pale leads to a 10 percentage point decrease in the share of self-employed, i.e., the size of the drop equals to one half of the standard deviation of this variable.

Finally, trust is significantly higher in urban and metropolitan settlements inside the Pale compared to similar settlements outside the Pale: crossing the Pale border into the Pale leads to a 25 percentage point increase in the share of the population who trust others, which equals to about one half of its standard deviation.

All of the results presented in Table 4 are robust both in terms of magnitude and statistical significance to the changes in the estimation method as can be seen from the comparison of different columns.[21] In addition, the results are robust to excluding metropolitan areas from the sample and controlling for the size of the settlement (results are available from the authors upon request).

Table 5 presents results of regressions analogous to those presented in Table 4, but for the sample of rural areas. In contrast to the results for urban areas, in rural PSUs, only the preference for democracy has a robust association with the Pale but with the opposite sign to the relationship found for urban PSUs. None of the other outcomes are robustly related to the Pale dummy. Coefficients on the Pale dummy are always insignificant for the assessment of transition process, satisfaction with economy, self-employment and trust. There are two cases, in which reduced sample approach yields statistically significant results for the preference for market, but they are not robust to using RD control function approach.

Overall, coefficients on "in Pale" dummy in the rural sample are insignificant for most of the outcomes, and importantly, in all cases when they are significant, they have the opposite sign to the robust effect present in urban areas. As Jews did not live in rural areas on either side of the Pale

[21] If longitude is included as covariate in the most restrictive specification (with distance lower than 35 km from the border), the results for the preference for market and democracy and for the satisfaction with the state of the economy remain the same, but for trust and the comparison of economic situation now and in 1989 they become insignificant.

border, one can consider the effect of the Pale in rural areas as placebo treatment. If our results were driven by some omitted spatial variation rather than the fact that the Pale regulated Jewish residence in the Russian Empire, we would have obtained similar results for rural and urban areas. The positive effect of the Pale in the rural sample on the preference for democracy and in few specifications for the preference for market suggests that we might underestimate the effect of the Pale on these outcomes for the urban areas as the overall pattern in the data is such that there is a higher preference for democracy (and possibly market) towards the West and the Pale is in the West. Below in the robustness section 7, we present results of additional falsifications tests based on placebo experiments, in which we estimate the discontinuity at the shifted border of the Pale and at various meridians.

In order to check the validity of our regression discontinuity approach, we verify that the controls do not exhibit discontinuity at the Pale border. In particular, we run RD control function and reduced sample regressions for each variable used as a control in equations 1 and 2. Thus, we estimate the following equations: $x_i = \alpha + \beta p_i + \varepsilon_i$, s.t. $| d_i | < \Delta$ and $x_i = \alpha + \beta p_i + f(d_i) + \varepsilon_i$ for each component $x_i$ in the vector of covariates $\mathbf{x}_i$ and for all other possible variables that we considered as potential co-determinants of our outcomes in robustness checks but did not include in the baseline specification. In all of these regressions with one exception, the coefficients on $p_i$ are statistically insignificant and very close to zero.[22] The only covariate that exhibits a discontinuous jump at the Pale border is elevation: urban PSUs close to the Pale border inside the Pale are 82 meters higher than similar PSUs on the opposite side of the Pale border. Our main identification assumption (backed up by historical evidence) is that the border of the Pale is arbitrary and did not reflect some important geographical or economic heterogeneity. The available geographical characteristics with the exception of elevation, i.e., temperature, precipitation, evaporation, and cloudiness, are not related to the Pale border. As far as the elevation is concerned, we verify that it has no significant

[22] Results available from the authors upon request.

relationship with our outcomes irrespective of whether we include the Pale dummy in the list of covariates, and therefore, we conclude that it cannot drive our results. As it exhibits a jump at the border, we include it as control in all specifications. The reason to include other controls $\mathbf{x}_i$ in our baseline regressions is solely to increase the precision of the estimates of $\beta$ and the results should be robust to excluding controls. Table 6 reports results of regressions similar to the ones reported in Table 4, but without any controls. Indeed, we find that the results are very similar.

To illustrate our baseline results (presented in Table 4), in Figure 2 for each outcome we plot the estimated control function, i.e., the polynomials of distance on both sides of the Pale border [$\sum_{k=1}^{4}\hat{\delta}_k d_i^k$ and $\sum_{k=1}^{4}(\hat{\delta}_k+\hat{\phi}_k)d_i^k$ ], along with their confidence intervals. In addition, we plot averages for every five respondents on the same graph. Using the same methodology, Figure 3 illustrates discontinuity in the share of the Jewish population in 1897 on the two sides of the Pale border in the settlements and in counties (*uezds*) of the Russian Empire for the LiTS PSUs using 1897 Russian Empire census data. Figure B1 in the online Auxiliary Results Appendix B presents unconditional averages of each of our outcomes at the two sides of the Pale border by distance.

### 4.3. Economic outcomes

In the regressions for attitudes we used consumption and education as controls. We already mentioned above that the Pale does not significantly affect any of these controls.[23]

In addition, we considered respondent's relative income at individual level and population growth for 100 years since 1897 at the settlement level and found that there is no significant relationship between these variables and the Pale. Thus, we found discontinuity at the Pale border only in one economic outcome, namely, self-employment.

[23] A non-result on education is consistent with Acemoglu et al. (2010) and is of particular interest. It supports the premise of historians that there was no transmission of human or social capital from Jews to Gentiles inside the Pale as Jews were more educated compared to Gentiles and now we do not see the difference in education of the Gentile population on the two sides of the pale border. According to the 1897 census, less than 28% of the total Russian population was literate whereas the literacy rate among the Jewish population exceeded 50%.

### 4.4. Scaling the results by former Jewish presence (IV estimation)

So far we presented the results of the estimation of reduced form relationship: between the Pale and outcomes. Our hypothesis, however, has two underlying stages. The Pale regulated Jewish residence in the Russian Empire and the former Jewish presence has a long-term effect on attitudes and self-employment. Thus, we can run a 2SLS regression to relate outcomes to the percentage of Jewish residents in the Russian Empire, where the latter is predicted by the Pale. This exercise amounts to a re-scaling of the results, which helps to understand the magnitudes better. Table 7 presents the results of the first-stage relationship relating the percentage of Jews in 1897 in urban PSUs and the percentage of Jews in 1897 in counties (*uezds*) for both samples of non-rural and rural PSUs to the Pale dummy in our baseline sample of three countries with within country variation in the Pale dummy. (The settlement-level data on percentage of Jews in 1897 exist only for a subset of urban and metropolitan PSUs.) The first three columns present the results at PSU level without controls; the last three columns present individual-level regressions with all control variables (which is our actual first-stage). As expected, the Pale dummy is a strong predictor of the percentage of Jews in the population both at county (*uezd*) and settlement level. The share of Jews in urban settlements was 27.6 percentage points higher inside the Pale compared to outside the Pale, and it was 8 percentage points higher in counties. F-statistics for the Pale dummy are always above 10, and therefore, we do not need to worry about a weak-instrument problem.

Table 8 presents results of the second-stage regressions: the upper panel -- for the sample of urban and metropolitan PSUs; and the lower panel -- for rural PSUs. The results are consistent with the reduced form. The higher share of the Jewish population in the Russian Empire is associated with significantly lower support for market and democracy, lower assessment of the transition process and the current state of the economy, lower penetration of self-employment, and higher trust for urban PSUs today. The magnitude of the results for urban PSUs is as follows: an increase in the percentage of Jews in 1897 by 10 percentage points in a settlement (which approximately equals to one half of

the standard deviation increase) leads to a 7 percentage point decline in the support for market and democracy, approximately a 10 percent of the SD decline in the positive assessment of the transition process and of the economy, a 2.5 percentage point decline in self-employment, and a 6 percentage point increase in trust.

Simple OLS regressions which relate shares of Jews in the Russian Empire to our outcomes today yield insignificant results (not reported). One possible explanation for this is that within the Pale, Jews were able to move freely and the choice of their location was not exogenous. Particularly, they may have chosen places of residence where the non-Jewish population was more positively inclined to liberal values (and these values persisted to the present day).

For the rural PSUs, we find no statistically significant relationship for all outcomes but one. There is a positive marginally significant coefficient on the percent of Jews in 1897 for the preference for democracy.

It is worth noting that all results described in this section use OLS for simplicity of interpretation of the magnitude of the effects. Results are robust to using probit when outcomes are dummy variables and ordered probit when outcomes take on five values from 1 to 5, and their IV equivalents for the results presented in the last subsection. In addition, we experimented with extending the sample to other countries in Eastern Europe which constituted parts of Russian Empire. In particular, we added PSUs in Belarus, Moldova, Lithuania, Estonia, and Poland to the sample. There is no within-country variation in the Pale dummy for these other countries, but their inclusion into the sample could lead to a higher precision in estimating coefficients on control variables, and therefore, potentially could have affected our results. The estimates of the coefficients on the Pale dummy are not affected by the extension of the sample.

### *5. Channels: former presence of Jews vs. new migrants*

Previous section established that the Pale of Settlement is consequential in the long-term for political preferences of the electorate, attitudes towards market and democracy, assessment of

economic transition process and the current state of economy, entrepreneurship and trust. In this section, we focus on the possible channels of influence.

The Pale of Settlement could have an effect on today's outcomes either because Jews lived in the Pale before or because new migrant population settled in the Pale when Jews were eliminated by the Nazis. Both of these channels can potentially have a long term effect. New migrants, without roots in the place of residence, may have attitudes and aspirations quite different from those held by representatives of groups with traditions and culture formed in one place during centuries.[24] Since Jews as a group played a special social and economic role in society, the Holocaust, which resulted in a drastic social change, may also have a long term effect. We discuss possible mechanisms through which former Jewish presence affects current outcomes in detail in the next section.

In this section, we attempt to discriminate between these two channels. In particular, we identify places in Belarus, Lithuania, Poland, Russia, and Ukraine that received new populations settling in spaces emptied not or not only because Jews were gone but because of mass out-migration of entire ethnic groups (mostly, Poles and Germans) after the redrawing of their country borders. We then compare the long-term effects of the renewal of the population on outcomes in places where this renewal was associated with the mass murder of Jews and where it was associated with Poles and Germans moving out.

In the sample of six countries: Belarus, Lithuania, Latvia, Poland, Russia, and Ukraine, for each PSU, we collected information on ethnic composition for two points in time: 1) at the end of the nineteenth century and 2) at the end of the twentieth century. The data were collected at county-level (i.e., the smallest administrative unit for which the data are available). The sources are given in the Table A7 of the online Data Appendix.

[24] Expectations and beliefs of people who face new environments, which is characteristic of migrants, are likely to differ from those of the people in stable environments. Swindler (1986) argued that "unsettled" people update beliefs more in response to shocks compared to "settled" people. Olson (1982) claimed that stable societies tend to form collusions and distributional coalitions that may hinder economic growth.

Based on these data, we construct two variables: one reflecting the change in the ethnic composition of the population associated with the disappearance of Jews; the other reflecting the change in the ethnic composition of the non-Jewish population.

As the change in ethnic composition between Jewish and Gentile population in settlement *s*, we take:

$$\Delta JG_s = \log(j_s^{XIX} + 1) - \log(j_s^{XX} + 1),$$

where $j_s^{XIX}$ and $j_s^{XX}$ denote the shares of Jews in the total population in settlement *s* at the end of the nineteenth century and at the end of the twentieth century, respectively. Thus, $\Delta JG_s$ is the rate of shrinkage of the Jewish population.

As the Jewish population largely disappeared from Eastern Europe, in 271 out of 291 PSUs this measure is positive. It varies from 25% to -0.36%.[25] Only in 2 PSUs in our sample the Jewish population grew by more than 0.3%. On average, the share of the Jewish population shrank by 8.6% (with standard deviation of 7%).

In order to measure the extent of ethnic change among the Gentile population denoted by $\Delta GG$, we first define the majority group in each of the six countries at the end of the 20th century.[26] We call all of the Gentile population which does not belong to the Gentile majority group today "Gentile minority." We calculate the shares of the population which belong to the "Gentile minority" (defined as of today) in the total Gentile population at the end of nineteenth and end of the twentieth century and denote these two shares by $g_s^{XIX}$ and $g_s^{XX}$, respectively. The share of the "Gentile minority" shrank over the last century in 80% of PSUs and expanded in 20%. We define a measure of the change in ethnic composition among Gentile groups as follows:

[25] There are 50 PSUs per country in LiTS, we have information on the change in ethnic composition for 299 PSUs in 6 countries. We were unable to find the ethnic composition at the end of the nineteenth century for one rural PSU currently in Zakarpatskaya oblast of Ukraine, which used to belong to Austro-Hungary. We present the analysis for the sample of 291 PSUs which excludes 8 PSUs in the Far East and Eastern Siberia (this is our baseline sample for Russia). Adding these 8 PSUs to the sample does not change any of our results.

[26] It is an easy task, as each respective country has today a dominant ethnic group which constitutes the overwhelming majority of population (e.g., Russians in Russia, Poles in Poland, or Lithuanians in Lithuania). Note that as the twentieth century saw massive movements of populations, the groups that constitute majorities of population today, were not necessarily a majority 100 years ago.

$$\Delta GG_s = |\log(g_s^{XIX}+1) - \log(g_s^{XX}+1)|.$$

This is the rate of change of the ethnic mix within Gentile population. The idea is that whenever $g_s^{XIX}$ and $g_s^{XX}$ are different, this means that the ethnic mix of non-Jewish groups changed either in favor of the majority or in favor of minorities. In both cases this means a renewal of the Gentile population. The growth rate of the Gentile minority ($\log(g_s^{XX}+1) - \log(g_s^{XIX}+1)$) varies greatly from -68% to 29%. The rate of renewal of the ethnic mix within the non-Jewish population is defined as the absolute value of the growth rate of the Gentile minority. It varies from 0% to 68% with the mean value of 14% and standard deviation of 16.[27]

As we already discussed, movements of ethnic groups can be driven by a wide range of different factors, many of which cannot be considered exogenous. The Pale can be used as an exogenous source of variation in the change between the Jewish and non-Jewish population. In order to estimate the effect of the ethnic change within the non-Jewish population, we need to find an exogenous source of variation for it as well.

Many historical sources (e.g., Eberhardt, 2003; Magocsi, 1993; Stola, 1992; Piesowicz 1987) point out that the redrawing of country borders after the Second World War and the move of Poland westward on the map of Europe triggered massive migrations of particular ethnic groups from areas where they resided for centuries. Based on historical evidence, we made a list of places that had mass migrations of entire ethnic groups driven by redrawing of country borders. First, the so-called "Western Territories" of contemporary Poland used to be populated primarily by Germans (since they were part of Germany before the war) and now they are populated by Poles.[28] Second and similarly,

[27] We measure the change in ethnic composition, which is, of course, not necessarily the same as renewal of the population. Several areas in Eastern Europe saw a substantial renewal of the population which has nothing to do with the change in ethnic composition. For instance, the intensive warfare and the great famine in Ukraine (Golodomor) lead to a massive loss of human lives and, arguably, subsequently may have triggered migration into the "emptied areas." There is no data, however, on migrations brought about by these events.

[28] The German population in Poland decreased from 3.6 million in 1946 to 0.2 million in 1950. The "Western Territories" were mainly populated with Poles coming from central Poland but also with Poles transferred from eastern regions of pre-war Poland on the East of the Curzon line, Poles repatriated from Russia, some Ukrainians and demobilized Polish soldiers (Piesowicz, 1987).

the German town of Konigsberg (now, Kaliningrad) together with the region around it after the war became part of the Soviet Union and experienced a dramatic renewal of its population as Germans left and Russians moved in. Third, the territory of the Second Polish Republic (SPR) outside contemporary Poland covered parts of Belarus, Lithuania, and Ukraine. These territories used to have substantial Polish populations, whereas nowadays they are populated primarily by Belarusians, Lithuanians, and Ukrainians in their respective countries. In addition, between the wars, the capital of Lithuania, Vilnius, belonged to Poland and Lithuanians moved their capital to the city of Kaunas (Kovno), which used to be a rather ethnically diverse town. Kaunas was picked to be the capital because it was the second largest city in Lithuania after Vilnius. Once it became the capital, it experienced a mass inflow of Lithuanians and there was no migration among other groups that lived in Kaunas. Lithuanians formed an overwhelming majority of the place once it became the capital, whereas they were a very small minority group before. This new ethnic structure of the population persisted to this day despite the move of the capital back to Vilnius after the Second World War. All of these were exogenously predetermined migrations. Thus, we create a dummy that equals 1 for all PSUs in Polish Western Territories, Second Polish Republic outside Poland, Kaliningradskaya Oblast (i.e., the region of Konigsberg), and Kaunas and call it "moved country." Summary statistics for both measures of the renewal of population and for the "moved country" instrument are presented in Table A8 in the online Data Appendix.

Being in "moved country" is a strong predictor of the change among different groups of the Gentile population and being in the Pale is a strong predictor of the change between Gentile and Jewish population. Table 9 presents results of regressions in which we relate our two measures of the change in ethnic composition of the population over the last century ($\Delta GG_s$ and $\Delta JG_s$) to "Pale" and "moved country" dummies. Results are presented for regressions at PSU level without any controls (first six regressions in each panel) and at the individual level with and without controls. The set of controls includes a dummy for the Russian Empire in addition to all other controls that were

used in baseline regressions. This is because to investigate the channels, we expanded the sample to areas in Poland, Ukraine, and Russia outside the Russian Empire. (It is important to note that the "moved country" dummy has variation outside the Russian Empire as well as inside the Russian Empire.) Results for all PSUs are in the upper panel of the table and for urban and metropolitan PSUs in the lower panel. We verify the robustness of the results to the two samples as the change in country borders summarized by the "moved country" dummy must have triggered migration of both urban and rural population.

The "moved country" dummy is highly statistically significant in explaining variation in the change in ethnic composition among Gentile groups. Being in "moved country" increases the rate of change within the Gentile population by 18 percentage points in the whole sample and 20 percentage points in urban areas. In contrast, "in Pale" is not associated with the change within the Gentile population. The change in ethnic composition between Jews and non-Jews is significantly related to both "moved country" and "Pale." This is to be expected as all of moved country territories (i.e., PSUs with moved country dummy equal one) are entirely to the west of the binding eastern Pale border. The "in Pale" dummy, however, has a substantially larger effect in terms of magnitude and statistical significance compared to "moved country" dummy on the change in ethnic composition between Jews and non-Jews. The size of the effect of the Pale on the rate of change in population between Jews and non-Jews is about 10 percentage points, which is 3-times larger than that of "moved country." The last row of each panel of Table 9 presents F-statistics for the excluded instruments: they are always above 10, and therefore, we do not need to worry about the potential weakness of the instruments.

In order to differentiate between the two channels, we relate our outcomes both to the change within the Gentile population and to the change between Jews and Gentiles. If the effect of the Pale were driven by the presence of new migrant population, which settled in emptied Jewish houses, we would expect to see similar effect on outcomes of both of these measures, as both of them reflect the extent of new migrant population settling in the houses of people who disappeared. (Jews were killed

or moved to death camps, Poles and Germans moved to their own "moved countries.") If, in contrast, the effect of the Pale is driven by former Jewish presence in the area, the effects of the two variables should differ. Table 10 presents results of the second stage of the 2SLS regressions, where $\Delta GG_s$ and $\Delta JG_s$ are instrumented by "moved country" and "Pale" dummies. For each outcome, we present results of three regressions: with both $\Delta GG_s$ and $\Delta JG_s$ included as regressors and with each of the two variables included separately.[29] First, we find that the effect of the change in ethnic composition from Jews to Gentiles is broadly consistent with our previous results on the effect of the Pale. The results are somewhat weaker, than those presented in Table 8, but for most outcomes they remain statistically significant. In regressions with only the change in ethnic composition between Jews and Gentiles included in the regression, in the whole sample only the effect for the support for democracy loses statistical significance and only in the sample of all PSUs. When we include the change among non-Jewish groups as an additional regressor, the coefficient on the change between Jews and Gentiles is significant for all outcomes with the exception of the preference for democracy and trust in the sample of all PSUs (and the sign of the effect is as expected for these outcomes as well). In the sample of urban and metropolitan PSUs, the effect of the change between Jews and Gentiles on trust remains statistically significant with $\Delta GG_s$ included as control, but the effects on self-employment and satisfaction with the economy lose significance.

The most important finding is that the change among non-Jewish groups does not have a significant effect on our outcomes, irrespective of whether we include the change in ethnic composition between Jews and Gentiles as regressor. Moreover, when both $\Delta GG_s$ and $\Delta JG_s$ are included in the regression, the coefficients on them almost always have the opposite sign. This evidence is consistent with only one of the two potential channels being at play, namely, that the Pale matters because of Jews.

[29] The two variables are positively and significantly correlated with correlation coefficient of 0.13.

To provide further evidence that the effect of the Pale is not driven by new migrant population, we compare election results for the anti-market and pro-market parties on the two sides of the border of the Second Polish Republic (SPR) within Lithuania and on the two sides of the border of "Western Territories" within Poland.[30] Table 11 presents the results of OLS regressions of the vote in an electoral district by country for subnational regions with within-region variation in the "moved country" dummy. In regressions for Poland, we cluster observations at the level of powiat (second-tier administrative division), as there are many electoral districts in each powiat. As in the analysis presented in Table 3, we control for the region and election dummies as well as for urban electoral districts and regional centers. If the Pale results were driven by the new migrant population, one should have expected to see a higher vote for the socialist parties and lower vote for pro-market parties in the "moved country." This is not the case in the data.

In Poland, in electoral districts inside the "moved country" there is a significantly lower support for what could be called an "anti-market" party compared to electoral districts outside the "moved country."[31] At the same time, there is no significant effect of "moved country" on the pro-market liberal party in Poland. Similarly, in Lithuania, there is a a significantly higher support for pro-market parties inside the "moved country" and no significant effect for the socialist party. In all cases, the sign of the effect of "moved country" is the opposite to what we found for the Pale. This is consistent with the view that de-rooted population is more dynamic, mobile, less conservative, less constrained by traditions, more entrepreneurial, and more pro-market (e.g., Olson, 1982).

[30] SPR border also crossed the territories of contemporary Belarus and Ukraine. However, we cannot use election data for these countries. As for Ukraine, the border of SPR exactly coincides with internal borders between different regions (subnational units), and therefore, there is no within-region variation in "moved country" in Ukraine. As for Belarus, it is not a democracy and there are no political parties independent from the president Alexander Lukashenko.

[31] There is no socialist or communist party in Poland. The only party which calls itself leftist (Alliance of Democratic Left, SLD) is a very pro-European, pro-market party. Among the two big right-wing parties, Law and Justice (PiS) is a pro-government-intervention party, in opposition to the Civic Platform (PO) party, which, in turn, has a pro-market and pro-liberal political agenda. We compare votes for PiS (as the anti-market party) and PO (as the pro-market party). We also checked the results for SLD: the support for this party is not significantly different inside and outside the "moved country."

To sum up, the evidence presented in this section brings us to the conclusion that the Pale matters because Jews lived there before and not because new migrants occupied emptied space when the Jews were gone.

### *6. Mechanisms driving the effect of the Pale*

Our results are complementary to Acemoglu at al. (2010) who find that the intensity of the Holocaust is associated with lower population growth and higher political support for communists in cities inside Russia and lower per capita incomes measured at the oblast level in Russia. At the same time, they find no effect on education. In our analysis, the border of the Pale of Settlement can be interpreted as a proxy for the intensity of the Holocaust. Consistent with Acemoglu at al. (2010), we find higher political support for communist/socialist parties inside the Pale and no effect on education.[32] Acemoglu et al. (2010) argue that the Holocaust disproportionally destroyed the middle class as Jews were disproportionally represented in the middle class of the society. The destruction of the middle class can, indeed, explain some of our results. The extermination of Jews must have biased the population towards less liberal values (which usually are shared to a larger extent by the middle class) and towards less entrepreneurship as the Jews were more likely to be entrepreneurs inside the Pale.

To illustrate the "missing middle class" mechanism of the effect of the Pale, we plot the histograms of measures of relative income and consumption, available in LiTS, for residents of urban PSUs within 100 kilometers of the Pale border in Latvia, Russia, and Ukraine, separately for PSUs inside and outside the Pale. Figure 4 presents these histograms. The upper panel of the figure presents histograms for the self-assessed position on the 10-step income ladder (our measure of relative income). The left pair of graphs presents histograms for each of the 10 steps and the right pair of graphs aggregates each two steps in one for convenience. It is apparent from the graphs that smaller share of respondents position themselves on the $5^{th}$ to the $8^{th}$ step of the 10-step income ladder inside

[32] Unlike Acemoglu at al. (2010) we find no significant effect on city growth or per capita consumption level. This, however, could be a consequence of poor measurement of these variables in LiTS data.

the Pale compared to outside the Pale (it is easier seen on the right pair of graphs). The lower panel of Figure 4 presents histograms of consumption together with a plot of the best-fit normal density. As with relative income, we present graphs for less and more aggregated bins. The density plots are wider and shorter inside the Pale compared to outside the Pale. All of these pieces of evidence are suggestive of a thinner middle class inside the Pale and, therefore, are consistent with the "removal of the middle class" as one of the underlying mechanisms of the Pale effect.

The missing middle class mechanism is insufficient to explain all of the observed facts. In particular, it cannot explain the robustly higher trust inside the Pale compared to outside the Pale as there is no obvious association between the middle class and trust. In addition, it seems that the magnitude of the differences in income and consumption distributions in and out of the Pale today is not sufficiently high to explain the sizeable difference in anti-market attitudes of the residents of the Pale. Based on our reading of vast historical evidence, we suggest an additional mechanism which may explain these results, namely, the development of apersistent anti-market culture and bonding trust among the non-Jewish population.

Before the Second World War, Jews and non-Jews lived in the urban areas of the Pale and "feared and despised each other, and continued to live as 'two solitudes'" (Aster and Potichnyj 1983). The two groups were organized into two internally coherent communities, with different traditions, prohibitions, mythology, language, beliefs and values and were engaged in little interaction beyond market transactions. The presence of Jews created a challenge for the non-Jewish population as Jews were dominating in several important economic niches which the non-Jewish community aspired to control but failed in competition with the Jews. This created demand for ethnic hatred on the part of the non-Jewish population (see Glaeser 2005 on the theory of the demand and supply of hatred). Indeed, the relationship between the two communities was dominated by animosity and suspicion often resulting in open outbursts of ethnic hatred and, sometimes, pogroms.[33]

[33] Slezkine (2002) describes the relations between the majority of the Pale Jews and their customers as follows: "Each side saw the other as unclean, opaque, dangerous, contemptible, and ultimately irrelevant to the

The close co-existence with the Jews created pressure within the non-Jewish population inside the Pale to develop strong ties of loyalty in their community in response and in opposition to strong ties within the Jewish community, which are a part of traditional Jewish culture. This type of internal trust, limited to a close and homogenous group of people belonging to the same community or to a closed social network is known as "bonding" (rather than "bridging") social capital (Fukuyama 1995, Putnam 2000, Tabellini 2008).[34] In the face of the rival group (i.e., Jews), the Gentile population not only united and consolidated, but also developed values that are contrary to those that the Jewish group was associated with. Since Jews represented a liberal pro-market force because of their traditional occupations, ethnic animosity contributed to the development of anti-market culture among the Gentile population in opposition to the Jews. Gentiles developed social stigma against what Jews were associated with in their eyes, and in particular, against the market and market-making activities which were traditionally Jewish and in which they failed to compete against the Jews.[35]

The development of within-group trust and anti-market culture amongst the non-Jewish population was a response to the challenge of co-existence with Jews and was a special characteristic of the Gentile population inside the Pale, as outside the Pale local population with the same ethnic and religious background was not subjected to similar social pressures as it had no experience of living with Jews side-by-side. We argue that the differences in attitudes and trust that we observe today between residents on the two sides of the Pale border are a consequence of the persistent anti-market culture and bonding within-group ties developed during two centuries of co-existence of Jews

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communal past and future salvation … Most Jewish and non-Jewish inhabitants of the Pale of Settlement shared the same fundamental view of what separated them. …they tended to think of each other as universal and mutually complementary opposites: mind versus body, head versus heart, outsider versus insider, nomadic versus settled" (pp. 106-107). See also Hoffman (1997) who relied on one of shtetls' Memory Book to provide evidence of ethnic animosity between the two groups. Jews were accused by Gentiles of all sorts of wrongdoings from economic exploitation to ritual murders (Dubnow 1920; Tokarska-Bakir 2008). The official teaching of the Christian Churches portrayed the Jew as "the Other" (Spicer, 2007).

[34] Also see Greif and Tabellini (2010); Foley and Edwards (1998), and Portes (1998).

[35] This argument has some parallels to the phenomenon of the social stigma against 'acting white' among the US black population (Fordham and Ogbu 1986; Tyson et al. 2005).

and Gentiles inside the Pale in the Russian Empire. The anti-market culture manifests itself in the anti-market and anti-transition sentiment, higher support for socialist and communist parties, and low entrepreneurship, while bonding ties manifest themselves in higher trust within the Pale.

As the rival group (Jews) disappeared during the Holocaust, within-group trust became empirically indistinguishable from generalized trust based on the question about whether most people can be trusted (available in LiTS survey).[36] Respondents, when they are asked this question, think about people they encounter in their ordinary life and in a homogenous society these are the members of their own group (Bahry et al., 2005). Since the population of the Pale became homogenous when the Jews were killed, positive answers to trust question reflect within-group trust inside the Pale.

There is, unfortunately, no question on attitudes towards representatives of other ethnic groups which would have allowed disentangling bonding from bridging trust directly. The LiTS questionnaire does contain the question about membership in voluntary civic organizations (similar to questions used as proxies for bridging social capital in Knack and Keefer 1997, Glaeser et al. 2002 and Beugelsdijk and Smulders 2009).[37] The number of respondents who are members of voluntary civic organizations, however, turns out to be too small for proper econometric inference. In our baseline sample (e.g., urban and metropolitan settlements in Latvia, Ukraine, and Western Russia) there are only 59 members of voluntary civic organizations among 1839 respondents who answered this question. 50 of these 59 live outside the Pale. Thus, inside the Pale 1.45% of respondents are members of civic organizations compared to 4.10% outside the Pale. Membership in civic organizations is also significantly lower inside the Pale in OLS regressions with all controls; but the number of observations with positive responses close to the Pale border on either side is insufficient for regression discontinuity analysis. This suggestive evidence is consistent with our interpretation of the fact that residents of urban areas inside the Pale have more trust compared to those outside the

[36] For a discussion of different definitions of social capital see Durlauf and Fafchamps (2005) and Guiso et al. (2010).
[37] The exact formulation of the question is: "Are you a member of other [than political parties] civic/voluntary organization (club, association)?"

Pale as an expression of higher bonding (rather than bridging) social capital within the Pale. Furthermore, the fact that we do not find a positive effect of the Pale on average consumption or other economic outcomes, despite higher trust in the Pale, is also consistent with the conjecture that the observed higher trust in the Pale is bonding in nature as strong within-group ties are not as productive as weak between-group ties (Granovetter 1973, 2005). In addition, as generalized trust is usually positively correlated with trust in institutions, we checked and found no statistical association between the Pale, on the one hand, and the survey responses about trust in various institutions such as the banking sector, foreign investors, government, parliament, courts, or political parties, on the other hand.[38] Future research is needed to provide more systematic evidence on the mechanism of the effect.[39]

An important question arises, which is necessary for understanding the mechanism. How one can reconcile two seemingly contradictory facts: on the one hand, in the eyes of the non-Jewish population in the Pale the Jews were seen as promoters of capitalism and market culture; on the other hand, they played a major role in the revolutionary movements of the 20th century? First, it is clear that only a small part of the Jewish population was involved in the revolutionary movement; the biggest part remained attached to the religious tradition. As far as the minority attracted by communism is concerned, historians (e.g., Slezkine 2004, Schatz 1991, Gerrits 2009) often point out that Jews (just as other discriminated ethnic minorities) were attracted to the revolutionary movement because it promised them universalism, justice, liberation and, in particular, equality of ethnic groups. In addition, the communist movement offered, especially to younger Jews, an opportunity to escape from the highly restrictive religious traditions of closed shtetl communities and parental authority.

[38] For the relationship between generalized trust and trust in institutions, see for instance, La Porta et al. (1997) and Aghion et al. (2009).

[39] Even though the persistence of higher (bonding) trust and of the anti-market culture is related to the previous presence of the Jews, the Holocaust could have further reinforced this effect. First, witnessing the Holocaust did not leave the local population unaffected: assistance to killings, humiliations, murders could have contributed to even stronger anti-Jewish attitudes as a built-in self-justification psychological mechanism. Second, as Gross (2004) suggested, the persistence of anti-Semitism in places where Jews used to live can also be explained by the fear of the non-Jewish population that Jews could come back and reclaim their property.

Therefore, there is no contradiction between the pro-market culture present in the big part of the Jewish population and radical engagement of a relatively small part of it. Moreover, the motivations of the Jews who actively supported radical movements were unrelated to the Bolsheviks' political agenda with regard to market or state ownership.[40] The *main* economic slogan of Bolsheviks' populist political campaign at the time of revolutionary movement was about the redistribution in favor of workers and peasants (i.e., "Factories to workers; land to peasants") rather than about the rejection of markets. Overall, there is not necessarily a contradiction between the common perception of Jews as agents of capitalism and their participation in the revolution.[41]

### *7. Robustness*

Our analysis relies on spatial cross-sectional variation and, as is typical for this kind of analyses, we need to worry about confounding factors that may be correlated with the Pale border.

First, it is important to note that the Polish-Lithuanian Commonwealth (1569-1795), characterized by good institutions such as strict checks on monarchical power and ethnic and religious tolerance (uncommon among Eastern European states at that time) occupied much of the same territories as the Pale. Figure B2 in the online Auxiliary Results Appendix shows the borders of the Pale and of the Polish-Lithuanian Commonwealth on the same map. As shown on the map, there are two places on the map (in Russia and Ukraine) where the borders almost coincide; however, there are also territories with variation in the Pale both completely inside the Polish-Lithuanian Commonwealth (such as all of Latvia) and completely outside the Polish-Lithuanian Commonwealth (namely, Southern Ukraine). In order to verify that our results are not driven by the omitted Polish-

[40] Other political parties of the beginning of the 20th century that also were promising equality and liberation to the Jews were socialist; and there was no viable pro-market alternative.

[41] Kopstein and Wittenberg (2003) provide systematic evidence that over-representation of Jews in the Communist party at the beginning of the 20th century should not be equated with Jewish mass political support for communist. They show that about 93 percent of Jewish voters supported noncommunist parties in 1922 and 1928 Polish national parliamentary elections and only around 14 percent of the communists' electoral support came from Jews. Later on, during the sovietization of the Pale territories, Jews often suffered just as non-Jewish population from such policies as deportations to Siberia, expropriation, and elimination of local self-governance, i.e., the abolition of Jewish kahal (Gerrits 2009).

Lithuanian Commonwealth border effect, we conduct two exercises: first, we include a dummy for Polish-Lithuanian Commonwealth as an additional control variable; second, we re-estimate all the results separately for Latvia (there are not enough urban PSUs in South Ukraine outside the Polish-Lithuanian Commonwealth to run regressions). In both cases, we find that our results are robust. Table B2 presents results for the sample of three countries with the Polish-Lithuanian Commonwealth dummy as an additional control variable. The results for urban and metropolitan sample are very similar to the baseline presented in Tables 4 both in terms of magnitude and statistical significance. The Polish-Lithuanian Commonwealth dummy, in contrast, is rarely significant. Table B3 in the appendix presents results for Latvia only. As there is not enough variation in distance to PSUs in Latvia to estimate controlled function RD regression, we run simple OLS and reduced sample regressions (for PSUs 70 and 35 km from the border, as all urban and metropolitan PSUs in Latvia are at most 140 kilometers from the border and therefore simple OLS and sample 140 coincide). We also adopt a more parsimonious set of controls for Latvia excluding geographical controls as there is little variation in them. As shown in the Table, the results are robust for all outcomes with the exception of self-employment. Overall, we conclude that it is unlikely that our results are driven by the Polish-Lithuanian Commonwealth.[42]

Our baseline set of controls includes elevation (because PSUs inside the Pale are significantly higher than outside the Pale, although the magnitude of the difference is not substantial, namely, 82 meters) and longitude (because the West is generally more pro-market than the East). But we also verified that none of the other geographical variables affect our results. In particular, the inclusion of latitude, temperature, evaporation, and precipitation, which may proxy for the quality of the land, does not affect our results or add explanatory power to our regressions.

In addition, we conducted two kinds of placebo experiments. First, we hypothetically shifted the border of the Pale and estimated RD at the "shifted border." In particular, we defined the set of

[42] It is worth noting that it would be hard to reconcile the "anti-market culture" effects that we found with the Polish-Lithuanian Commonwealth (PLC). A priori, only the trust result may have been driven by PLC. Yet, our robustness exercises show that trust is significantly related to the Pale even when one keeps PLC constant.

placebo pale dummies, which equal to one when the distance to the true pale border is 225, 200, 150, 100, 50, -50, -75, -100, -150, and -225 kilometers. The negative values indicate distances to the Pale border for PSUs outside the Pale. The thresholds were chosen in a way that sufficient number of PSUs switched their position in each of the "placebo Pales" compared to the actual Pale and to the other "placebo Pales." For these placebo Pale dummies, we re-estimated our regressions. The first column of Table B4 in the online Auxiliary Results Appendix summarizes the results. Overall, only in one third of regressions the coefficient at the placebo Pale dummy was of the same sign as our main results. In 8.3 percent of placebo regressions coefficients on the "placebo Pale" dummies are significant at the 10percent level and has the same sign as benchmark. In 3.3 percent of placebo regressions, we found coefficient at placebo Pale dummy significant at the 5 percent level, and in 1.7 percent - significant at the 1 percent level. As we rely on cross-sectional geographical variation and all settlements are different and located at some non-trivial distance from each other, it is not surprising that we find some statistically significant results in placebo regressions; yet, their number with the predicted sign is sufficiently small for us to conclude that it is highly unlikely that our results are a random realization.

Second, our baseline regressions control for longitude linearly. Yet, one could argue that this is a too restrictive functional form. In order to find out whether longitude could have driven our results (in case we did not control for it flexibly enough) we conduct an additional placebo experiment, in which instead of the effect of Pale dummy we estimate an effect of having longitude below 30, 32, 34, 36, and 38. The results are presented in the second column of Table B4. Again in the majority of placebo regressions, the coefficient at the placebo treatment has the opposite sign compared to baseline regressions. We find the significant at (at least) 5% level effect of meridians with the same sign as baseline in 10% of placebo regressions and at 1% level in 3.3% of placebo regressions.

The two placebo exercises suggest that our standard errors might be biased downwards. However, this bias can not be large enough to drive our highly significant baseline results.

## *8. Conclusions*

Current residents of the Pale (if compared to their counterparts outside the Pale) vote less for pro-market liberal political parties and more for socialist anti-market parties, have lower support for market and democracy, are less engaged in entrepreneurship, but exhibit higher levels of trust. At the same time, the Pale has no lasting effects on average consumption, income, or education levels. These effects are related to the former presence of Jews rather than the inflow of new migrant population into the formerly-Jewish areas. During several centuries of Jewish presence in Eastern Europe, the non-Jewish population, that lived side-by-side with Jews, developed a particular anti-market culture and within group loyalty, both fueled by ethnic animosity. This culture persisted despite the disappearance of the group that was central to its formation. The Pale of Settlement and the Holocaust have tangible consequences for political and social development of Eastern Europe today.

Broader implications emerge from our analysis. Attitudes and beliefs formed in a distant past by a series of historical accidents can persist in the long run and may have an important effect on political choices many decades later. Our interpretation of the presented evidence also suggests that the co-existence of hostile ethnic or religious groups in close proximity not only has an effect on attitudes of the representatives of these groups about each other, but also can affect the group identity and self-perception of group representatives. In particular, one group may define itself in opposition to a rival, especially when the rival has easily observed special inalienable characteristics. Furthermore, social interaction within group changes in the presence of a rival group, as group members develop within-group loyalty.

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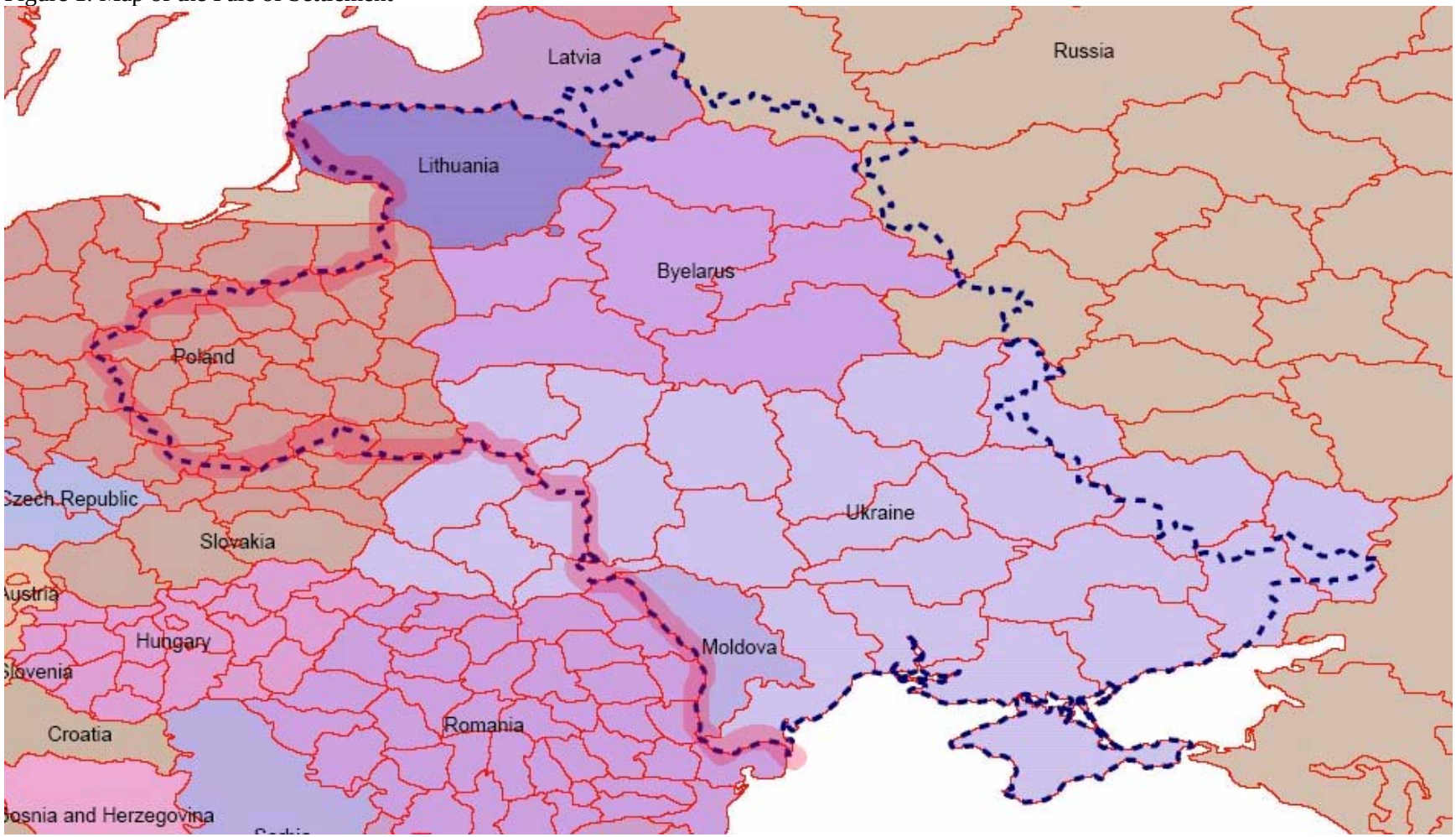
Figure 1. Map of the Pale of Settlement




Note: Thin dashed line represents the border of the Pale of Settlement; thick opaque line portrays the Western land border of the Russian Empire. Red thin solid lines present contemporary administrative divisions within countries.

Figure 2. Outcomes: Discontinuity at the Pale border.

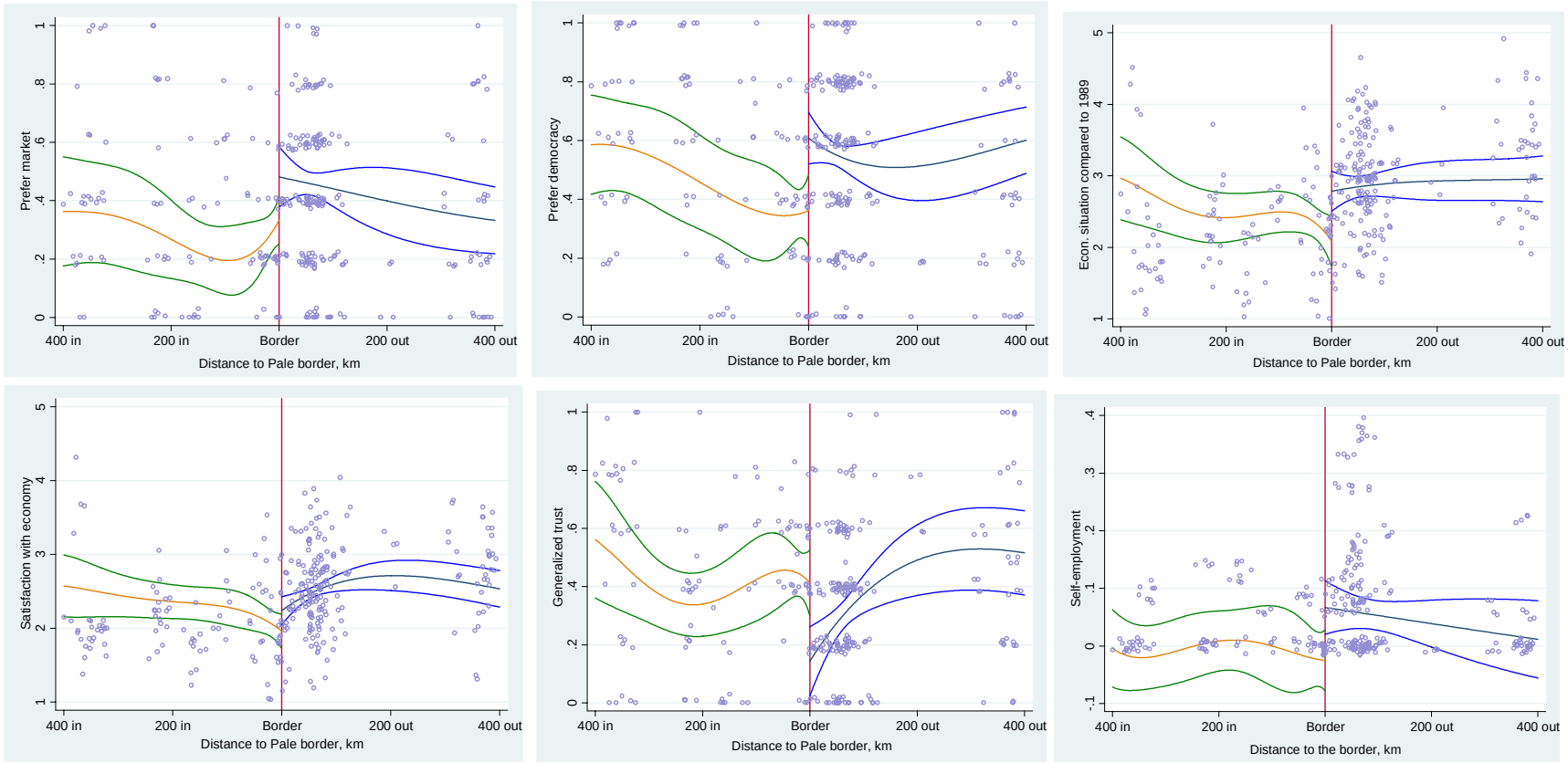


Figure 3. Percent of Jews in 1987 at both sides of the Pale border

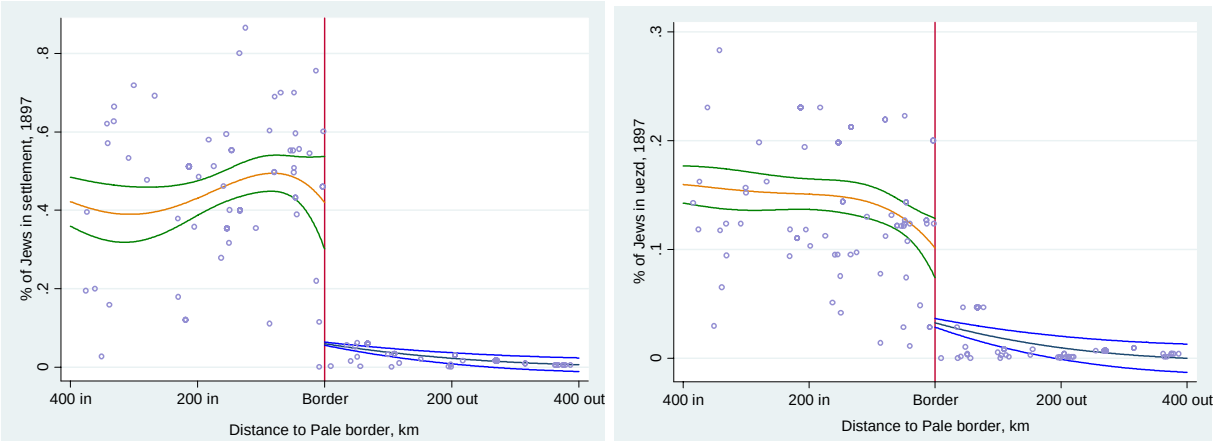
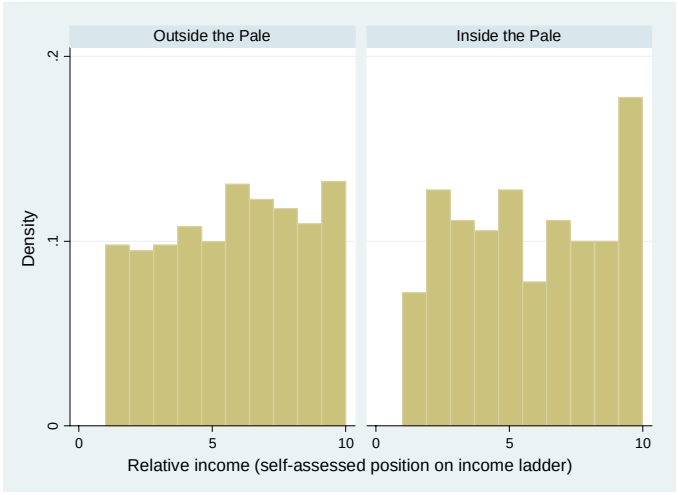
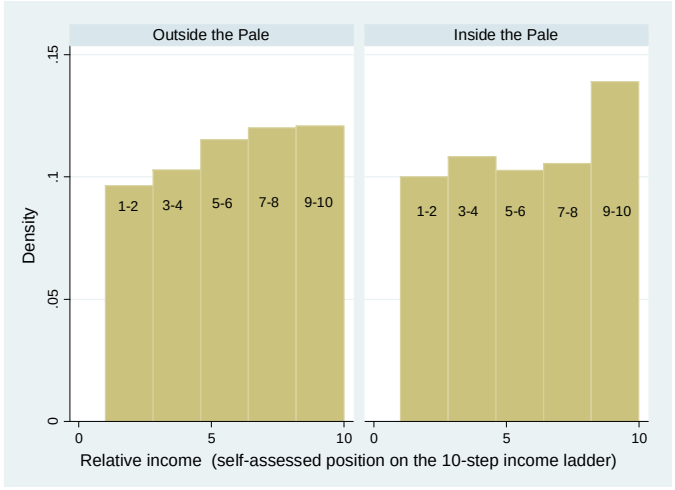
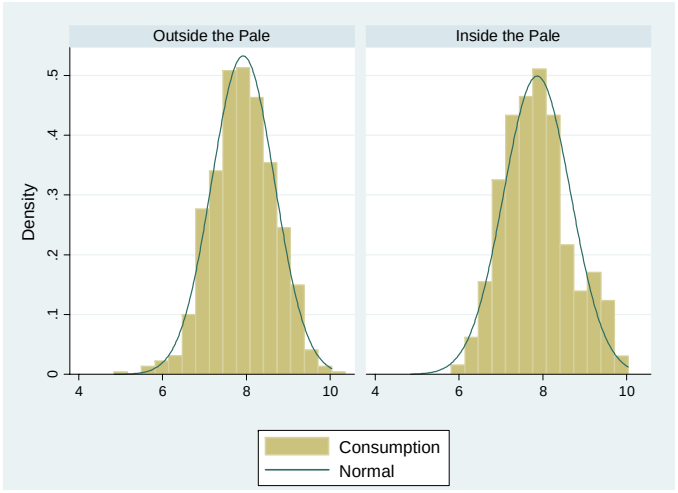


Figure 4. Missing middle class. Relative income (10-step ladder) and consumption of residents of LiTS PSUs in Latvia, Russia, and Ukraine situated no more than 100 kilometers from the Pale border.



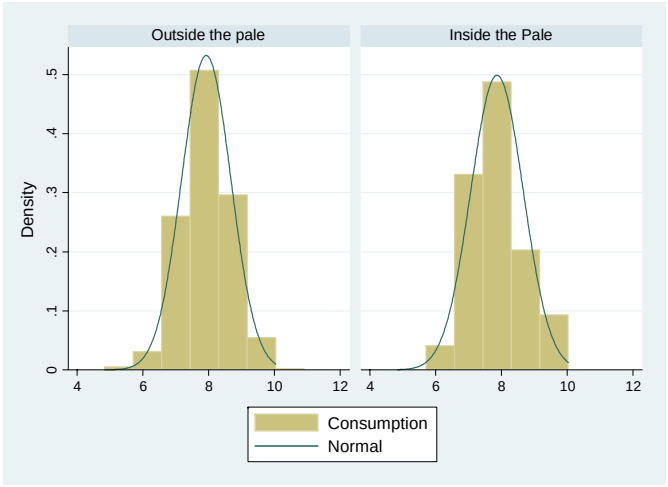



Table 1. Jews in the Pale of Settlement (1897 Census)

| | | Total | | Urban | |
|---|---|---|---|---|---|
| | | Number of Jewish residents | % of total population | Number of Jewish residents in urban areas | % of urban population |
| **The Pale of Settlement** | | **4 483 300** | **11.3%** | **2 083 668** | **37.0%** |
| including provinces: | | | | | |
| 1 | Bessarabiya | 228 168 | 11.8% | 109 065 | 37.2% |
| 2 | Vilenskaya | 202 374 | 12.7% | 85 250 | 43.1% |
| 3 | Vitebskaya | 174 240 | 11.7% | 112 480 | 52.1% |
| 4 | Volynskaya | 394 774 | 13.2% | 118 727 | 50.8% |
| 5 | Grodnenskaya | 278 542 | 17.4% | 146 907 | 57.7% |
| 6 | Ekaterinoslavskaya | 99 152 | 4.7% | 62 602 | 26.0% |
| 7 | Kievskaya | 430 489 | 12.1% | 142 222 | 31.0% |
| 8 | Kovenskaya | 212 028 | 13.7% | 61 694 | 43.1% |
| 9 | Minskaya | 343 466 | 16.0% | 132 278 | 58.8% |
| 10 | Moghilevskaya | 203 507 | 12.1% | 77 082 | 52.4% |
| 11 | Podoliya | 369 306 | 12.2% | 102 204 | 46.1% |
| 12 | Poltavskaya | 110 855 | 4.0% | 80 994 | 29.5% |
| 13 | Taurida | 55 418 | 3.8% | 34 248 | 11.8% |
| 14 | Chernigovskaya | 113 787 | 5.0% | 54 401 | 26.0% |
| 15 | Congress of Poland | 1 267 194 | 13.5% | 763 514 | 34.3% |

Source: Census 1897.

Table 2. Percentage of Jewish population in and outside the Pale in provinces adjacent to the border of the Pale (1897 Census)

| | Outside the Pale | | | Inside the Pale | | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Mean | Min | Max |
| % of Jewish population in provinces | 0.68 | 0.17 | 1.83 | 7.48 | 3.97 | 12.06 |
| % of Jewish population in uezds (sub-province administrative units) | 0.47 | 0.00 | 4.67 | 6.80 | 0.89 | 22.28 |
| % of Jewish population in cenral uezds of each province | 1.83 | 0.01 | 4.67 | 13.98 | 5.10 | 22.28 |
| % of Jews in provincial urban population | 4.12 | 1.42 | 6.44 | 37.15 | 25.97 | 52.37 |
| | (7 provinces, 76 uezds) | | | (5 provinces, 60 uezds) | | |

Note: Provinces outside the Pale and adjacent to the border: Donskaya, Kharkovskaya, Kurskaya, Livliandskaya, Orovskaya, Pskovskaya, and Smolenskaya. Provinces inside the Pale and adjacent to the border: Chernigovskaya, Ekaterinoslavskaya, Mogilevskaya, Poltavskaya, and Vitebskaya. We exclude Courland province, where Jews had special status and were allowed to reside despite being outside the Pale. (Jews constituted 5.6% of the total Courland's population.)

Table 3. Election results. OLS.

| | Percent of vote for communist and socialist parties in a district | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contries in the sample | All countries | All countries | All countries | Latvia | Latvia | Latvia | Russia | Russia | Russia | Ukraine | Ukraine | Ukraine |
| In Pale | 4.219** | 4.675*** | 5.111*** | 12.297** | 11.916*** | 11.823** | 5.251** | 5.837*** | 6.572*** | 2.165 | 3.271 | 3.315 |
| | [1.805] | [1.612] | [1.564] | [5.007] | [4.363] | [4.690] | [2.554] | [2.208] | [2.169] | [2.676] | [2.509] | [2.860] |
| On the border | 3.827*** | 4.563*** | 4.704*** | 2.407 | 4.276* | 4.285* | 3.797** | 4.530*** | 4.663*** | 4.216 | 2.942 | 3.483 |
| | [1.245] | [1.159] | [1.141] | [2.650] | [2.146] | [2.210] | [1.489] | [1.339] | [1.304] | [2.602] | [2.549] | [2.559] |
| Town | | 3.137 | 3.142 | | 8.247** | 8.523** | | 1.519 | 1.473 | | -4.294* | -4.272* |
| | | [2.143] | [2.160] | | [3.196] | [3.194] | | [2.475] | [2.472] | | [2.393] | [2.455] |
| Regional center | | 5.609 | | | 1.026 | | | 7.442 | | | -5.897*** | |
| | | [5.487] | | | [2.971] | | | [8.372] | | | [1.575] | |
| Election & regional dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 615 | 615 | 596 | 90 | 90 | 83 | 360 | 360 | 348 | 165 | 165 | 125 |
| R-squared | 0.685 | 0.697 | 0.716 | 0.670 | 0.725 | 0.707 | 0.600 | 0.616 | 0.661 | 0.717 | 0.737 | 0.711 |
| Regional center excluded | No | No | Yes | No | No | Yes | No | No | Yes | No | No | Yes |
| Regions with variation | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

| | Percent of vote for market-reform parties in a district | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contries in the sample | All countries | All countries | All countries | Latvia | Latvia | Latvia | Russia | Russia | Russia | Ukraine | Ukraine | Ukraine |
| In Pale | -0.796 | -0.437 | -0.219 | -6.453** | -6.325*** | -6.670*** | -1.485* | -0.564 | -0.612* | 0.915 | 0.743 | 2.089 |
| | [0.872] | [0.791] | [0.752] | [2.426] | [2.314] | [2.461] | [0.822] | [0.438] | [0.367] | [2.212] | [2.331] | [2.568] |
| On the border | -1.844** | -1.317* | -1.324* | -0.535 | -1.449 | -1.599 | -2.245*** | -0.992** | -1.154*** | -1.470 | -1.278 | -0.613 |
| | [0.758] | [0.745] | [0.725] | [1.322] | [1.226] | [1.207] | [0.556] | [0.455] | [0.420] | [2.347] | [2.274] | [2.196] |
| Town | | 1.802** | 1.575** | | -2.997 | -3.331 | | 3.074*** | 3.073*** | | 1.652 | 1.105 |
| | | [0.770] | [0.797] | | [2.046] | [2.005] | | [0.686] | [0.699] | | [1.994] | [2.060] |
| Regional center | | 5.360 | | | -3.043 | | | 10.980** | | | 0.864 | |
| | | [4.621] | | | [2.011] | | | [4.934] | | | [1.743] | |
| Election & regional dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 615 | 615 | 596 | 90 | 90 | 83 | 360 | 360 | 348 | 165 | 165 | 125 |
| R-squared | 0.785 | 0.794 | 0.827 | 0.702 | 0.731 | 0.722 | 0.149 | 0.424 | 0.393 | 0.693 | 0.694 | 0.704 |
| Regional center excluded | No | No | Yes | No | No | Yes | No | No | Yes | No | No | Yes |
| Regions with variation | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Note: Robust standard errors in parentheses clustered by electoral district. *** p<0.01, ** p<0.05, * p<0.1. The three countries included in 'All countries' are Latvia, Russia and Ukraine.

Table 4. The Pale and contemporary attitudes in urban and metropolitan areas. Sample: Urban and metropolitan PSUs in Latvia, Ukraine, and Russia

| | Urban and metropolitan settlements | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Prefer market to planed economy | | | | | Prefer democracy to autocratic regime | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | -0.158 | -0.159 | -0.203 | -0.147 | -0.159 | -0.15 | -0.171 | -0.246 | -0.229 | -0.206 |
| | [0.051]*** | [0.055]*** | [0.058]*** | [0.045]*** | [0.054]*** | [0.062]** | [0.066]** | [0.066]*** | [0.042]*** | [0.082]** |
| Observations | 1833 | 996 | 837 | 217 | 1833 | 1832 | 996 | 837 | 217 | 1832 |
| R-squared | 0.11 | 0.11 | 0.11 | 0.15 | 0.12 | 0.08 | 0.09 | 0.1 | 0.12 | 0.11 |
| PSUs in Pale | 31 | 11 | 9 | 6 | 31 | 31 | 11 | 9 | 6 | 31 |
| PSUs outside Pale | 61 | 39 | 33 | 5 | 61 | 61 | 39 | 33 | 5 | 61 |
| | Economic situation better in 2006 than in 1989 | | | | | Satisfaction with present state of economy | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | -0.406 | -0.444 | -0.349 | -0.427 | -0.587 | -0.223 | -0.363 | -0.348 | -0.311 | -0.355 |
| | [0.173]** | [0.167]** | [0.240] | [0.151]** | [0.230]** | [0.107]** | [0.103]*** | [0.131]** | [0.159]* | [0.135]*** |
| Observations | 1646 | 908 | 759 | 205 | 1646 | 1741 | 955 | 804 | 209 | 1741 |
| R-squared | 0.19 | 0.2 | 0.22 | 0.16 | 0.21 | 0.11 | 0.11 | 0.12 | 0.17 | 0.13 |
| PSUs in Pale | 31 | 11 | 9 | 6 | 31 | 31 | 11 | 9 | 6 | 31 |
| PSUs outside Pale | 61 | 39 | 33 | 5 | 61 | 61 | 39 | 33 | 5 | 61 |
| | Self-employment | | | | | Trust | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | -0.065 | -0.087 | -0.133 | -0.039 | -0.101 | 0.163 | 0.197 | 0.215 | 0.158 | 0.248 |
| | [0.033]* | [0.051]* | [0.070]* | [0.030] | [0.041]** | [0.043]*** | [0.058]*** | [0.059]*** | [0.060]** | [0.075]*** |
| Observations | 1057 | 572 | 486 | 131 | 1057 | 1803 | 988 | 829 | 213 | 1803 |
| R-squared | 0.04 | 0.06 | 0.06 | 0.05 | 0.06 | 0.03 | 0.06 | 0.05 | 0.1 | 0.05 |
| PSUs in Pale | 31 | 11 | 9 | 6 | 31 | 31 | 11 | 9 | 6 | 31 |
| PSUs outside Pale | 61 | 39 | 33 | 5 | 61 | 61 | 39 | 33 | 5 | 61 |

Note: For each dependent variable we present five regressions: OLS, three reduced sample regressions with the distance to the border of the Pale below 140, 70 and 35 km, and RD regression, which includes two polynomials of distance on both sides of the border in the list of covariates. List of controls includes country dummies, metropolitan area dummy, religious fractionalization, Western Ukraine dummy (in OLS and RD regression), longitude, elevation, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. In sample 35, we exclude longitude from the list of covariates. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 5. The Pale and contemporary attitudes in rural areas. Sample: Rural PSUs in Latvia, Ukraine, Russia

| | Rural settlements | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Prefer market to planed economy | | | | | Prefer democracy to autocratic regime | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | 0.105 | 0.164 | 0.143 | -0.01 | 0.133 | 0.171 | 0.293 | 0.266 | 0.301 | 0.304 |
| | [0.078] | [0.069]** | [0.073]* | [0.108] | [0.120] | [0.082]** | [0.072]*** | [0.078]*** | [0.117]** | [0.100]*** |
| Observations | 858 | 419 | 339 | 160 | 858 | 858 | 419 | 339 | 160 | 858 |
| R-squared | 0.09 | 0.08 | 0.1 | 0.2 | 0.12 | 0.08 | 0.08 | 0.09 | 0.11 | 0.15 |
| PSUs in Pale | 15 | 5 | 5 | 3 | 15 | 15 | 5 | 5 | 3 | 15 |
| PSUs outside Pale | 28 | 16 | 12 | 5 | 28 | 28 | 16 | 12 | 5 | 28 |
| | Economic situation better in 2006 than in 1989 | | | | | Satisfaction with present state of economy | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | -0.182 | -0.08 | -0.223 | -0.004 | -0.277 | -0.136 | -0.148 | -0.169 | -0.059 | -0.069 |
| | [0.281] | [0.241] | [0.207] | [0.320] | [0.249] | [0.281] | [0.232] | [0.253] | [0.167] | [0.241] |
| Observations | 804 | 396 | 318 | 152 | 804 | 823 | 411 | 331 | 159 | 823 |
| R-squared | 0.18 | 0.13 | 0.17 | 0.14 | 0.22 | 0.14 | 0.05 | 0.07 | 0.15 | 0.18 |
| PSUs in Pale | 15 | 5 | 5 | 3 | 15 | 15 | 5 | 5 | 3 | 15 |
| PSUs outside Pale | 28 | 16 | 12 | 5 | 28 | 28 | 16 | 12 | 5 | 28 |
| | Self-employment | | | | | Trust | | | | |
| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
| In Pale | 0.014 | 0.027 | -0.002 | 0.162 | 0.017 | 0.018 | 0.066 | 0.05 | 0.019 | 0.058 |
| | [0.025] | [0.061] | [0.068] | [0.152] | [0.072] | [0.106] | [0.119] | [0.138] | [0.202] | [0.141] |
| Observations | 421 | 208 | 167 | 79 | 421 | 842 | 414 | 334 | 156 | 842 |
| R-squared | 0.09 | 0.18 | 0.21 | 0.28 | 0.11 | 0.06 | 0.09 | 0.07 | 0.2 | 0.08 |
| PSUs in Pale | 15 | 5 | 5 | 3 | 15 | 15 | 5 | 5 | 3 | 15 |
| PSUs outside Pale | 28 | 16 | 12 | 5 | 28 | 28 | 16 | 12 | 5 | 28 |

Note: For each dependent variable we present five regressions: OLS, three reduced sample regressions with the distance to the border of the Pale below 140, 70 and 35 km, and RD regression, which includes two polynomials of distance on both sides of the border in the list of covariates. List of controls includes country dummies, metropolitan area dummy, religious fractionalization, Western Ukraine dummy (in OLS and RD regression), longitude, elevation, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. In sample 35, we exclude longitude from the list of covariates. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. The Pale and contemporary attitudes, no controls included. Sample: urban and metropolitan PSUs in Latvia, Ukraine, and Russia.

| | Urban and metropolitan settlements | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Prefer market | | | Prefer democracy | | | Econ. situation compared to 1989 | | |
| | sample 70 | sample 35 | RD regression | sample 70 | sample 35 | RD regression | sample 70 | sample 35 | RD regression |
| In Pale | -0.153 | -0.197 | -0.178 | -0.183 | -0.242 | -0.208 | -0.74 | -0.481 | -0.787 |
| | [0.049]*** | [0.060]*** | [0.057]*** | [0.057]*** | [0.062]*** | [0.092]** | [0.204]*** | [0.221]* | [0.191]*** |
| Observations | 840 | 220 | 1839 | 840 | 220 | 1838 | 762 | 208 | 1652 |
| R-squared | 0.02 | 0.04 | 0.03 | 0.02 | 0.06 | 0.04 | 0.06 | 0.04 | 0.11 |
| PSUs in Pale | 9 | 6 | 31 | 9 | 6 | 31 | 9 | 6 | 31 |
| PSUs outside Pale | 33 | 5 | 61 | 33 | 5 | 61 | 33 | 5 | 61 |

| | Satisfaction with economy | | | Self-employment | | | Trust | | |
|---|---|---|---|---|---|---|---|---|---|
| | sample 70 | sample 35 | RD regression | sample 70 | sample 35 | RD regression | sample 79 | sample 35 | RD regression |
| In Pale | -0.423 | -0.29 | -0.41 | -0.056 | -0.027 | -0.077 | 0.15 | 0.2 | 0.209 |
| | [0.154]*** | [0.208] | [0.170]** | [0.023]** | [0.023] | [0.032]** | [0.040]*** | [0.075]** | [0.075]*** |
| Observations | 807 | 212 | 1746 | 487 | 132 | 1060 | 832 | 216 | 1809 |
| R-squared | 0.02 | 0.02 | 0.07 | 0.01 | 0.01 | 0.03 | 0.02 | 0.04 | 0.02 |
| PSUs in Pale | 9 | 6 | 31 | 9 | 6 | 31 | 9 | 6 | 31 |
| PSUs outside Pale | 33 | 5 | 61 | 33 | 5 | 61 | 33 | 5 | 61 |

Note: For each dependent variable we present two reduced sample regressions with the distance to the border of the Pale below 70 and 35 km, and RD regression, which includes two polynomials of distance on both sides of the border in the list of covariates. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. The Pale and the percentage of Jewish population in the Russian Empire. The first stage.

| | PSU-level regressions | | | Individual-level regressions, clusters by PSU (the first stage) | | |
|---|---|---|---|---|---|---|
| Type of PSUs: | Urban and metropolitan | | Rural | Urban and metropolitan | | Rural |
| Dependent variable: | % of Jews in uezd, 1897 | % of Jews in settlement, 1897 | % of Jews in uezd, 1897 | % of Jews in uezd, 1897 | % of Jews in settlement, 1897 | % of Jews in uezd, 1897 |
| In Pale | 0.08 | 0.276 | 0.067 | 0.082 | 0.276 | 0.079 |
| | [0.012]*** | [0.037]*** | [0.017]*** | [0.016]*** | [0.028]*** | [0.025]*** |
| Observations | 92 | 80 | 43 | 1834 | 1594 | 858 |
| R-squared | 46.4 | 56.58 | 15.75 | 0.62 | 0.75 | 0.57 |
| Controls | No | No | No | All | All | All |
| F-stat | 46.4 | 56.58 | 15.75 | 27.24 | 98.26 | 10.01 |
| PSUs in Pale | 31 | 28 | 15 | 31 | 28 | 15 |
| PSUs outside Pale | 61 | 52 | 28 | 61 | 52 | 28 |

Note: Countries in the sample: Latvia, Ukraine, and Russia.
The first three regressions present PSU-level regressions without controls. The last three regressions present individual-level regressions with standards errors adjusted for clusters within PSUs. The list of controls in individual-level regressions includes country dummies, metropolitan area dummy, religious fractionalization, Western Ukraine dummy, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. *** p<0.01, ** p<0.05, * p<0.1. Robust SEs in brackets.

Table 8. The Pale and the percentage of Jewish population in the Russian Empire. The second stage.

| | IV, the second stage, urban and metropolitan PSUs | | | | | |
|---|---|---|---|---|---|---|
| | Prefer market | | Prefer democracy | | Econ. situation compared to 1989 | |
| % of Jews in uezd, 1897 | -1.989 | | -1.921 | | -5.044 | |
| | [0.743]*** | | [0.863]** | | [1.935]** | |
| % of Jews in settlement, 1897 | | -0.662 | | -0.67 | | -1.54 |
| | | [0.170]*** | | [0.215]*** | | [0.699]** |
| Observations | 1833 | 1593 | 1832 | 1592 | 1646 | 1429 |
| R-squared | 0.08 | 0.1 | 0.05 | 0.07 | 0.16 | 0.16 |
| PSUs in Pale | 31 | 28 | 31 | 28 | 31 | 28 |
| PSUs outside Pale | 61 | 52 | 61 | 52 | 61 | 52 |
| | Satisfaction with economy | | Self-employment | | Trust | |
| % of Jews in uezd, 1897 | -2.699 | | -0.76 | | 1.999 | |
| | [1.325]** | | [0.407]* | | [0.660]*** | |
| % of Jews in settlement, 1897 | | -0.963 | | -0.246 | | 0.593 |
| | | [0.475]** | | [0.128]* | | [0.168]*** |
| Observations | 1741 | 1514 | 1057 | 932 | 1803 | 1564 |
| R-squared | 0.1 | 0.1 | 0.02 | 0.01 | | 0.04 |
| PSUs in Pale | 31 | 28 | 31 | 28 | 31 | 28 |
| PSUs outside Pale | 61 | 52 | 61 | 52 | 61 | 52 |

| | IV, the second stage, rural PSUs | | | | | |
|---|---|---|---|---|---|---|
| | Prefer market | Prefer democracy | Ec. Sit. to 1989 | Satisf. w/ economy | Self-empl | Trust |
| % of Jews in uezd, 1897 | 1.338 | 2.175 | -2.313 | -1.664 | 0.108 | 0.221 |
| | [0.983] | [1.107]* | [3.653] | [3.297] | [0.385] | [1.328] |
| Observations | 858 | 858 | 804 | 823 | 421 | 842 |
| R-squared | 0.09 | 0.07 | 0.17 | 0.14 | 0.09 | 0.06 |
| PSUs in Pale | 15 | 15 | 15 | 15 | 15 | 15 |
| PSUs outside Pale | 28 | 28 | 28 | 28 | 28 | 28 |

Note: Countries in the sample: Latvia, Ukraine, and Russia. % of Jews in 1897 is instrumented by "in Pale" dummy. List of controls includes country dummies, religious fractionalization, Western Ukraine dummy, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 9. Channels, the first stage

| | All PSUs (including rural) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Change in ethnic composition: | | | | | | | | | |
| | among Gentile groups | | | Jews vs. Gentiles | | | among Gentile groups | | Jews vs. Gentiles | |
| | PSU level regressions | | | | | | Individual level regressions; PSU clusters | | | |
| Moved country | 0,181 | | 0,182 | 0,047 | | 0,033 | 0,182 | 0,122 | 0,033 | 0,021 |
| | [0.029]*** | | [0.029]*** | [0.010]*** | | [0.007]*** | [0.029]*** | [0.026]*** | [0.007]*** | [0.007]*** |
| In Pale | | 0,01 | -0,005 | | 0,106 | 0,103 | -0,005 | 0,095 | 0,103 | 0,077 |
| | | [0.019] | [0.017] | | [0.005]*** | [0.005]*** | [0.017] | [0.025]*** | [0.005]*** | [0.012]*** |
| Controls | No | No | No | No | No | No | No | All | No | All |
| Observations | 291 | 291 | 291 | 291 | 291 | 291 | 5820 | 5806 | 5820 | 5806 |
| R-squared | 0,19 | 0,00 | 0,19 | 0,07 | 0,56 | 0,59 | 0,19 | 0,5 | 0,59 | 0,71 |
| F (Moved country) | 40,17 | | 40,22 | 20,67 | | 23,08 | 40,48 | 21,84 | 23,23 | 10,1 |
| F (Pale) | | 0,29 | 0,09 | | 423,72 | 387,36 | 0,09 | 15 | 389,92 | 43,78 |
| F (Both) | | | 20,17 | | | 342,49 | 20,31 | 18,39 | 344,75 | 27,91 |

| | Urban and metropolitan settlements | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Change in ethnic composition: | | | | | | | | | |
| | among Gentile groups | | | Jews vs. Gentiles | | | among Gentile groups | | Jews vs. Gentiles | |
| | PSU level regressions | | | | | | Individual level regressions; PSU clusters | | | |
| Moved country | 0,201 | | 0,199 | 0,056 | | 0,033 | 0,199 | 0,107 | 0,033 | 0,027 |
| | [0.034]*** | | [0.034]*** | [0.012]*** | | [0.008]*** | [0.034]*** | [0.030]*** | [0.008]*** | [0.008]*** |
| In Pale | | 0,036 | 0,01 | | 0,112 | 0,108 | 0,01 | 0,103 | 0,108 | 0,08 |
| | | [0.024] | [0.021] | | [0.006]*** | [0.007]*** | [0.021] | [0.032]*** | [0.007]*** | [0.014]*** |
| Controls | No | No | No | No | No | No | No | All | No | All |
| Observations | 193 | 193 | 193 | 193 | 193 | 193 | 3860 | 3848 | 3860 | 3848 |
| R-squared | 0,24 | 0,01 | 0,24 | 0,09 | 0,59 | 0,63 | 0,24 | 0,57 | 0,63 | 0,74 |
| F (Moved country) | 35,24 | | 33,54 | 20,91 | | 16,12 | 33,87 | 12,5 | 16,28 | 11,52 |
| F (Pale) | | 2,29 | 0,21 | | 323,44 | 268,55 | 0,21 | 10,08 | 271,24 | 35,25 |
| F (Both) | | | 17,45 | | | 266,38 | 17,63 | 10,61 | 269,05 | 24,44 |

Note: Moved country is the dummy that equals 1 for all PSUs in Polish Western Territories, Second Polish Republic outside Poland, the region of Konigsberg and Kaunas. The sample includes countries with variation in at least one of the two instruments: Belarus, Latvia, Lithuania, Poland, Ukraine, and Russia (if we include Estonia and Moldova with no variation in instruments, the results are the same). We include Russian Empire in the list of control variables as now we include in the sample parts of Poland, Lithuania and Russia outside the Russian Empire. The list of other controls includes country dummies, religious fractionalization, Western Ukraine dummy, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. Robust standard errors are in brackets, we adjust them for clusters at PSU level in individual-level regressions. *** p<0.01, ** p<0.05, * p<0.1.

Table 10. Channels , the second stage

| IV regressions | All PSUs (including rural settlements) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Prefer market | | | Prefer democracy | | | Econ. situation compared to 1989 | | |
| Change b/w Jews and Gentiles | -1,898 | -1,074 | | -0,772 | -0,47 | | -5,849 | -4,697 | |
| | [1.096]* | [0.587]* | | [1.053] | [0.659] | | [2.463]** | [1.624]*** | |
| Change among Gentile groups | 0,621 | | 0,267 | 0,228 | | 0,084 | 0,898 | | -0,197 |
| | [0.485] | | [0.307] | [0.459] | | [0.326] | [1.023] | | [0.617] |
| Observations | 5799 | 5799 | 5799 | 5799 | 5799 | 5799 | 5179 | 5179 | 5179 |
| R-squared | 0,04 | 0,08 | 0,08 | 0,05 | 0,06 | 0,06 | 0,13 | 0,14 | 0,17 |
| | Satisfaction with the economy | | | Self-employment | | | Trust | | |
| Change b/w Jews and Gentiles | -3,186 | -3,069 | | -1,04 | -0,609 | | 1,504 | 1,4 | |
| | [1.684]* | [1.068]*** | | [0.630]* | [0.298]** | | [0.917] | [0.560]** | |
| Change among Gentile groups | 0,088 | | -0,495 | 0,335 | | 0,091 | -0,077 | | 0,2 |
| | [0.747] | | [0.512] | [0.353] | | [0.226] | [0.407] | | [0.281] |
| Observations | 5533 | 5533 | 5533 | 3020 | 3020 | 3020 | 5691 | 5691 | 5691 |
| R-squared | 0,15 | 0,16 | 0,17 | 0,03 | 0,06 | 0,05 | 0,01 | 0,02 | 0,02 |

| IV regressions | Urban and metropolitan settlements | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Prefer market | | | Prefer democracy | | | Econ. situation compared to 1989 | | |
| Change b/w Jews and Gentiles | -3,074 | -1,746 | | -1,596 | -1,32 | | -6,702 | -4,795 | |
| | [1.731]* | [0.696]** | | [1.516] | [0.773]* | | [3.641]* | [1.866]** | |
| Change among Gentile groups | 0,972 | | 0,137 | 0,202 | | -0,23 | 1,475 | | -0,373 |
| | [0.834] | | [0.387] | [0.770] | | [0.443] | [1.782] | | [0.801] |
| Observations | 3845 | 3845 | 3845 | 3845 | 3845 | 3845 | 3376 | 3376 | 3376 |
| R-squared | 0,09 | 0,07 | 0,09 | 0,05 | 0,05 | 0,06 | 0,13 | 0,16 | 0,18 |
| | Satisfaction with the economy | | | Self-employment | | | Trust | | |
| Change b/w Jews and Gentiles | -2,862 | -2,892 | | -1,876 | -0,634 | | 2,447 | 1,868 | |
| | [2.249] | [1.128]** | | [1.208] | [0.325]* | | [1.337]* | [0.556]*** | |
| Change among Gentile groups | -0,022 | | -0,751 | 0,937 | | 0,34 | -0,42 | | 0,304 |
| | [1.178] | | [0.720] | [0.677] | | [0.282] | [0.681] | | [0.393] |
| Observations | 3662 | 3662 | 3662 | 2140 | 2140 | 2140 | 3767 | 3767 | 3882 |
| R-squared | 0,16 | 0,15 | 0,16 | 0,03 | 0,03 | 0,02 | 0,02 | 0,01 | 0,02 |

Note: The sample includes countries with variation in at least one of the two instruments: Belarus, Latvia, Lithuania, Poland, Ukraine, and Russia (if we include Estonia and Moldova with no variation in instruments, results are the same).The list of controls includes dummy for Russian Empire, country dummies, religious fractionalization, Western Ukraine dummy, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 11. Channels. Election results in the "moved country"

| | Percent of vote for anti-market parties in a district | | | | | |
|---|---|---|---|---|---|---|
| Country sample | Lithuania | Lithuania | Lithuania | Poland | Poland | Poland |
| Moved country | -3.685 | -8.944*** | -10.430*** | -4.168*** | -4.167*** | -4.179*** |
| | [2.300] | [2.523] | [2.689] | [0.899] | [0.900] | [0.905] |
| Moved country border | -3.363 | -2.710 | -3.043 | 0.000 | 0.000 | 0.000 |
| | [2.074] | [1.994] | [2.173] | [0.000] | [0.000] | [0.000] |
| Town | | 0.000 | 0.000 | | -1,11 | 1,088 |
| | | [0.000] | [0.000] | | [1.363] | [1.367] |
| Regional center | | 6.832*** | | | 3.535* | |
| | | [1.574] | | | [1.805] | |
| Election & regional dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 72 | 72 | 39 | 1929 | 1929 | 1917 |
| R-squared | 0.672 | 0.739 | 0.753 | 0.501 | 0,679 | 0,68 |
| Regional center excluded | No | No | Yes | No | No | Yes |
| Regions with variation | Yes | Yes | Yes | Yes | Yes | Yes |
| | Percent of vote for pro-market parties in a district | | | | | |
| Country sample | Lithuania | Lithuania | Lithuania | Poland | Poland | Poland |
| Moved country | 6.038*** | -0.297 | -2.198 | 1.455 | 1.496 | 1.500 |
| | [1.602] | [1.858] | [1.765] | [2.157] | [2.210] | [2.215] |
| Moved country border | 0.594 | 1.380 | 0.955 | 0.000 | 0.000 | 0.000 |
| | [1.167] | [1.074] | [1.135] | [0.000] | [0.000] | [0.000] |
| Town | | 0.000 | 0.000 | | 6.850*** | 6.836*** |
| | | [0.000] | [0.000] | | [1.621] | [1.625] |
| Regional center | | 8.231*** | | | 15.542*** | |
| | | [1.818] | | | [1.964] | |
| Election & regional dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 72 | 72 | 39 | 1929 | 1929 | 1917 |
| R-squared | 0.644 | 0.733 | 0.556 | 0.503 | 0.518 | 0.512 |
| Regional center excluded | No | No | Yes | No | No | Yes |
| Regions with variation | Yes | Yes | Yes | Yes | Yes | Yes |

Note: Moved country is a dummy for the Lithuanian districts belonging to the Second Polish Republic before the Second World War or for the Polish districts in Western Territories today. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

***Online Data Appendix A***

Table A1. Sources of election data

| Country | Source | Website |
|---|---|---|
| Latvia | The Central Election Commission of Latvia | http://www.cvk.lv/ |
| Ukraine | The Ukraine Central Electoral Commission | http://www.cvk.gov.ua/ |
| Russia | The Central Electoral Commission of the Russian Federation | http://www.cikrf.ru/ |
| Lithuania | The Seimas of the Republic of Lithuania | http://www3.lrs.lt/ |
| Poland | The State Electoral Commission of Poland | http://www.pkw.gov.pl/ |

Table A2. Coding of political parties as "liberal, pro-market" vs. "socialist, anti-market"

| Election | Coding | Party name | Short description of ideology |
|---|---|---|---|
| Latvia, 1998 | Pro-market | *People's Party (TP)* | conservative, right-wing, pro-market |
| | Pro-market | *Latvia's Way (LC)* | conservative-liberal, pro-market |
| | Anti-market | *National Harmony Party (TSP)* | left-wing, pro-government intervention |
| Latvia, 2002 | Pro-market | *People's Party (TP)* | conservative, right-wing, pro-market |
| | Pro-market | *Latvia's Way (LC)* | conservative-liberal, pro-market |
| | Anti-market | *For Human Rights in United Latvia* | left-wing, pro-government intervention (union of *National Harmony Party*, *Latvian Socialist Party*, and *Equal Rights*) |
| Latvia, 2006 | Pro-market | *People's Party (TP)* | conservative, right-wing, pro-market |
| | Pro-market | *Latvia's Way (LC)* | conservative-liberal, pro-market |
| | Anti-market | *National Harmony Party (TSP)* | left-wing, pro-government intervention |
| Ukraine, 1998 | Pro-market | *People's Movement of Ukraine (Narodnyi Rukh)* | centre-right, moderately pro-market |
| | Pro-market | *Our Ukraine* | centre-right, pro-market, nationalist |
| | Anti-market | *Communist Party of Ukraine* | left-wing, program: social support of retired, headed by Petr Symonenko |
| | Anti-market | *Socialist Peasant Party of Ukraine* | left-wing, pro-government intervention, effectively merged with *Socialist Party of Ukraine* in 1998 |
| Ukraine, 2002 | Pro-market | *Our Ukraine* | centre-right, pro-market, nationalist |
| | Pro-market | *Yulia Tymoshenko Bloc* | centre-right, moderately pro-market |
| | Anti-market | *Communist Party of Ukraine* | left-wing, program: social support of retired, headed by Petr Symonenko |
| | Anti-market | *Socialist Party of Ukraine* | left-wing, pro-government intervention, headed by Alexander Moroz |
| Ukraine, 2006 | Pro-market | *Our Ukraine* | centre-right, pro-market, nationalist |
| | Pro-market | *Yulia Tymoshenko Bloc* | centre-right, moderately pro-market |
| | Anti-market | *Communist Party of Ukraine* | left-wing, program: social support of retired, headed by Petr Symonenko |
| | Anti-market | *Socialist Party of Ukraine* | left-wing, pro-government intervention, headed by Alexander Moroz |
| Russia, 1995 | Pro-market | *Yabloko* | socially liberal, pro-market |
| | Anti-market | *Communist Party of Russia* | left-wing, pro-government intervention, nationalist |

| | | | |
|---|---|---|---|
| Russia, 1999 | Pro-market | *Yabloko* | socially liberal, pro-market |
| | Pro-market | *Union of Right Forces* | right-wing, economically liberal, pro-market |
| | Anti-market | *Communist Party of Russia* | left-wing, pro-government intervention, nationalist |
| Russia, 2003 | Pro-market | *Yabloko* | socially liberal, pro-market |
| | Pro-market | *Union of Right Forces* | right-wing, economically liberal, pro-market |
| | Anti-market | *Communist Party of Russia* | left-wing, pro-government intervention, nationalist |
| Lithuania, 1996 | Pro-market | *Lithuanian Liberal Union* | conservatively liberal, pro-market |
| | Anti-market | *Lithuanian Democratic Labor Party (LDDP)* | pro-government intervention, emerged out of the *Communist Party of Lithuania*; |
| | Anti-market | *Lithuanian Social Democratic Party (LSDP)* | pro-government intervention, socially-democratic |
| | Anti-market | *Lithuanian Socialist Party* | communist, socialist, pro-government intervention |
| Lithuania, 2000 | Pro-market | *Lithuanian Liberal Union* | conservatively liberal, pro-market |
| | Anti-market | *Algirdas Brazauskas Social-Democratic Coalition* | left-wing, pro-government intervention, headed by former communist |
| Lithuania, 2004 | Pro-market | *Liberal and Centre Union* | liberal, pro-market, formed after merger between *Lithuanian Liberal Union* and *Lithuanian Centre Union* in 2003 |
| | Anti-market | *Algirdas Brazauskas Social-Democratic Coalition* | left-wing, pro-government intervention, headed by former communist |
| Poland, 2001 | Pro-market | *Civic Platform* | centre-right, liberal, pro-market |
| | Pro-market | *Freedom Union* | centre, liberal, pro-market |
| | Anti-market | *Law and Justice* | right-wing, pro-government intervention |
| Poland, 2005 | Pro-market | *Civic Platform* | centre-right, liberal, pro-market |
| | Anti-market | *Law and Justice* | right-wing, pro-government intervention |
| Poland, 2007 | Pro-market | *Civic Platform* | centre-right, liberal, pro-market |
| | Anti-market | *Law and Justice* | right-wing, pro-government intervention |

Table A3. Summary statistics, election data, sample of regions with within-region variation in each country.

| Country | % of total vote | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| Latvia: | | | | | | |
| | Districts inside Pale: | | | | | |
| | Anti-market | 24 | 33.13 | 15.15 | 8.51 | 56.28 |
| | Pro-market | 24 | 23.15 | 10.39 | 4.81 | 43.40 |
| | Districts outside Pale: | | | | | |
| | Anti-market | 66 | 7.17 | 6.13 | 1.24 | 27.35 |
| | Pro-market | 66 | 33.45 | 8.92 | 13.51 | 55.43 |
| | Districts on the border: | | | | | |
| | Anti-market | 12 | 12.13 | 9.23 | 1.90 | 27.35 |
| | Pro-market | 12 | 32.80 | 10.01 | 13.51 | 48.79 |
| Russia: | | | | | | |
| | Districts inside Pale: | | | | | |
| | Anti-market | 45 | 37.14 | 16.52 | 11.19 | 96.61 |
| | Pro-market | 45 | 3.33 | 2.19 | 0.64 | 12.02 |
| | Districts outside Pale: | | | | | |
| | Anti-market | 315 | 25.97 | 11.77 | 0.00 | 80.96 |
| | Pro-market | 315 | 5.07 | 5.25 | 0.00 | 60.89 |
| | Districts on the border: | | | | | |
| | Anti-market | 51 | 30.94 | 10.96 | 14.87 | 54.46 |
| | Pro-market | 51 | 2.91 | 1.36 | 0.91 | 7.09 |
| Ukraine: | | | | | | |
| | Districts inside Pale: | | | | | |
| | Anti-market | 54 | 28.83 | 14.37 | 3.45 | 56.78 |
| | Pro-market | 54 | 7.34 | 11.18 | 2.35 | 69.08 |
| | Districts outside Pale: | | | | | |
| | Anti-market | 131 | 24.65 | 17.33 | 0.99 | 63.35 |
| | Pro-market | 131 | 20.35 | 24.56 | 1.54 | 90.98 |
| | Districts on the border: | | | | | |
| | Anti-market | 55 | 27.86 | 18.86 | 1.85 | 63.35 |
| | Pro-market | 55 | 16.66 | 21.96 | 1.54 | 85.70 |
| Poland: | | | | | | |
| | Districts in-moved country: | | | | | |
| | Anti-market | 630 | 15.35 | 9.66 | 0 | 44.04 |
| | Pro-market | 630 | 25.48 | 15.4 | 0 | 69.6 |
| | Districts out-moved country: | | | | | |
| | Anti-market | 1299 | 19.95 | 13.1 | 0 | 64.79 |
| | Pro-market | 1299 | 24.09 | 13.64 | 0 | 64.73 |
| Lithuania: | | | | | | |
| | Districts in-moved country: | | | | | |
| | Anti-market | 36 | 18.14 | 5.92 | 5.31 | 30.94 |
| | Pro-market | 36 | 13.07 | 10.27 | 0.48 | 30.11 |
| | Districts out-moved country: | | | | | |
| | Anti-market | 36 | 25.15 | 9.15 | 11.37 | 51.95 |
| | Pro-market | 36 | 7.33 | 5.75 | 0.26 | 19.95 |
| | District on the border: | | | | | |
| | Anti-market | 18 | 23.71 | 10.83 | 11.37 | 51.95 |
| | Pro-market | 18 | 7.66 | 5.36 | 0.26 | 17.39 |

Note: Coding of political parties is given in Table A2.

Table A4. Description of variables used in the analysis of the LiTS survey data

| | |
|---|---|
| **Outcomes** | |
| Prefer market | Dummy equals 1 if the respondent prefers a market economy to any other form of economic system. The exact question asked was: "Which of the following statements do you agree with most? a/ A market economy is preferable to any other form of economic system. b/ Under some circumstances, a planned economy may be preferable to a market economy. c/ For people like me, it does not matter whether the economic system is organized as a market economy or as a planned economy." |
| Prefer democracy | Dummy equals 1 if the respondent prefers democracy over autocratic regimes. The exact question asked was: "Which of the following statements do you agree with most? a/ Democracy is preferable to any other form of political system. b/ Under some circumstances, an authoritarian government may be preferable to a democratic one. c/ For people like me, it does not matter whether the a government is democratic or authoritarian." |
| Economic situation today better than around 1989 | Extent to which the respondent agrees that the economic situation in her country is better today than around 1989. The question asked was: "To what extent do you agree with the following statement: The economic situation in this country is better today than around 1989: 1=Strongly disagree, 2=Disagree, 3=Neither disagree nor agree, 4=Agree, 5=Strongly agree." |
| Satisfaction with present state of the economy | Extent to which the respondent is satisfied with the present state of the economy. The question asked was: "To what extent do you agree with the following statement: On the whole, I am satisfied with the present state of the economy: 1=Strongly disagree, 2=Disagree, 3=Neither disagree nor agree, 4=Agree, 5=Strongly agree." |
| Entrepreneur or self-employed | Dummy equals 1 if the respondent moved to self-employment and entrepreneurship before 2006. We only refer to working-age respondents, i.e. respondents with an age between 18 and 60 years for any year. |
| Trust | Dummy equals 1 if the respondent indicates that she has some trust or complete trust in others. The question asked was: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? 1=complete distrust, 2=some distrust, 3=neither trust nor distrust, 4= some trust, 5=complete trust." |
| **Individual level controls** | |
| Gender | Gender of the respondent (0=female, 1=male). |
| Age | Age of the respondent (with a quadratic term). |
| Ethnic minority | Dummy equals 1 if the respondent considers himself as a member of an ethnic minority in his country. |
| Religion | Dummies for the religion of the respondent: (1) atheistic / agnostic / none, (2) Jewish, (3) Christian, (5) Muslim, (6) other. |
| Consumption | Approximated by total household's annualized consumption expenditures per (equalized) household member. Children younger than 14 years enter with a weight of 0.3. The information on consumption expenditures is given by the head of household (or another knowledgeable household member. |

| | |
|---|---|
| Relative income | Subjective household's wealth ranking on an imaginary ten-step ladder (from the poorest to the richest). This information is given by the head of household (or another knowledgeable household member).The question asked was: "Please imagine a ten-step ladder where on the bottom, the first step, stand the poorest people and on the highest step, the tenth, stand the richest. On which step of the ten is you household today?" |
| Education | Dummies for highest educational degree obtained by the respondent: (1) no degree, (2) highest compulsory, (3) secondary education, (4) professional, vocational school/training, (5) higher professional degree (university, college), (6) Postgraduate degree. |
| Employment | Dummy equals 1 if the respondent had a job within the previous seven days at the time of the survey. |
| Retired | Dummy equals 1 if the respondent was retired at the time of the survey. |
| Unemployment | Dummy equals 1 if the respondent was actively looking for a job at the time of the survey. |
| Student | Dummy equals 1 if the respondent was a student at the time of the survey. |
| **Settlement level controls** | |
| Religious fractionalization | An index calculated for each PSU = 1 – ((Share of Christians)$^2$ + (Share of Muslims)$^2$ + (Share of Jews)$^2$ + (Share of atheists)$^2$ + (Share of other religions)$^2$) |
| Location | Dummies for location of the interviewed household: (1) metropolitan, (2) rural, or (3) urban (excluding metropolitan) area. |
| Longitude | Coordinates measuring the position of the settlement on the Earth's surface (compared to the Prime Meridian which is the longitude that runs through Greenwich, England). |
| Elevation | Elevation above sea level, in meters. |
| Temperature | Mean temperature, in °C (1 decimal). |
| Precipitation | Mean precipitation, in mm (0 decimal). |
| Cloudiness | Mean sunshine or cloudiness, in % (0 decimal). |
| Potential evaporation | The amount of water that could be evaporated and transpired if there were sufficient water available (mm, 0 decimal). |
| Actual evaporation | The sum of evaporation and plant transpiration from the Earth's land surface to atmosphere (mm, 0 decimal). |

Sources:
For individual level controls, religious fractionalization, and location: Life in Transition Survey (LiTS), EBRD and World Bank, 2006. For the last six geographical variables: Global GIS dataset.

Table A5. Summary statistics by Pale dummy, LiTS data, urban and metropolitan PSUs in Latvia, Ukraine, and Russia

| | Outside the Pale, urban and metropolitan PSUs | | | | | Inside the Pale, urban and metropolitan PSUs | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Obs | Mean | Std. Dev. | Min | Max | Obs | Mean | Std. Dev. | Min | Max |
| Prefer market | 1220 | 0.37 | 0.48 | 0 | 1 | 619 | 0.39 | 0.49 | 0 | 1 |
| Prefer democracy | 1220 | 0.51 | 0.50 | 0 | 1 | 618 | 0.54 | 0.50 | 0 | 1 |
| Econ. sit. today vs. 1989 | 1108 | 3.01 | 1.20 | 1 | 5 | 544 | 2.24 | 1.10 | 1 | 5 |
| Satisfaction with economy | 1153 | 2.63 | 1.09 | 1 | 5 | 593 | 2.13 | 0.94 | 1 | 5 |
| Self-employment | 730 | 0.06 | 0.25 | 0 | 1 | 330 | 0.06 | 0.23 | 0 | 1 |
| Trust | 1204 | 0.35 | 0.48 | 0 | 1 | 605 | 0.44 | 0.50 | 0 | 1 |
| Male | 1220 | 0.35 | 0.48 | 0 | 1 | 620 | 0.39 | 0.49 | 0 | 1 |
| Consumption | 1219 | 7.89 | 0.75 | 4.84 | 10.04 | 619 | 7.71 | 0.76 | 5.80 | 9.93 |
| Education: no degree | 1220 | 0.02 | 0.13 | 0 | 1 | 619 | 0.01 | 0.09 | 0 | 1 |
| Education: compulsory | 1220 | 0.13 | 0.33 | 0 | 1 | 619 | 0.10 | 0.30 | 0 | 1 |
| Education: secondary | 1220 | 0.34 | 0.47 | 0 | 1 | 619 | 0.36 | 0.48 | 0 | 1 |
| Education: professional | 1220 | 0.27 | 0.44 | 0 | 1 | 619 | 0.30 | 0.46 | 0 | 1 |
| Education: higher | 1220 | 0.01 | 0.08 | 0 | 1 | 619 | 0.01 | 0.09 | 0 | 1 |
| Employed in last 7 days | 1220 | 0.54 | 0.50 | 0 | 1 | 620 | 0.47 | 0.50 | 0 | 1 |
| Retired in 2006 | 1220 | 0.26 | 0.44 | 0 | 1 | 620 | 0.28 | 0.45 | 0 | 1 |
| Unemployed in 2006 | 1220 | 0.05 | 0.21 | 0 | 1 | 620 | 0.06 | 0.23 | 0 | 1 |
| Student in 2006 | 1220 | 0.03 | 0.16 | 0 | 1 | 620 | 0.05 | 0.21 | 0 | 1 |
| Ethnic minority | 1219 | 0.13 | 0.34 | 0 | 1 | 618 | 0.11 | 0.31 | 0 | 1 |
| HH religion | 1220 | 0.29 | 0.18 | 0 | 0.7875 | 620 | 0.19 | 0.17 | 0 | 0.485 |
| Age | 1220 | 48.33 | 18.96 | 18 | 97 | 620 | 46.60 | 19.22 | 18 | 88 |
| Age squared | 1220 | 2695.16 | 1923.89 | 324.00 | 9409.00 | 620 | 2540.74 | 1919.13 | 324.00 | 7744.00 |
| Christian | 1220 | 0.79 | 0.41 | 0 | 1 | 620 | 0.88 | 0.33 | 0 | 1 |
| Muslim | 1220 | 0.02 | 0.14 | 0 | 1 | 620 | 0.00 | 0.04 | 0 | 1 |
| Jewish | 1220 | 0.00 | 0.00 | 0 | 0 | 620 | 0.006 | 0.08 | 0 | 1 |
| Metropolitan | 1220 | 0.39 | 0.49 | 0 | 1 | 620 | 0.23 | 0.42 | 0 | 1 |
| Longitude | 1220 | 33.59 | 11.83 | 21.00 | 73.39 | 620 | 31.20 | 3.71 | 24.72 | 38.05 |
| Latitude | 1220 | 55.28 | 3.40 | 45.25 | 62.14 | 620 | 49.89 | 3.19 | 44.95 | 56.55 |
| Elevation | 1220 | 77.10 | 67.28 | 3 | 213 | 620 | 129.77 | 60.25 | 20 | 293 |
| Temperature | 1220 | 5.34 | 2.28 | -2.15 | 10.55 | 620 | 7.48 | 1.48 | 4.95 | 10.90 |
| Clowdiness | 1220 | 32.30 | 4.93 | 28 | 46 | 620 | 37.73 | 5.74 | 28.5 | 49 |
| Precipitation | 1220 | 56.95 | 7.04 | 41 | 79.5 | 620 | 53.15 | 8.65 | 34.5 | 69.5 |
| Evaporation | 1220 | 46.48 | 6.00 | 26.5 | 56.5 | 620 | 45.05 | 9.53 | 23 | 62.5 |

Table A6. Summary statistics by Pale dummy, LiTS data, rural PSUs, in Latvia, Ukraine, and Russia

| | Outside the Pale, rural PSUs | | | | | Inside the Pale, rural PSUs | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Obs | Mean | Std. Dev. | Min | Max | Obs | Mean | Std. Dev. | Min | Max |
| Prefer market | 560 | 0.31 | 0.46 | 0 | 1 | 300 | 0.31 | 0.46 | 0 | 1 |
| Prefer democracy | 560 | 0.47 | 0.50 | 0 | 1 | 300 | 0.52 | 0.50 | 0 | 1 |
| Econ. sit. today vs. 1989 | 522 | 2.93 | 1.22 | 1 | 5 | 284 | 2.15 | 1.08 | 1 | 5 |
| Satisfaction with economy | 537 | 2.70 | 1.14 | 1 | 5 | 288 | 2.06 | 0.94 | 1 | 5 |
| Self-employment | 298 | 0.05 | 0.22 | 0 | 1 | 124 | 0.04 | 0.20 | 0 | 1 |
| Trust | 547 | 0.30 | 0.46 | 0 | 1 | 297 | 0.41 | 0.49 | 0 | 1 |
| Male | 560 | 0.41 | 0.49 | 0 | 1 | 300 | 0.32 | 0.47 | 0 | 1 |
| Consumption | 559 | 7.71 | 0.74 | 4.67 | 10.22 | 300 | 7.20 | 0.78 | 4.62 | 9.82 |
| Education: no degree | 560 | 0.02 | 0.13 | 0 | 1 | 300 | 0.05 | 0.23 | 0 | 1 |
| Education: compulsory | 560 | 0.21 | 0.41 | 0 | 1 | 300 | 0.18 | 0.38 | 0 | 1 |
| Education: secondary | 560 | 0.36 | 0.48 | 0 | 1 | 300 | 0.36 | 0.48 | 0 | 1 |
| Education: professional | 560 | 0.15 | 0.35 | 0 | 1 | 300 | 0.13 | 0.34 | 0 | 1 |
| Education: higher | 560 | 0.00 | 0.00 | 0 | 0 | 300 | 0.00 | 0.00 | 0 | 0 |
| Employed in last 7 days | 560 | 0.48 | 0.50 | 0 | 1 | 300 | 0.34 | 0.47 | 0 | 1 |
| Retired in 2006 | 560 | 0.28 | 0.45 | 0 | 1 | 300 | 0.41 | 0.49 | 0 | 1 |
| Unemployed in 2006 | 560 | 0.05 | 0.22 | 0 | 1 | 300 | 0.08 | 0.27 | 0 | 1 |
| Student in 2006 | 560 | 0.02 | 0.14 | 0 | 1 | 300 | 0.01 | 0.10 | 0 | 1 |
| Ethnic minority | 560 | 0.10 | 0.30 | 0 | 1 | 299 | 0.10 | 0.30 | 0 | 1 |
| HH religion | 560 | 0.33 | 0.17 | 0 | 0.58 | 300 | 0.16 | 0.16 | 0 | 0.4875 |
| Age | 560 | 48.74 | 17.52 | 18 | 89 | 300 | 51.61 | 17.91 | 18 | 91 |
| Age squared | 560 | 2682.55 | 1765.63 | 324.00 | 7921.00 | 300 | 2983.51 | 1865.56 | 324.00 | 8281.00 |
| Christian | 560 | 0.72 | 0.45 | 0 | 1 | 300 | 0.90 | 0.30 | 0 | 1 |
| Muslim | 560 | 0.01 | 0.12 | 0 | 1 | 300 | 0.01 | 0.11 | 0 | 1 |
| Jewish | 560 | 0.00 | 0.00 | 0 | 0 | 300 | 0.00 | 0.00 | 0 | 0 |
| Longitude | 560 | 35.23 | 12.85 | 21.19 | 65.51 | 300 | 31.15 | 2.67 | 26.53 | 34.60 |
| Latitude | 560 | 55.78 | 4.04 | 44.73 | 67.58 | 300 | 50.01 | 3.51 | 45.52 | 56.50 |
| Elevation | 560 | 110.04 | 75.24 | 3 | 330 | 300 | 118.20 | 64.56 | 17 | 273 |
| Temperature | 560 | 4.75 | 2.81 | -5.30 | 9.90 | 300 | 7.34 | 1.76 | 4.45 | 10.35 |
| Clowdiness | 560 | 32.55 | 5.05 | 28 | 42.5 | 300 | 37.77 | 5.85 | 29 | 47 |
| Precipitation | 560 | 59.13 | 10.22 | 36.5 | 72.5 | 300 | 52.00 | 8.71 | 34.5 | 67.5 |
| Evaporation | 560 | 45.25 | 5.74 | 27.5 | 52.5 | 300 | 43.17 | 10.11 | 23 | 58 |

Table A7. Sources of data on ethnic composition of PSUs.

| Country | Year | Source |
|---|---|---|
| Belarus | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Belarus | 1999: | http://babylon.iatp.by/nationalRegistry/1/index.html |
| Moldova | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Moldova | 2004: | http://www.statistica.md/ |
| Poland | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Poland | 1900: | http://verwaltungsgeschichte.de/ |
| Poland | 2002: | http://www.stat.gov.pl/gus/6647_4520_PLK_HTML.htm |
| Ukraine | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Ukraine | 2001: | http://www.ukrcensus.gov.ua/eng/results/general/nationality/ |
| Latvia | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Latvia | 2000: | http://data.csb.gov.lv/ |
| Lithuania | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Lithuania | 1900: | http://verwaltungsgeschichte.de/ |
| Lithuania | 2001: | http://www.stat.gov.lt |
| Russia | 1897: | http://www.demoscope.ru/weekly/pril.php |
| Russia | 2002: | http://www.perepis2002.ru/ |

Note: We proxied ethnic composition at the end of 19th and 20th century by the data for the closest available year.

Table A8. Summary statistics, Movements of population data
PSUs in Latvia, Lithuania, Ukraine, Poland, Belarus, and Western Russia

| | **Obs** | **Mean** | **Std. Dev.** | **Min** | **Max** |
|---|---|---|---|---|---|
| In “moved country” | 291 | 0.19 | 0.39 | 0 | 1 |
| Change in ethnic composition among Gentile groups | 291 | 14.38% | 16.01% | 0.00% | 68.05% |
| Change in ethnic composition Jews vs Gentiles | 291 | 8.55% | 7.03% | -0.37% | 24.95% |

***Online Auxiliary Results Appendix B***

Table B1. Election results for the Socialist Party of Ukraine

| | Percent of vote for the socialist party in a district, Ukraine | | |
|---|---|---|---|
| In Pale | 2.435*** | 2.754*** | 2.462** |
| | [0.842] | [0.867] | [0.962] |
| On the border | 3.444*** | 3.067*** | 2.977*** |
| | [0.856] | [0.801] | [0.808] |
| Town | | 0.245 | 0.365 |
| | | [1.777] | [1.765] |
| Regional center | | -1.781*** | |
| | | [0.489] | |
| Election & regional dummies | Yes | Yes | Yes |
| Observations | 165 | 165 | 125 |
| R-squared | 0.717 | 0.737 | 0.711 |
| Regional center excluded | No | No | Yes |
| Regions with variation | Yes | Yes | Yes |

Note: OLS. Robust standard errors in parentheses clustered by electoral district.
*** p<0.01, ** p<0.05, * p<0.1.

Table B2.Controlling for Polish-Lithuanian Commonwealth, Sample: urban and metropolitan PSUs in Latvia, Ukraine and Western Russia

| | OLS | sample 140 | sample 70 | sample 35 | RD regression | OLS | sample 140 | sample 70 | sample 35 | RD regression |
|---|---|---|---|---|---|---|---|---|---|---|
| | Prefer market to planed economy | | | | | Prefer democracy to autocratic regime | | | | |
| In Pale | -0,154 | -0,142 | -0,196 | -0,198 | -0,163 | -0,176 | -0,189 | -0,244 | -0,412 | -0,191 |
| | [0.054]*** | [0.065]** | [0.055]*** | [0.061]*** | [0.055]*** | [0.066]*** | [0.075]** | [0.066]*** | [0.108]*** | [0.080]** |
| In PLC | -0,025 | -0,062 | -0,156 | -0,166 | -0,028 | 0,145 | 0,069 | -0,04 | -0,602 | 0,128 |
| | [0.093] | [0.070] | [0.069]** | [0.118] | [0.102] | [0.100] | [0.102] | [0.113] | [0.298]* | [0.113] |
| Observations | 1833 | 996 | 837 | 217 | 1833 | 1832 | 996 | 837 | 217 | 1832 |
| R-squared | 0,11 | 0,11 | 0,11 | 0,15 | 0,12 | 0,09 | 0,1 | 0,1 | 0,12 | 0,11 |
| | Economic situation better in 2006 than in 1989 | | | | | Satisfaction with present state of economy | | | | |
| In Pale | -0,389 | -0,328 | -0,309 | -0,735 | -0,604 | -0,223 | -0,398 | -0,348 | -1,285 | -0,37 |
| | [0.185]** | [0.164]* | [0.220] | [0.477] | [0.230]** | [0.125]* | [0.131]*** | [0.134]** | [0.281]*** | [0.139]*** |
| In PLC | -0,088 | -0,417 | -0,659 | -0,993 | -0,149 | 0,003 | 0,124 | 0,005 | -3,21 | -0,117 |
| | [0.220] | [0.174]** | [0.221]*** | [1.288] | [0.247] | [0.170] | [0.192] | [0.205] | [0.887]*** | [0.200] |
| Observations | 1646 | 908 | 759 | 205 | 1646 | 1741 | 955 | 804 | 209 | 1741 |
| R-squared | 0,19 | 0,21 | 0,23 | 0,16 | 0,21 | 0,11 | 0,11 | 0,12 | 0,21 | 0,13 |
| | Self-employment | | | | | Trust | | | | |
| In Pale | -0,062 | -0,101 | -0,133 | 0,081 | -0,104 | 0,176 | 0,189 | 0,214 | -0,159 | 0,245 |
| | [0.032]* | [0.051]* | [0.070]* | [0.096] | [0.043]** | [0.047]*** | [0.057]*** | [0.061]*** | [0.095] | [0.076]*** |
| In PLC | -0,011 | 0,054 | 0,01 | 0,402 | -0,019 | -0,073 | 0,029 | 0,015 | -1,038 | -0,031 |
| | [0.035] | [0.048] | [0.066] | [0.267] | [0.034] | [0.078] | [0.091] | [0.081] | [0.238]*** | [0.100] |
| Observations | 1057 | 572 | 486 | 131 | 1057 | 1803 | 988 | 829 | 213 | 1803 |
| R-squared | 0,04 | 0,06 | 0,06 | 0,07 | 0,06 | 0,03 | 0,06 | 0,05 | 0,11 | 0,05 |

Note: For each dependent variable we present five regressions: OLS, three reduced sample regressions with the distance to the border of the Pale below 140, 70 and 35 km, and RD regression, which includes two polynomials of distance on both sides of the border in the list of covariates. List of controls includes country dummies, metropolitan area dummy, religious fractionalization, Western Ukraine dummy (in OLS and RD regression), longitude, elevation, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. In sample 35, we exclude longitude from the list of covariates. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B3. Latvia only (territory inside the Polish-Lithuanian Commonwealth) Sample: urban and metropolitan PSUs

| | OLS | sample 70 | sample 35 | OLS | sample 70 | sample 35 |
|---|---|---|---|---|---|---|
| | Prefer market to planed economy | | | Prefer democracy to autocratic regime | | |
| In Pale | -0,213 | -0,198 | -0,17 | -0,259 | -0,23 | -0,175 |
| | [0.081]** | [0.071]*** | [0.037]*** | [0.090]*** | [0.086]** | [0.088]* |
| Observations | 678 | 618 | 138 | 678 | 618 | 138 |
| R-squared | 0,09 | 0,1 | 0,2 | 0,06 | 0,07 | 0,16 |
| PSUs in Pale | 5 | 5 | 3 | 5 | 5 | 3 |
| PSUs outside Pale | 29 | 26 | 4 | 29 | 26 | 4 |
| | Economic situation better in 2006 than in 1989 | | | Satisfaction with present state of economy | | |
| In Pale | -0,928 | -0,926 | -0,735 | -0,451 | -0,422 | -0,232 |
| | [0.225]*** | [0.231]*** | [0.109]*** | [0.185]** | [0.183]** | [0.170] |
| Observations | 630 | 571 | 131 | 665 | 607 | 134 |
| R-squared | 0,19 | 0,21 | 0,26 | 0,08 | 0,09 | 0,17 |
| PSUs in Pale | 5 | 5 | 3 | 5 | 5 | 3 |
| PSUs outside Pale | 29 | 26 | 4 | 29 | 26 | 4 |
| | Self-employment | | | Trust | | |
| In Pale | -0,037 | -0,02 | 0,019 | 0,173 | 0,203 | 0,271 |
| | [0.049] | [0.045] | [0.033] | [0.077]** | [0.073]*** | [0.094]** |
| Observations | 379 | 349 | 77 | 676 | 616 | 138 |
| R-squared | 0,05 | 0,05 | 0,12 | 0,05 | 0,05 | 0,15 |
| PSUs in Pale | 5 | 5 | 3 | 5 | 5 | 3 |
| PSUs outside Pale | 29 | 26 | 4 | 29 | 26 | 4 |

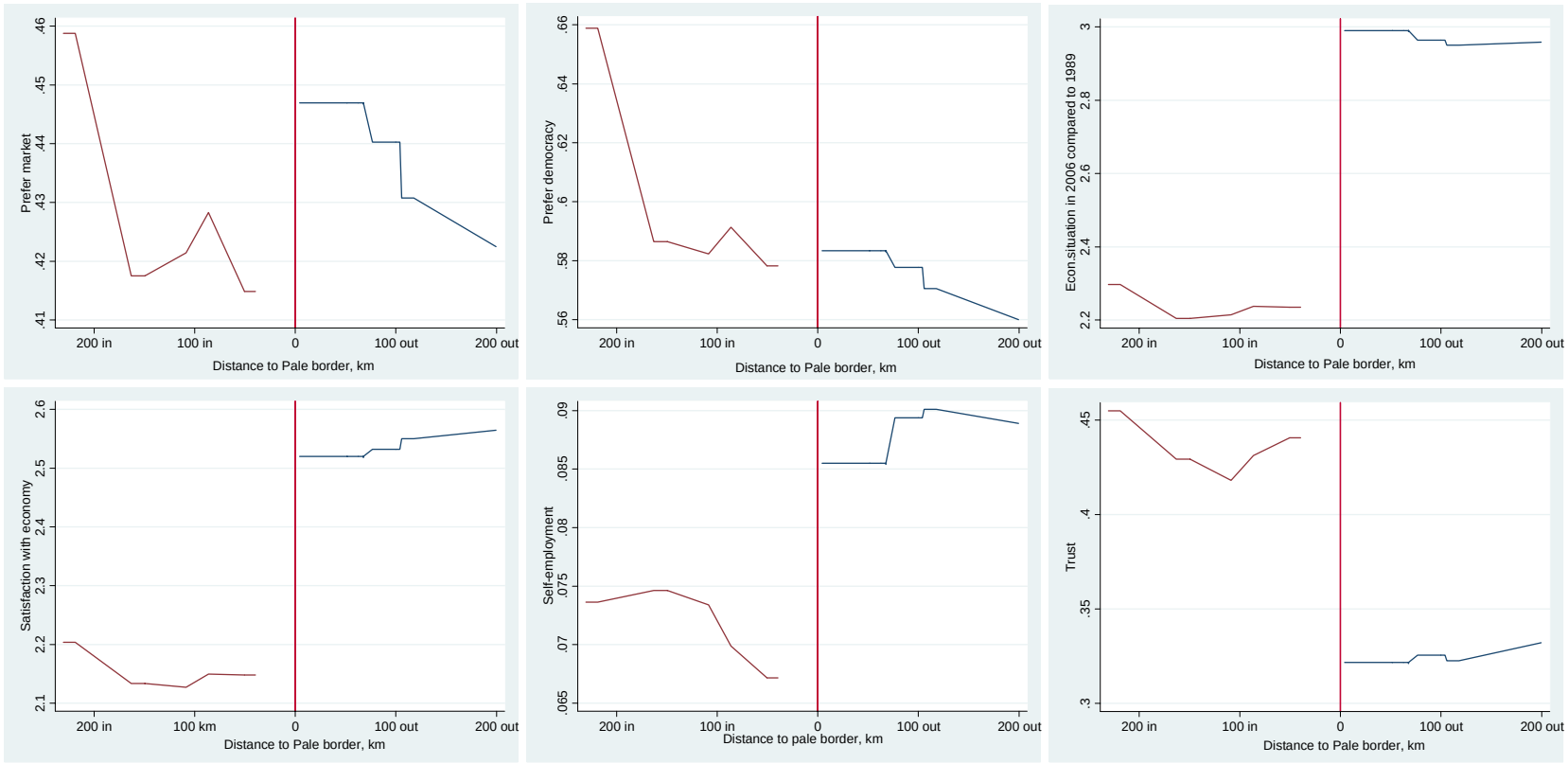
Note: For each dependent variable we present three regressions: OLS, and two reduced sample regressions with the distance to the border of the Pale below 70 and 35 km. List of controls includes country dummies, metropolitan area dummy, religious fractionalization, gender, age (with a quadratic term), education level dummies, consumption, employment status dummies, ethnic minority dummy, and religion dummies. Robust standard errors adjusted for clusters at PSU level in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B4. Results of placebo regressions

| | South-West of shifted Pale border | West of meridian |
|---|---|---|
| Number of placebo regressions | 60 | 30 |
| % of coefficients with the same sign as baseline | 33.3% | 43.3% |
| % of coefficients with at least 10% significance level of the same sign as in baseline | 8.3% | 16.3% |
| % of coefficients with at least 5% significance level of the same sign as in baseline | 3.3% | 10.0% |
| % of coefficients with at least 1% significance level of the same sign as in baseline | 1.7% | 3.3% |

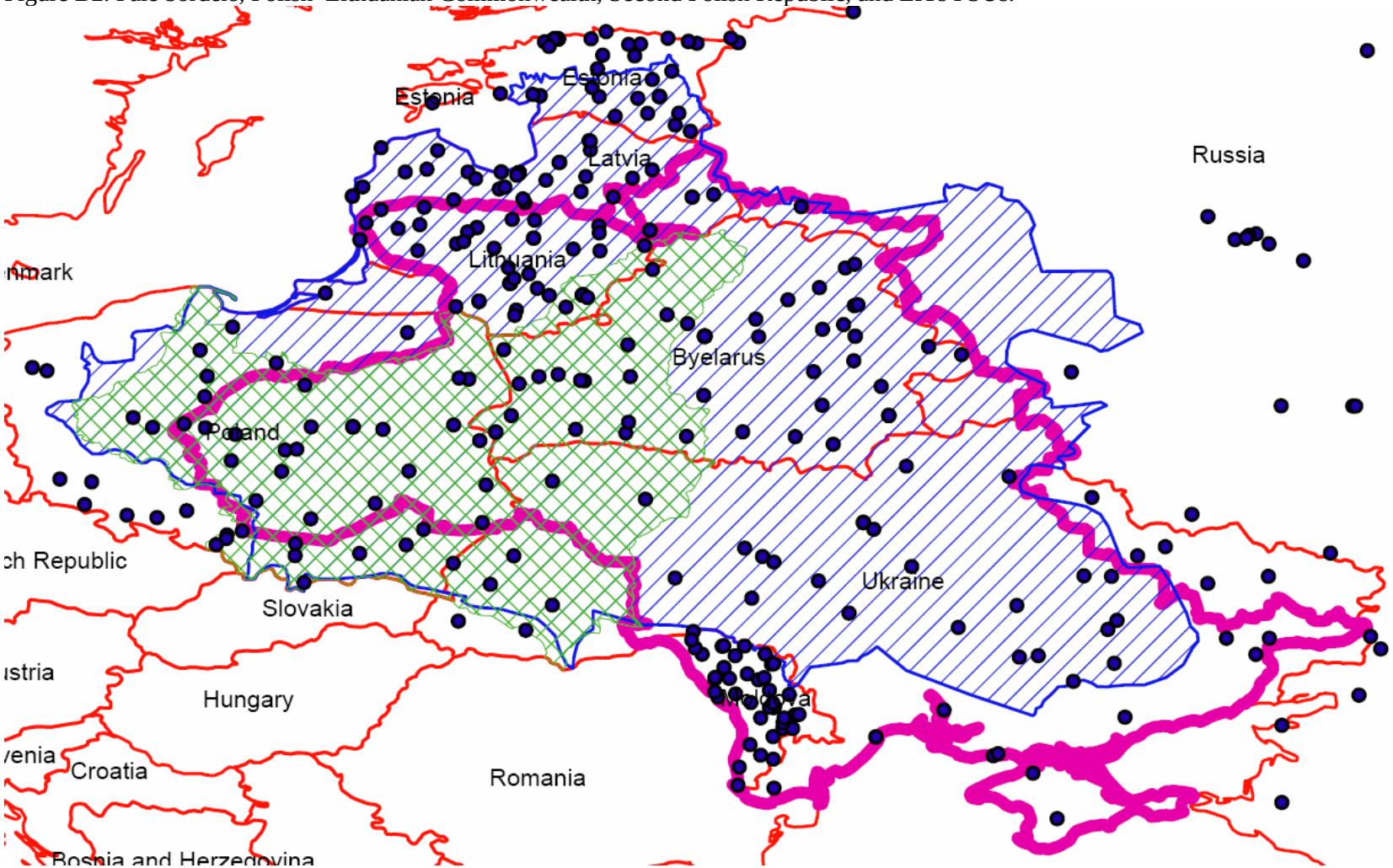
Note: The table summarizes the results of the placebo experiment in which our six outcomes (prefer market, prefer democracy, economic situation better today, satisfaction with present state of economy, self-employment, and trust) are related to a placebo pale treatment in which we "shift" the border of the Pale or consider being west of a particular meridian as treatment. In both cases we estimate RD regressions on the sample of urban and metropolitan PSUs. The first column gives the summary of the results for the placebo, in which treatment is defined as distance to the actual Pale border above 225, 200, 150, 100, 50,-225, -200, -150. -100 and -50 kilometers (instead of zero, as in the baseline regressions). In these regressions we use our standard set of controls. The second column summarizes results for the placebo experiment where the treatment is defined as having longitude below 30, 32, 34, 36, and 38. In these regressions we omit longitude, as the placebo treatment in this case is collinear with longitude.

Figure B1.Averages of outcomes by distance.




Note: For each distance, the graph presents plain averages over all observations on the particular side of the Pale border that are located at most at this distance to the border.

Figure B2. Pale borders, Polish–Lithuanian Commonwealth, Second Polish Republic, and LITs PSUs.




Polish–Lithuanian Commonwealth border as of 1619 is area market in blue; Second Polish Republic is the area market in green, Pale border is solid pink, dots indicate LITs PSUs; red thin lines mark contemporary country borders.