Historical Legacies in Savings: Evidence from Romania

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Abstract

This study investigates the channels of long-run persistence in savings using a spatial regression discontinuity across an imperial border in present-day Romania. With data obtained from a lab in the field experiment and household survey, the results confirm that imperial history affects savings behaviors today. There is no evidence that imperial history is correlated with risk and time preferences or cultural savings norms. Rather, imperial history is strongly correlated with contemporary financial access, which is positively associated with savings outcomes. Falsification tests reject pseudo effects, while there is no empirical support for alternative mechanisms, such as trust in financial institutions, financial literacy, and migration. Results using nationally-representative data corroborate the primary findings. Lastly, evidence that savings mitigates household economic shocks suggests important welfare implications of savings legacies.

JEL codes: O12, O16, N23, N33
Keywords: savings, historical persistence, spatial discontinuity, risk and time preferences, financial development, lab-in-the-field experiments

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1 Introduction

Savings is fundamental to economic welfare, yet many of the world's poor under-save. While numerous explanations have been posited, the role of history is poorly understood.[1] This paper presents a new hypothesis: historically-rooted hysteresis in savings. To test this, I implement a lab in the field experiment around an eighteenth century imperial border in present-day Romania, focusing on the various mechanisms through which savings legacies may persist.

A thriving set of literature confirms that history matters for economic development.[2] Throughout Eastern Europe specifically, research suggests that imperial legacies determine contemporaneous trust preferences (Becker et al., 2016; Grosjean, 2011*b*; Mendelski and Libman, 2011), institutional quality (Dimitrova-Grajzl, 2007; Becker et al., 2016), judicial performance (Mendelski and Libman, 2011), financial development (Grosjean, 2011*a*), belief in democratic ideals (Grosjean and Senik, 2011; Grosfeld and Zhuravskaya, 2015), and transportation infrastructure (Grosfeld and Zhuravskaya, 2015). Less is known, however, about the persistence of savings.

Historical data suggests that regional disparities in savings existed throughout Eastern Europe as early as the nineteenth century. Census records from the Habsburg Monarchy show that provinces that endured the longest exposure to Habsburg institutions were more financially developed and exhibited higher savings rates than regions that were previously under Ottoman rule (Austria, 1914). In Romania specifically, by the turn of the twentieth century, Habsburg regions had substantially more banks than regions that were former vassals of the Ottoman Empire (Mendelski and Libman, 2011). In this paper, I first explore whether these patterns are currently sustained. That is, do people living in former Habsburg regions today save more?

Next, I explore the possible cultural and institutional mechanisms through which such trends persist. I define cultural channels as those pertaining to economic preferences and institutional channels as the physical presence of formal financial institutions. Theoretical models of savings predict that a primary determinant of savings is economic preferences for risk and time. To the extent that history determines these preferences, either directly or through cultural transmission, long-run persistence in preferences could explain observed differences in savings behaviors. In

[1] These include the role of temptation spending (Banerjee and Mullainathan, 2010), hyperbolic time preferences and commitment issues (Ashraf et al., 2006; Tanaka et al., 2010; Bauer et al., 2012; Giné et al., 2017; Dupas and Robinson, 2013), and social networks (Karlan, 2005; Karlan et al., 2009).

[2] See Nunn (2009) for a review.

addition, path dependence in financial development in former Habsburg areas could affect savings today if financial access is necessary for savings accumulation.

The empirical framework employs a spatial regression discontinuity (RD) across the Habsburg imperial border in Suceava County, Romania, using a sample of semi-subsistence farmers. I measure economic preferences for risk and time through experimental games, which are combined with observations on individual, household, and farm characteristics from a household survey. I control for potential differences in unobservables, such as ability, entrepreneurship, and effort, by restricting the sample frame to farmers who recently applied for an EU cash transfer program and received scores within a bandwidth of the cutoff for acceptance. Further, by limiting the sample to a single county within one country, I control for unobservables in local institutions that could affect savings. Balance tests of observable factors that are correlated with savings, such as age, education, agricultural productivity, and wealth, indicate no evidence of discontinuous jumps in covariates around the imperial border in this sample, thereby validating the assumptions necessary for the spatial RD (Imbens and Lemieux, 2008; Dell, 2010).

The empirical analysis confirms historical persistence in savings behaviors. Farmers living in former Habsburg regions are 18 percentage points more likely to have saved 1,000 Lei or more – roughly $300 USD or a month's salary in Romania – and have accumulated approximately 320 Lei more in savings assets than their non-Habsburg counterparts, a 45 percent increase from average non-Habsburg savings.[3] The results are robust to various specifications of the RD polynomial.

Turning to the mechanisms, there is no evidence that imperial legacies persist through risk and time preferences, or through cultural norms of savings. Instead, the results suggest that disparities in financial access are correlated with differences in savings. The spatial RD confirms that farmers in Habsburg regions live significantly closer to formal financial institutions today and that increasing financial access by 1 standard deviation is associated with 0.10 standard deviation increase in total accumulated savings. Additional evidence suggests that a lack of financial access on the non-Habsburg side of the border is correlated with a propensity to invest in informal assets, such as animals, grain inventory, and jewelry. These assets have lower rates of return than formal savings accounts, such that households who use informal savings instruments have a significantly

[3]Accumulated savings in this study represents both formal bank account balances and informal savings, such as cash at home, jewelry, grain inventory, livestock, etc.

lower value of total accumulated savings: households living in non-Habsburg regions are 25 percent more likely to save in an informal asset and saving in informal assets is associated with 27 percent lower accumulated savings.

I conduct several empirical checks in order to verify the robustness of the primary findings. Falsification tests which arbitrarily move the border to the northwest and southeast rule-out placebo West-East trends in savings and financial access. In addition, I conduct an external validity analysis that replicates the spatial RD using nationally-representative data from the European Bank for Reconstruction and Development Life in Transition Survey II (EBRD LiTS II) within Romania, which corroborates the primary findings. This exercise suggests that the local average treatment effects observed in my sample of farmers are generalizable to a nationally representative scale. Lastly, I explore alternative channels of persistence, such as trust in financial institutions, financial literacy, and migration, and find no evidence of differences in these outcomes across the border.

The imperial differences in savings suggest important consequences for economic welfare in the region. Macroeconomic effects may be ambiguous if savings imbalances do not translate into larger differences in capital investment or wealth, which I do not observe in my data. On the microeconomic scale, however, savings is important for consumption smoothing and protection against economic shocks. Using the EBRD LiTS II data I explore households' ability to cope with economic shocks in the immediate aftermath of the global financial crisis. This exercise suggests that savings is negatively associated with the probability that households lower consumption, decrease medical care, shut off utilities, sell an asset, or are forced to move as a result of the global recession.

These findings contribute to a larger literature on savings by the poor by highlighting an unexplored determinant of savings – history.[4] It is well-known that historical events are an important determinant of economic development, as they influence institutions, trust, education, infrastructure, health, and technology (Nunn, 2009). Savings legacies, however, have been under-studied. Given that savings rates have serious implications for economic welfare, it is crucial to understand their origins. Moreover, while the empirical savings literature has made significant progress in quantifying the relationship between economic preferences and savings (Ashraf et al., 2006; Tanaka et al., 2010; Bauer et al., 2012; Giné et al., 2017), there is little understanding of how these preferences

[4]See Karlan and Zinman (2014) for a review.

arise, especially in middle-income countries like Romania.[5]

In addition, this paper relates to a recent literature exploring the mechanisms through which historical events and institutions influence contemporaneous economic outcomes.[6] In doing so, my work also contributes to a growing literature using lab in the field methods to explore questions in economic history.[7]

The paper proceeds as follows. The next section discusses the historical setting in which differential savings patterns might have emerged, while section 3 briefly discusses the theoretical intuition behind savings decisions. Section 4 describes the empirical framework and presents the initial results on savings. Section 5 carefully explores the channels of persistence, while section 6 conducts several robustness checks. Section 7 discusses the plausibility of alternative channels of persistence and section 8 concludes.

2 Historical Context

Romania has a complicated imperial history. By the fourteenth century, the Ottoman Empire ruled most of the land comprising the modern state either directly or indirectly through a system of suzerainty authority. After defeating the Ottomans in the Battle of Vienna in the late seventeenth century, the Habsburgs acquired the Principality of Transylvania, while the Danubian principalities of Wallachia and Moldavia remained vassals of the Ottoman Empire. With the election of Alexandru Ioan Cuza in 1859, the United Principalities of Moldavia and Wallachia – a de jure vassal of the Ottoman Empire, but a de facto independent state – was formed.[8] Transylvania and Bukovina, to the north and west of the United Principalities, remained Habsburg provinces until the formation of the Romanian state in 1918.

[5]Galor and Ömer Özak (2016) show that geographic variation in the "natural" return to agriculture has a persistent effect on the distribution of time preferences across societies. Chen (2013) argues that speakers of languages that grammatically associate the future and the present exhibit future-oriented behavior, and empirically demonstrates that speakers of such languages save more, retire with more wealth, smoke less, practice safer sex, and are less obese. Note, however, that there is very little geo-climatic variation across the study region and all farmers in the sample grow the same subset of crops and face similar prices. Moreover, all respondents in the sample speak the same language (Romanian).

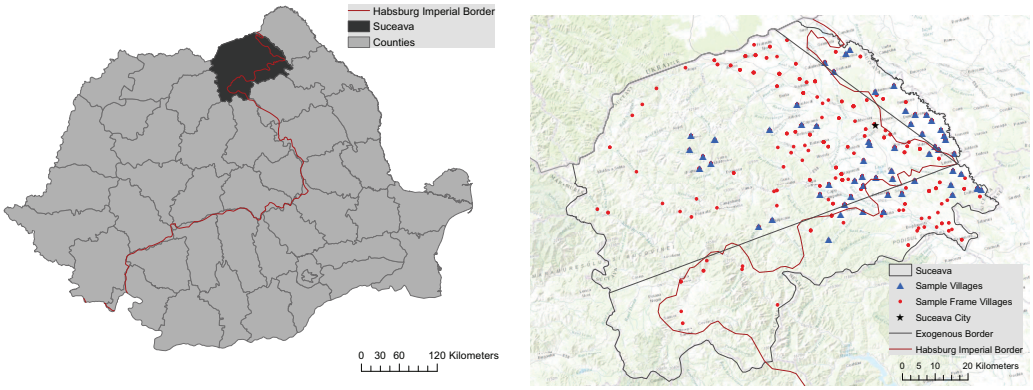
[6] See Dell (2010), Nunn and Wantchekon (2011), Bleakley and Lin (2012), Wahl (2017), Dell et al. (2018), and Fontana et al. (2018).

[7]See Caicedo (2018) for a recent application in Paraguay, Karaja and Rubin (2017) also in Romania, and Lowes et al. (2017); Lowes (2018) in central Africa.

[8]Official independence from the Ottoman Empire was recognized after the Romanian War of Independence in 1878.

The sample area for this research is present-day Suceava county (illustrated in Figure 1), which is historically divided between the Habsburg region of Bukovina and the Principality of Moldavia. Bukovina, to the north and west of the border, was covertly annexed into Austrian territory during the Russo-Turkish War of 1768-1774 and remained a Habsburg province until the Empire's demise after World War I. Moldavia, the region to the south and east of the border, was ruled as an Ottoman vassal state from 1514 until its independence in 1859.

In the empirical analysis that follows, "treatment" is considered exposure to Habsburg rule. The Bukovinian area of Suceava, although once under Ottoman influence, endured Habsburg rule for over 100 years until the establishment of the modern Romanian state in 1918. The Moldavian side experienced a mix of both Ottoman and Romanian authority, but was never exposed to Habsburg institutions. It is, therefore, considered the "control" region.



(a) Romania (b) Suceava

Figure 1: Imperial border in Suceava

The section below outlines important institutional differences between the Habsburg and Ottoman empires in order to motivate why one might expect persistent outcomes in savings. Although Romania is a unified country, with a largely homogenous population,[9] important distinctions across the imperial boundary defined the early stages of political and economic development. While the Moldavian side of Suceava became officially Romanian after 1859, persistent negative effects of Ottoman rule, particularly in the absence of later Habsburg influence, have been well-documented in the literature (Dimitrova-Grajzl, 2007; Mendelski and Libman, 2011; Grosjean, 2011*a*; Grosjean and Senik, 2011; Grosfeld and Zhuravskaya, 2015), and are relevant to the current

[9] 89 percent of the population is ethnically Romanian and 87 percent identify as Orthodox Christians (Romanian Census, 2011)

analysis.

2.1 Political and Legal Institutions

Political distinctions between the two empires may best be classified through the inclusive versus extractive framework (Acemoglu and Robinson, 2012). Habsburg political institutions, while centralized through parliament in Vienna, were highly decentralized at the local level (Becker et al., 2016). Ottoman bureaucracy, on the other hand, was heavily centralized and run by officials who regarded their positions as opportunities for private gain (Dimitrova-Grajzl, 2007). The Romanian vassal states had no political representation in Ottoman government and instead obtained political privilege through the amount of tribute paid to the Sultan. Payments were sent from Romania to Istanbul and could come in three forms: 1) annual monetary tribute; 2) gifts from newly throned Romanian princes; or 3) supply of food and raw materials to Istanbul (Sugar, 1977).

Legal institutions in the Ottoman Empire were notoriously corrupt, known for their clientelist networks and rampant nepotism (Sugar, 1977; Dimitrova-Grajzl, 2007; Mendelski and Libman, 2011). In contrast, Habsburg legal institutions emphasized accountability of judges through the Ministry of Justice and disciplinary councils (Mendelski and Libman, 2011) and an efficient bureaucracy who attempted to establish trust by providing consistent rule and discouraging radical shifts in administration (Dimitrova-Grajzl, 2007). These differences have been shown to have perpetuated more demand for litigation in the Habsburg regions of Romania today (Mendelski and Libman, 2011), and a lower functioning rule of law in former Ottoman regions of Southeastern Europe (Dimitrova-Grajzl, 2007). To the extent that political and legal institutions interact with financial institutions, these differences could have important influence on savings and investment incentives today.

2.2 Financial Institutions

Financial development followed divergent trajectories in the Hasbsurg and Ottoman empires, the effects of which have been shown to persist today (Grosjean, 2011*a*). These differences are often thought to have originated in the opposing treatment of usury by the main religious institutions in each empire. The prohibition on interest stipulated by Islamic law remained a primary feature of Ottoman finance well into the 19th Century. In contrast, Roman Catholicism−the official religion of

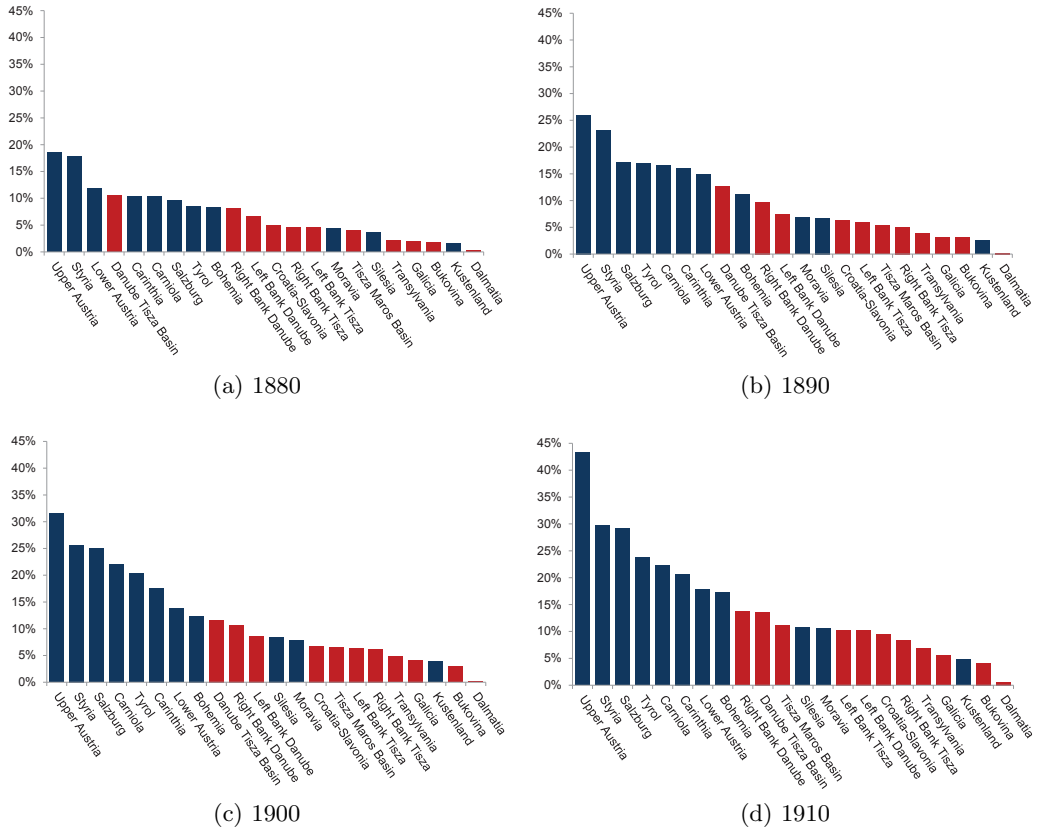
the Habsburg Empire−abolished usury restrictions in the early 17th century, while the Orthodox church never prohibited interest in the first place. Although, there were restrictions for clergy (Pamuk, 2004).

The Islamic ban on interest encouraged the development of many informal lending networks, such as business partnerships, transfers of debt, and letters of credit (Pamuk, 2004). Tax-farming arrangements between the central bureaucracy and those with liquid capital assets created strong disincentives to develop formal public financial institutions (Pamuk, 2004), while Islamic inheritance law and its discouragement of corporations hindered the establishment of private ones (Kuran, 2005). The first formal lending bank in the Ottoman Empire was not established until the 1840s, and the central bank was not instituted until 1863 (Pamuk, 2004). In contrast, private banking houses in the Habsburg Empire flourished as early as the late 17th century. Accordingly, banks played a significant role in industrial development throughout the 19th century, constituting the majority of joint-stock enterprises in the second half of the century (Good, 1984).

Financial underdevelopment in former Ottoman regions of Romania was documented as early as 1911, with only 151 banks in Wallachia and Moldavia versus 430 in Habsburg Transylvania (Mendelski and Libman, 2011).[10] To the extent that financial infrastructure influences savings, the historical differences in imperial financial development could have important consequences for this study. Stylized data in Figure 2 suggests that savings differences existed as early as the 19th century (Austria, 1914). Each bar represents per capita bank savings deposits as a percent of per capita GDP for an administrative region of the Habsburg Monarchy. Blue bars indicate regions that were always under Habsburg rule (i.e., as a succession of the Holy Roman Empire). Red bars represent regions that experienced other imperial influence prior to joining the Habsburg Monarchy. It is clear from the figure that regions with the longest exposure to Habsburg rule tend to have higher savings rates than those with less exposure.[11] The primary objective of this study is to explore whether these patterns endure today.

[10]The geographic size of Wallachia and Moldavia is double that of Transylvania, such that the differences in the levels would be even more pronounced at a per capita level.

[11]It would ideal to compare historical savings rates across the border in Suceava County (i.e., between Bukovina and Moldavia). Note that such data exists for Bukovina, but neither Ottoman nor Romanian data (post 1859) exist for Moldavia. While there was a population census conducted in 1859 for the United Principalities of Moldavia and Wallachia, no disaggregated data exist for Moldavia in the area around Suceava.



(a) 1880 (b) 1890

(c) 1900 (d) 1910

Figure 2: Historical Savings: bank deposits as a % of GDP

Data provided by David Good. Each bar represents per capita bank savings deposits as a percent of per capita GDP for an administrative region of the Habsburg Monarchy. Bars in blue indicate regions that were always under Habsburg rule (i.e., as a succession of the Holy Roman Empire). Bars in red represent regions that experienced other imperial influence prior to joining the Habsburg Monarchy.

2.3 Exogeneity and Enforcement of Borders

Obtaining causal estimates of the effect of imperial history on savings behaviors requires that the imperial boundary was exogenous and enforced. In 1498, Stefan cel Mare, the Moldavian prince revered for great military victories against Poland, Hungary, as well as the Ottomans, was forced to accept Ottoman suzerainty over the lands that are now Suceava. The Ottomans ruled this region until the late 18th century, after defeat in the Russo-Turkish war of 1768-1774. During this period, the eastern border of the Habsburg empire was only loosely demarcated, following the ridge and watershed of the Carpathian Mountains, and susceptible to encroachment. Habsburg delegates were thus sent to the region in the late 1760s to map a strict border (Veres, 2014).

As the war came to a close, the Austrian envoys incited a land-grab in northern Bukovina (Veres,

2014). The Habsburg emperor Joseph II traveled to Transylvania in 1773 in order to monitor the cartographic excursions, where he noted the vast forest resources and strategic geographic positioning of the Bukovinian region. Claiming that the land would provide the ideal terrain for a road connecting Galicia and Transylvania, Joseph II made a case for annexation (Veres, 2014). In a covert effort, the mapping expeditions redrew the imperial boundaries to include Bukovina in Habsburg territory. The Ottomans lacked the resources to rebuff the Habsburg campaign (Veres, 2014), such that when the war ended in 1774, the international boundaries were already well-documented. The Final Convention of Bukovina's Borders in 1776 established a clear line between the new Habsburg Bukovina and Ottoman Moldavia (Veres, 2014). Although Russia defeated the Ottomans, the 1774 Treaty of Kücük Kaynarca stipulated that Istanbul maintain influence over Moldavia, until de facto independence in 1859 and de jure independence in 1878.

The extent to which the borders drawn by Habsburg cartographers were exogenous to economic preferences, financial institutions, and savings behaviors is unclear from the historical literature. Some accounts mention resistance by the Ottoman-ruled subjects, who threatened violence against the mapping teams (Veres, 2014). This might raise concern that the new border only included regions where people were sympathetic to Habsburg values and institutions. Others, however, claim that the borders were exogenously drawn according to geographic characteristics, such as valleys and watersheds (Lavric, 2012). Figure 1 illustrates the true border in Suceava. It is not clear that this line follows obvious geographic patterns. Moreover, digital elevation modeling (DEM) simulations in which I attempted to "naturally" draw the border did not produce results consistent with the true boundary. Therefore, in my sampling I drew an exogenous Euclidean border across the region and only sampled villages that lay within both the true and exogenous lines. The details of the sampling design are described in Section 4, below.

While the exogeneity of the borders is unclear, there is sufficient evidence to suggest that they were enforced. Historical and military accounts reveal that strict cordons were established at all Habsburg borders in an attempt to control the Plague and remained in place 130 years after the Plague ended (Pesalj, 2013), while the Transylvanian military border remained armed with soldiers until 1876 (Pesalj, 2013). In addition, strong anti-Ottoman sentiments throughout the Empire required Ottoman subjects already residing in the Monarchy to acquire and maintain paperwork documenting their Ottoman status (Pesalj, 2013). Selective sorting in the historical period is

therefore not a concern to the identification strategy. I examine contemporaneous migration in Section 7 and do not find evidence that it is a salient concern for the study.

3 Theoretical Intuition

The empirical analysis is primarily concerned with elucidating the cultural and institutional mechanisms through which savings persists. Models of precautionary savings establish that risk and time preferences determine savings: as risk aversion increases and discount rates decline, savings increases (Kimball, 1990). The theoretical predictions on preferences in these models, however, are static and do not address the process through which preferences persist or evolve over time. Models of cultural transmission, which argue that cultural and economic norms transmit either "vertically" through inter-generational family transfers or "horizontally" through socialization, are useful in this context (Bisin and Verdier, 2001; Hauk and Saez-Marti, 2002).

If preferences are the mechanism through which savings patterns endure over time, they should be correlated with contemporaneous savings and there should be evidence that preferences also persist. In the empirical analysis, I first investigate the correlation between savings and preferences. I then examine whether or not there is evidence of persistence in preferences across the border. Further, I empirically estimate cultural transmission in savings following a methodology established by Head and Mayer (2008) in order to elucidate the persistence of cultural norms around savings.

With regard to institutional channels of persistence, I examine path dependence in the physical location of banks on either side of the border. There is existing evidence of legacies in Ottoman financial *under*development (Grosjean, 2011*a*). In a similar fashion, the greater prevalence of banks observed at the turn of the twentieth century in the Habsburg regions of Romania could have persisted over time, such that there is better financial development in former Habsburg regions today.

Theoretical intuition on this mechanism can be drawn from simple two-period models of portfolio allocation (Samuelson, 1969). I sketch a modified version of such a model in section Appendix A.3. In these models, an infinite sequence of overlapping representative agents choose to allocate savings between a formal and informal asset. I make a slight, but important, modification to Samuelson's framework by adding "iceberg" transaction costs to the formal asset, which can take the value

$\tau \in [0, 1]$, where $\tau = 1$ indicates that there are no transaction costs. Examples of such costs include account fees, red tape in opening accounts, a lack of access to formal financial institutions, or other institutional factors that disincentivize formal savings. The model predicts that as transaction costs in the formal financial sector decrease ($\tau \to 1$), individuals accumulate more savings and reallocate the portfolio choice from informal to formal assets, which receive a higher rate of return. I empirically investigate this prediction by first examining whether or not there is persistence in financial access and then exploring its relationship to savings and portfolio choice.

4 Persistence in Savings

4.1 Sampling and Data Collection

Experimental and survey data were collected in late 2013 in Suceava county, Romania. The sample frame was constructed from a group of semi-subsistence farmers who recently applied to an EU conditional cash transfer program.[12] Recall from the historical discussion in Section 2 that only villages located within both the true and exogenous borders were selected for sampling in order to control for uncertainty in the drawing of the imperial border.[13] Figure 1 illustrates the sample frame and selected villages. In order to mitigate differences in contemporaneous unobservables, I further restricted the sample frame to farmers who received application scores between 15 and 55 out of a possible 90 points, with 35 as a fuzzy cutoff for acceptance to the program.[14] Out of 522 invited farmers, 331 participated in the study, with 146 from Habsburg and 185 from non-Habsburg villages.[15]

[12] "Measure 141: Assistance to Semi-subsistence Farmers" (M141) is a conditional cash transfer program offered by the EU to farmers with between 2 and 8 economic size units (roughly €2000 to €8000 annual profits) who would like to transition into commercial farming. Selected applicants receive €1500 each year over 5 years, for a total of €7500.

[13] Errors in the original shapefile used to discern the imperial boundary were discovered during revisions to an earlier version of this manuscript. 4 villages that were originally classified as non-Habsburg were discovered to in fact be Habsburg, while 7 villages were erroneously classified as Habsburg, but are actually non-Habsburg. Versions of this manuscript prior to February 2017 do not account for the error and consequently suggest slightly different results in the empirical analysis.

[14] Note that the scoring on the application was not continuous. The various scores one could receive were: 0, 15, 20, 35, 40, 55, and 90. Farmers who received scores of 35 were both accepted and rejected from the program. Scores above 35 were accepted and scores below were rejected. It would perhaps have been ideal to include only farmers with scores of 35, balanced across accepted and rejected. However, there were an insufficient number of farmers in this category to achieve statistical power.

[15] 16 farmers that were not invited to participate in the study asked to join and were included. Of the 522 farmers that were invited, 245 were from Habsburg villages and 277 were from Ottoman villages. Habsburg villages had a 56% attendance rate, while non-Habsburg villages had a 64% attendance rate, the difference of which is

The restriction of the sample frame to farmers within a given range of ability, effort, and geographic space is essential to the identification strategy in order to mitigate as many differences in unobservables in individuals and local institutions as possible. The trade-off of this strategy is that the estimates are local average treatment effects, which may not extrapolate to a more general context. I address issues of external validity in Section 6 using secondary data that is nationally-representative at a much larger geographic scale – both within Romania and across 13 countries within a 100 km bandwidth of the Habsburg imperial border – in order to test the robustness of the primary findings.

Farmers were invited in groups of 20 to participate in experimental games at their local community centers. Risk was measured via the the Holt and Laury (2002) method. The subject was asked to choose between a safe lottery A in which she could win either 8 or 6 Lei with a given probability, or a risky lottery B which returned 20 or 2 Lei with the same probability. The choice was made over 10 rounds, with the odds of winning the higher amount in either lottery increasing in each round. I infer the respondent's tolerance for financial risk by comparing the number of As versus Bs chosen over the 10 rounds.[16]

Time questions followed a multiple price list (MPL) in which farmers were given a choice of receiving 8 Lei in a near period or a larger amount in a later period. The amount offered in the later period increased by 1 Lei over 10 rounds, such that in the first round respondents chose between 8 Lei in the near period and 9 Lei in the later period, and in the last round between 8 Lei (near) and 18 Lei (later). The point at which the participant decided to wait for the larger amount suggests her financial patience.

Farmers answered the MPL twice: once for a decision between tomorrow and 1 week, and again for a decision between 1 week and 2 weeks. Discount rates were calculated according to the standard method (Andreoni and Sprenger, 2012): $\delta = (\frac{X}{Y})^{1/k}$, where X is the point at which the respondent

statistically insignificant with a normalized difference of -0.11 standard deviations. The M141 application provides basic information about the applicant, including the year the application was lodged, as well as a series of dummy variables for whether or not the applicant belongs to a farming cooperative, receives an additional subsidy (M214 - payments for agri-environmental measures), is under 40, lives in a "less favored area", and plans to make an investment in their farm over the next 5 years. A regression of participation on these factors, as well as the Habsburg dummy, suggests that farmers who belong to a cooperative are 0.7 percent more likely to participate in the study, while farmers who receive M214 are 1.7 percent more likely to participate (Table A1). The magnitudes of these relationships are small and, therefore, not of concern to the identification strategy.

[16]Respondents typically choose lottery A until they switch over to lottery B for the remainder of the choices. During the lab in the field experiment, farmers were not allowed to switch back to A once they chose B.

switches, Y is the later amount, and k is the time between the near and later periods. The discount rate used in the analysis is the average of the discount rates calculated for each set of questions. I also use these questions to understand the role of hyperbolic discounting (or present-bias) in savings decisions (Ashraf et al., 2006; Tanaka et al., 2010; Bauer et al., 2012; Dupas and Robinson, 2013; Giné et al., 2017).[17]

All experiments were incentivized in order to elicit realistic behavior. For the risk and time experiments, 1 out of the 30 questions were chosen at random and played for real. Respondents were told ahead of time that if a question from the MPL were chosen, they should come back to the community center on the date indicated (tomorrow, in 1 week, or in 2 weeks) to retrieve their winnings. On average, participants received 26 Lei (approximately $7, or 30 percent of the daily wage) in total payouts.[18]

While each participant waited her turn to play the games, she completed a household survey that contained demographic questions about herself, her household, farm characteristics, and savings, credit and investment decisions. Although there are 331 farmers in the sample, not all completed the experimental games. In addition, some invited farmers could not attend the session and instead sent a representative for the household, making it difficult to link the experimental data with the survey responses. To correct for this discrepancy, I recorded the representative's age, gender, education, and relationship to the invited farmer, and asked them to complete the survey with the farmer's information. If the representative was a spouse or parent, I treat the experimental data as if it were that of the farmer. Otherwise, I drop observations for which a representative was sent. Consequently, many of the estimates have sample sizes well below 331.[19]

Data on the village level geophysical characteristics was extracted at the point level using GIS software and data from various sources. Soil quality data was obtained from the European Soil

[17]In addition, each farmer played a game that measures levels of interpersonal trust (Berg et al., 1995) in order to control for the potential confoundedness of trust with responses to the risk and time games (Schechter, 2007). In this game, Player 1 received 8 Lei, of which she could send a portion (0, 2, 4, 6, or 8) to an anonymous Player 2, which was tripled. Player 2 then decided what portion (if any) of the tripled amount to return to Player 1. The proportion sent measures Player 1's trust and the proportion returned measures Player 2's trustworthiness. Each farmer played the game once as Player 1 and again as Player 2 in order to measure both trust and trustworthiness. All decisions were made anonymously in a private room with an enumerator. Note that I do not examine interpersonal trust directly, as it is not theoretically related to savings decisions.

[18]Respondents were paid the sum of the Player 1 and Player 2 earnings from the trust game, in addition to the randomly selected payout from the risk and time games.

[19]There are 303 observations for which the experimental games and surveys could be linked. There are 28 observations with only survey data. In addition, as is often the case with survey data, some of the survey questions have missing observations.

Database. I use this to construct a dummy variable equal to one if the soil in a given village is classified as having "no agricultural limitations" (European Commission, 2004).[20] Terrain ruggedness data comes from Nunn and Puga (2012) and is used control for productivity factors that could affect savings rates. Lastly, the imperial boundary was drawn in GIS using the shapefile of a 1910 map, which was produced by Rumpler and Seger (2010). Habsburg treatment was assigned at the village level by overlaying a shapefile of village latitude and longitude with the 1910 map.

4.2 Estimation Framework

The Habsburg treatment is a deterministic and discontinuous function of known covariates, latitude and longitude, which suggests a using spatial regression discontinuity (RD) framework to estimate persistence in savings behaviors. The imperial border forms a multi-dimensional discontinuity in latitude-longitude space, which requires specifying a multidimensional RD polynomial in the estimating equation (Dell, 2010). The basic RD regression used in the empirical analysis is therefore:

$$Y_{iv} = \alpha + \beta Habsburg_v + \sigma \mathbf{X}_{iv} + f(location_v) + \phi \mathbf{Z}_v + \varepsilon_{iv} \tag{1}$$

where $Habsburg_v$ is a dummy variable equal to one if farmer i lives in a village v that was a part of the Habsburg Empire and $\mathbf{X}_{iv}$ is a vector of risk and time preferences.[21] To the extent that preferences are potential channel of persistence, I estimate equation (1) both with and without preferences controls. The RD polynomial $f(location_v)$ is a semi-parametric measurement of the location of the farmer's village, which takes three forms, discussed below. The vector $\mathbf{Z}_v$ contains geophysical and demographic characteristics of the farmer's village, including soil quality, which is a dummy variable equal to one if the soil is classified as having "no agricultural limitations", the Nunn and Puga (2012) measure of terrain ruggedness, elevation, distance to Suceava city, and village population. Lastly, ε_{iv} is the error term clustered at the village level.

The dependent variable Y_{iv} is a proxy for total accumulated savings (of both formal and informal

[20] These limitations are determined by the scientists who created the ESDB. Among the 17 possible agricultural limitations are: gravelly (over 35% gravel), stony (presence of stones $>$ 7.5 cm, impracticable mechanization), lithic (hard rock within 50 cm), glaciers and snow-caps, frangipans, and excessively drained.

[21] In alternate specifications, I also control for farmer-level covariates, including age, gender, education, wealth, household size, and how long the respondent's family has been living in the same village. However, since there are no observable differences in these covariates across the border (Table 1), I do not include them in the main analysis in order to conserve degrees of freedom. These specifications are nonetheless robust to the main findings (available upon request).

assets) that was constructed from a self-reported categorical variable from 1 to 5, where 1 represents savings between 0 and 50 Lei and 5 indicates savings greater than 1,000 Lei ($\sim$ \$300 USD or the average monthly salary in Romania in 2013). In some estimates I examine a dummy variable equal to 1 for savings greater than 1,000 Lei and in others I take the midpoint of the indicated savings category. If there is persistence in savings, β should be statistically significant and positive.

The spatial RD requires two identifying assumptions. First, all factors aside from the treatment must vary smoothly at the imperial boundary, such that there is no discontinuous jump in covariates at the border. In order to test this assumption, I conduct means tests of all covariates potentially correlated with savings in Table 1 using normalized differences, where a difference of 0.25 standard deviations is a rule of thumb for statistically significant differences (Imbens and Wooldridge, 2008).[22] There is no significant difference in individual and household level covariates, with the exception of a small difference in risk preferences, for which Habsburg respondents have marginally higher risk tolerance. In particular, there is no difference in the various measures of wealth that could be correlated with savings, such as the consumer durables index, home ownership, farm area, or crop output.[23] As a further check, I regress each of these variables on the Habsburg dummy, controlling for risk and time preferences, as well as a host of individual and household controls, and find no correlation between Habsburg imperial history and the various proxies for wealth (results in Table A2). In addition, I explore descriptive data on income at the national level and find no difference between Habsburg and non-Habsburg counties (Table A3). Lastly, Habsburg households are no more likely to have a migrant or receive remittances, conditional on having a migrant.

With regard to village-level geophysical characteristics, for villages in the sample of farmers, there are some large and significant differences in population, distance to Suceava city, ruggedness, soil quality, and elevation for villages in the sample. I therefore control for these covariates in all estimations using the sample of farmers. Note, however, that in the full sample of villages within Suceava county, many covariates are balanced, with the exception of distance to Suceava city and elevation. I control for these variables in any estimation that includes the full sample of villages in

[22] In most studies employing a spatial RD framework, it is standard to examine discontinuous jumps in covariates within varying bandwidths around the boundary (e.g. 100 km, 75 km, 50 km, and 25 km). Given that the mean distance to the border in this sample is 6.63 km, with a maximum distance of 31.42 km and minimum of 0 km, a simple means test on the whole sample is sufficient.

[23] The consumer durables index was constructed by assigning one point for each of the following durables owned: refrigerator, freezer, washing machine, audio equipment (iPod, stereo, etc.), computer, cell phone, television, bicycle, motorcycle, moped, and car, with a maximum value of 11.

Table 1: Normalized Differences in Covariates

	N	Habsburg	N	Non-Habsburg	Normalized Difference
Individual and Household Covariates					
Risky choices	128	5.844	168	5.179	0.299
Discount rate	128	0.907	168	0.902	0.074
Present bias (0/1)	128	0.125	168	0.119	0.013
Experimental data (0/1)	146	0.932	185	0.903	0.074
Age	144	45.042	176	44.545	0.032
Female (0/1)	146	0.336	184	0.429	-0.137
Post-secondary education (0/1)	146	0.493	184	0.511	-0.025
Household size	146	4.507	182	4.324	0.070
Raven score	146	4.747	178	4.916	-0.044
Durables index (1-11)	146	6.596	183	6.574	0.008
Home owner (0/1)	146	0.712	182	0.709	0.005
IHS(Farm Area)	146	2.072	183	1.879	0.174
IHS(Crop Output)	138	3.589	174	3.608	-0.011
Score on M141	146	33.116	185	31.811	0.097
Selected for M141	146	0.562	185	0.535	0.038
Land subsidy (0/1)	146	0.753	184	0.701	0.083
Animal subsidy (0/1)	146	0.473	182	0.440	0.047
Live in village<10 years (0/1)	144	0.007	182	0.011	-0.030
Live in village 10-50 years (0/1)	144	0.188	182	0.154	0.063
Live in village 50-100 years (0/1)	144	0.160	182	0.231	-0.127
Live in village>100 years (0/1)	144	0.646	182	0.604	0.060
Migrant in household (0/1)	146	0.267	184	0.217	0.082
Receive remittances (0/1)	39	0.615	36	0.583	0.046
Village level Covariates - Sample					
Village population	24	49.147	34	75.892	-0.280
Distance to Suceava city	24	29.177	34	22.483	0.350
Soil quality (0/1)	24	0.792	34	0.618	0.270
Ruggedness	24	149.675	34	94.092	0.405
Elevation	24	488.4	34	310.500	0.969
Km to primary road	24	2.298	34	2.396	-0.028
Village level Covariates - Suceava County					
Village population	238	53.870	169	52.958	0.008
Distance to Suceava city	238	41.543	169	31.960	0.297
Soil quality (0/1)	238	0.651	169	0.680	-0.044
Ruggedness	238	164.490	169	130.137	0.206
Elevation	238	575.714	169	427.254	0.443
Km to primary road	238	1.842	169	2.490	-0.203

Suceava county.

In a spatial RD, the treatment effect is typically identified through a semi-parametric technique using observations within a bandwidth of the treatment threshold (Imbens and Lemieux, 2008; Dell, 2010). I follow the literature by using a function of longitude (x) and latitude (y), as well

as distance, in order to distinguish the treatment indicator from the smooth effects of geographic location. Specifically, I follow Gelman and Imbens (2014), who recommend using local linear or quadratic polynomials, and explore three baseline specifications: 1) a linear polynomial of latitude and longitude, 2) a quadratic polynomial of latitude and longitude,[24], and 3) a quadratic polynomial of distance to the true imperial border.

An additional assumption often employed in RD is no selective sorting across the treatment threshold. This would be violated if either the drawing of the Bukovinian border included wealthier or more productive individuals with a higher propensity to save, or if it induced migration of such people to the Bukovinian side. I discuss in Section 4.1 how I address the former concern from a sampling perspective. With regard to latter, there is little evidence of substantial migration in this region. The historical discussion in Section 2 emphasizes the strict enforcement of the military border and the difficulties associated with crossing it during the imperial era. In the survey, I asked respondents how long their families had been living in the village where the respondent currently resides. 61 percent of families in the sample have been residing in the same village for over 100 years (long enough to experience imperial rule), while over 80 percent have remained for over 50 years. Moreover, there is no statistically significant difference in the years spent residing in the same village across the two samples, or in the proportion of households that have a migrant (Table 1).

4.3 Estimation Results

I begin by estimating equation (1) in order to explore the long-run effect of Habsburg imperial history on savings today. Table 2 displays the results. Panel A specifies $f(location_v)$ as a linear polynomial of latitude and longitude, while Panels B uses the quadratic polynomial of latitude and longitude, and Panel C uses a quadratic polynomial of distance to the border. In all three specifications, Habsburg imperial history is strongly correlated with savings. Moreover, these results are robust to controlling for risk and time preferences.

In Panels A and B, respondents who live in Habsburg areas are 18 to 19 percentage points more likely to have saved more than 1000 Lei and save approximately 320 to 350 Lei more on average. In Panel C, the magnitude of these effects is slightly larger. Habsburg respondents are 22

[24]The polynomial takes the following form, where x denotes longitude and y denotes latitude: $x + y + x^2 + y^2 + xy$.

Table 2: Imperial Persistence in Savings

	(1) Save> 1000 Lei	(2) Save> 1000 Lei	(3) Save> 1000 Lei	(4) Save Amount	(5) Save Amount	(6) Save Amount
Panel A: Linear RD polynomial in latitude and longitude						
Habsburg	0.182**	0.186***	0.177**	328.0**	335.4**	322.7**
	(0.0723)	(0.0669)	(0.0715)	(142.7)	(132.8)	(142.5)
Risky Choices		0.00898	0.00424		16.96	10.15
		(0.0151)	(0.0157)		(33.78)	(33.64)
Discount Rate		-1.214			-2227.7	
		(0.794)			(1446.8)	
Present Biased			-0.151*			-135.5
			(0.0786)			(122.4)
Panel B: Quadratic RD polynomial in latitude and longitude						
Habsburg	0.191**	0.189***	0.181**	347.8**	344.2**	337.6**
	(0.0744)	(0.0702)	(0.0734)	(146.2)	(138.6)	(146.2)
Risky Choices		0.0102	0.00593		19.07	13.13
		(0.0152)	(0.0159)		(34.02)	(34.11)
Discount Rate		-1.061			-1948.1	
		(0.773)			(1402.6)	
Present Biased			-0.161*			-150.1
			(0.0822)			(132.0)
Panel C: Quadratic RD polynomial in distance to true border						
Habsburg	0.226***	0.224***	0.221***	385.9***	383.9***	381.2***
	(0.0588)	(0.0566)	(0.0574)	(122.0)	(118.7)	(121.1)
Risky Choices		0.00898	0.00482		16.22	10.58
		(0.0145)	(0.0152)		(32.87)	(32.92)
Discount Rate		-0.970			-1713.5	
		(0.708)			(1295.3)	
Present Biased			-0.159**			-152.6
			(0.0740)			(121.8)
Mean of DV (non-Habs)	0.25	0.25	0.25	710.16	710.16	710.16
N	236	236	236	236	236	236
Clusters	49	49	49	49	49	49

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer in the sample. Robust standard errors in parentheses and clustered at the village level. All estimates include the following covariates: village population, soil quality, ruggedness, elevation, distance to Suceava city, and $f(location_v)$.

percentage points more likely to have saved more than 1000 Lei and save approximately 380 Lei more on average when the RD polynomial is specified with the quadratic distance to the border. Using the most conservative estimates in Panel A, the results suggest that the long run effect of

Habsburg imperial history on savings is large: a 70 percent increase in the probability of saving more than 1000 Lei and 45 percent higher savings on average.

It is interesting to note that risk and time preferences are uncorrelated with savings in all of the specifications, with the exception of present bias, which is negatively and weakly correlated with the probability saving more than 1000 Lei. For risk, the signs of the coefficients are positive and the standard errors are large. This is counterintuitive to precautionary models of savings, which predict that higher risk aversion (or lower risk tolerance) increases savings. While the direction of the coefficient for discount rates is consistent with economic theory (i.e., more impatience decreases savings), the standard errors are large.

What is most striking is that as risk and time preferences are added to each specification, the magnitude of the coefficient on the Habsburg dummy does not change substantially. In addition to the observation that these preferences are not significantly correlated with savings, these results suggest that risk and time preferences are unlikely channels through which imperial savings legacies persist. I conduct a more rigorous examination of channels in the next section.

5 Channels

5.1 Preferences and Culture

I begin by estimating equation (1) with various measures of preferences as the dependent variable and present the results in Table 3. In all specifications of the RD polynomial, Habsburg treatment is negatively correlated with risk, but the magnitude of the coefficients are small relative to the mean and the standard errors are large. Turning to discount rates, the sign on the Habsburg coefficient is inconsistent across RD polynomial specifications and the results are statistically insignificant and small in magnitude relative to the mean. Lastly, in regard to present bias, the Habsburg coefficient is negative and large relative to the mean, but the standard errors are large in all specifications of the RD polynomial.

The results in Table 3 suggest that imperial history is uncorrelated with contemporary preferences for risk and time. Moreover, the evidence from Table 2 shows that risk and time preferences are uncorrelated with savings and do not significantly shift the magnitude of the Habsburg coefficient when included as regressors. Nonetheless, while preferences do not appear to persist through

Table 3: Imperial Persistence in Preferences

	(1) Risky Choices	(2) Discount Rate	(3) Present Biased
Panel A: Linear RD polynomial in latitude and longitude			
Habsburg	-0.0273	0.000193	-0.0178
	(0.304)	(0.00732)	(0.0371)
Panel B: Quadratic RD polynomial in latitude and longitude			
Habsburg	-0.0252	-0.00266	-0.0463
	(0.344)	(0.00696)	(0.0398)
Panel C: Quadratic RD polynomial in distance to true border			
Habsburg	-0.0506	-0.00344	-0.0117
	(0.280)	(0.00782)	(0.0341)
Mean of DV (non-Habs)	5.19	0.90	0.08
N	276	276	276
Clusters	52	52	52

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer in the sample. Robust standard errors in parentheses and clustered at the village level. All estimates include the following covariates: village soil quality, ruggedness, elevation, distance to Suceava city, population, and $f(location_v)$.

imperial history, it is possible that they are culturally transmitted.

The literature on cultural transmission (Bisin and Verdier, 2001; Hauk and Saez-Marti, 2002; Guiso et al., 2006; Grosjean, 2011*b*; Guiso et al., 2016) demonstrates that certain norms and beliefs – many of which are important for economic development, such as trust and cooperation – persist over time. These norms can transmit either "vertically" via inter-generational family transfers, or "horizontally" through socialization (Bisin and Verdier, 2001). Horizontal and vertical transmission are substitutable, such that the prevalence of a given trait in one's social network may be a predictor of individual behavior.[25] I apply this framework to examine whether or not there is evidence of cultural transmission in preferences. In addition, I examine cultural transmission in savings itself.

Head and Mayer (2008) show that a gravity equation of the following specification can causally estimate cultural transmission:

$$Y_{ij} = \alpha + \gamma Dist_{ij} + \sigma|\bar{X}_i - \bar{X}_j| + \tau_i + \phi_j + \varepsilon_{ij} \tag{2}$$

where Y_{ij} is the Manhattan Distance of preferences and savings between villages i and j. The Manhattan Distance is a measure of dissimilarity in the categorical risk and savings questions

[25] I have not gathered formal data on social networks and rather assume that one's social network is correlated with geographical proximity at the village level.

between villages, where: $MD_{ij} = \Sigma_{r=1}^{R}|s_{ri} - s_{rj}|$ and s_{ri} is the share of responses in village i (or j) that correspond to the rth category in the risk and savings variable, of which there are 5 for savings questions and 10 for risk questions. For the time preference regression, I use the absolute value difference in mean discount rates between villages i and j. $Dist_{ij}$ is the inverse hyperbolic sine of the distance between villages i and j, while the term $|\bar{X}_i - \bar{X}_j|$ controls for absolute value differences in the village means of a number of individual and household covariates. Lastly, τ_i and ϕ_j are a fixed effect for each village in the dyad and standard errors ε_{ij} are clustered at the village level using multi-way clustering (Cameron et al., 2011).

The intuition behind equation (2) is that if preferences or savings are culturally transmitted, the village level means of these traits should become increasingly different as the distance between two villages increases, such that $\gamma > 0$. Alternatively, as geographic proximity increases, preferences and savings behaviors are more similar. The results in Table 4 suggest no evidence of cultural transmission in preferences or savings. In each of the columns, the coefficient on $Dist_{ij}$ is positive, but the standard errors are large. Moreover, consistent with the results in Table 2 village-level preferences for risk and time are not significantly correlated with savings.

With no evidence of an imperial effect on preferences, as well as a lack of evidence of cultural transmission in preferences and savings, or a relationship between preferences and savings, I conclude that preferences are an unlikely mechanism through which savings legacies persist. The next section explores the institutional channels.

5.2 Financial Access

I begin by examining whether or not there is evidence of imperial persistence in financial access. Recall from the historical discussion in Section 2 that the Habsburg regions of Romania were more financially developed than the regions of Moldavia and Wallachia around the turn of the twentieth century. In order to test whether there is a long-run correlation between Habsburg imperial history and financial development today, I regress measures of financial access at the village level on a Habsburg dummy, while controlling for demographic and geophysical characteristics, as well as various specifications of $f(location_v)$. Specifically, I examine each village within Suceava county,

Table 4: Cultural Transmission

	(1) Risk Manhattan Distance	(2) Discount Rate Difference	(3) Savings Manhattan Distance
IHS(Distance)	0.0323	0.00176	0.0111
	(0.0239)	(0.00141)	(0.0244)
Risk (Manhattan Distance)			-0.0175
			(0.0479)
Discount Rate Difference			0.0607
			(1.917)
N	1176	1176	1176
Clusters	49	49	49

* p< 0.10, ** p<0.05, *** p < 0.01. Unit of observation is a village dyad using data obtained from the household survey of M141 farmers. The Manhattan Distance is a measure of dissimilarity in the categorical risk and savings questions between villages, where: $MD_{ij} = \Sigma_{r=1}^{R}|s_{ri} - s_{rj}|$ and s_{ri} is the share of responses in village i (or j) that correspond to the rth category in the risk and savings variable, of which there are 5 for savings questions and 10 for risk questions. IHS(Distance) is the inverse hyperbolic sine of the geodesic distance between each village in the dyad. All estimates include two-way robust cluster standard errors at the village level, following the Cameron et al. (2011) method. All regressions control for the pairwise differences in the following covariates: age, post-secondary education, female, household size, durables index, and village elevation, ruggedness, soil quality, population, and distance to Suceava city, as well as a fixed effect for each village in the dyad.

of which there are 407, and its geodesic distance to the nearest bank-affiliated ATM.[26] I choose this measure for several reasons. First, bank-affiliated ATMs in Suceava allow for deposits, making it a viable mechanism for savings. Second, there are very few savings banks in Suceava county, most of which are concentrated around larger towns, such as Suceava city, Falticeni, and Radauti. ATMs, of which there were 67 in the entire county as of 2014, are accessible in towns as well as rural regions.

Table 5 shows that there is a strong correlation between imperial history and financial access, which is robust to various specifications of $f(location_v)$, as well as controlling for village level covariates that are unbalanced across the imperial border. In the most conservative estimates in column (3), Habsburg villages in Suceava county are approximately 30 percent – a distance of around 2.2 km – closer to an ATM than non-Habsburg villages. I interpret these results to suggest

[26]Geodesic distances were calculated using GIS software. The geodesic distance calculates the the shortest path between two points taking into consideration the curvature of the Earth. It is therefore exogenous to factors that could be correlated with financial access and imperial history, such as road infrastructure.

Table 5: Imperial Persistence in Financial Access

Dependent Variable: Geodesic distance to ATM	(1)	(2)	(3)
Panel A: No controls			
Habsburg	-0.600***	-0.408***	-0.291**
	(0.127)	(0.145)	(0.118)
Panel B: With controls			
Habsburg	-0.384**	-0.375**	-0.349***
	(0.158)	(0.156)	(0.109)
N	407	407	407
Clusters	113	113	113
$f(location_v)$	Linear Lat/Lon	Quadratic Lat/Lon	Quadratic distance

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a village in Suceava County, Romania. Robust standard errors in parentheses and clustered at the comuna (district) level. The dependent variable in all columns is the inverse hyperbolic sine (IHS) of the geodesic distance of a given village to the nearest bank-affiliated ATM. Panel A controls only for $f(location_v)$. Panel B includes the following additional controls: village elevation and village distance to Suceava city. ATM data obtained from Google Maps in April 2014. Population data obtained from the 2010 SEDEC population grid. Road data obtained from Global Roads Open Access Data Set, Version 1.

that the Habsburg regions of Suceava are more financially developed than non-Habsburg regions, which could be an important channel of persistence if financial development is correlated with savings behaviors.

The theoretical framework on portfolio allocation with transaction costs predicts that financial access determines savings. Specifically, higher transaction costs in the formal financial sector, which could include proximity to banks, are correlated with lower savings. To explore this prediction, I estimate the following equation:

$$Yiv = \alpha + \beta Financial\ Access_v + \sigma \mathbf{X}_{iv} + \phi \mathbf{Z}_v + \varepsilon_{iv} \tag{3}$$

where $Financial\ Access_v$ is the proximity to an ATM, specified as the inverse distance of respondent i's village v to the nearest ATM. The vector $\mathbf{X}_{iv}$ contains individual and household level controls that are correlated with savings, such as age, education, gender, household size, and the consumer durables index. In some specifications, it also includes risk and time preferences. Lastly, $\mathbf{Z}_v$ is a vector of village-level controls and ε_{iv} is the standard error clustered at the village level. If financial

Table 6: Financial Access and Savings

	(1) Save> 1000 Lei	(2) Save> 1000 Lei	(3) Save Amount	(4) Save Amount
Proximity to ATM	0.0835*	0.0883*	176.3**	185.3**
	(0.0467)	(0.0468)	(86.04)	(86.21)
	[0.09]	[0.11]	[0.10]	[0.11]
Risky Choices		0.00779		9.683
		(0.0151)		(34.71)
Discount Rate		-1.030		-1876.9
		(0.786)		(1478.2)
Mean DV (all)	0.29	0.29	775.99	775.99
N	233	233	233	233
Clusters	49	49	49	49

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Standardized beta coefficients in brackets. Unit of observation is a farmer in the sample. Robust standard errors in parentheses and clustered at the village level. *Proximity to ATM* is the inverse of the geodesic distance from the respondent's village to the nearest bank-affiliated ATM. All estimates include the following covariates: age, post-secondary education (0/1), female (0/1), household size, durables index, and village ruggedness, elevation, soil quality, population, and distance to Suceava city.

access is a channel of persistence, proximity to an ATM should be positively correlated with savings, such that $\beta > 0$.

Table 6 displays the results of estimating equation 3, which suggest that the proximity to an ATM is significantly correlated with having saved more than 1000 Lei and with total savings on average. A one standard deviation increase in the proximity to an ATM – approximately 2.3 km – is associated with a 0.10 standard deviation increase in savings, which corresponds to roughly 82 more Lei.

One of the ways in which persistence in financial access affects savings is through the constraints it places on the choice of savings instruments. Living farther away from a formal bank creates high transaction costs for savings, such that people living in areas of low financial development may be inclined to substitute formal savings into informal instruments, like livestock, which are known to have a lower rate of return (Karlan et al., 2014). It is interesting to note in Table 7 that farmers living in Habsburg regions are are approximately 22 percentage points less likely use illiquid forms of savings, such as livestock, grain inventory, and jewelry. In addition, there is weak evidence

that saving in an illiquid asset reduces the probability of having saved more than 1000 Lei by 34 percent and stronger evidence that it decreases total accumulated assets by 27 percent. That is, non-Habsburg farmers are more likely to choose informal savings instruments, which have a lower rate of return. This suggestive evidence is one possible explanation for the observed differences in the total accumulated value of savings in Table 2.

Table 7: Financial Access and Informal Savings

	(1) Save Illiquid	(2) Save Illiquid	(3) Save Illiquid	(4) Save > 1000 Lei	(5) Save Amount
Habsburg	-0.217***	-0.203***	-0.216***		
	(0.0729)	(0.0726)	(0.0790)		
Save in Illiquid Assets				-0.102+	-211.8**
				(0.0624)	(103.7)
Mean DV	0.84	0.84	0.84	0.29	775.99
N	289	289	289	257	257
Clusters	57	57	57	54	54
$f(location_v)$	Linear Lat/Lon	Quadratic Lat/Lon	Quadratic distance	N/A	N/A

+ p<0.15, * p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer in the sample. Robust standard errors in parentheses and clustered at the village level. All estimates include the following village covariates: soil quality, ruggedness, elevation, population, and distance to Suceava city. Columns (1)-(3) control for $f(location_v)$. Columns (4)-(5) also control for age, post-secondary education (0/1), female (0/1), household size, and consumer durables index.

A caveat of these results is that financial access on either side of the border is an equilibrium outcome and likely endogenous to average savings in the region. Banks locate in places where they can make a profit, which could be correlated with many observables, such as population density, infrastructure, and savings/investment demand, as well as unobservables like creditworthiness and entrepreneurship. To explore these issues further, I examine descriptive evidence from county-level census data for the whole of Romania. These data show no difference in income, population, or overdue-loans using data from 1996 to 2014 (Table A3 in the Appendix). Moreover, nationally-representative household data from the European Bank for Reconstruction and Development Life in Transition Survey II (EBRD LiTS II), indicates no difference in entrepreneurship across the imperial

border.[27] To causally test the effect of persistence in financial development on savings would require a counterfactual. While this is not possible in the present study, it is motivating for future work in which formal savings instruments can be randomly provided across the two populations (à la de Mel et al., 2013; Dupas and Robinson, 2013; Schaner, 2013). Evidence of equalization in savings across the border once financial access is balanced would suggest a causal institutional channel.

6 Robustness

6.1 External Validity

By restricting the sample frame to a set of farmers from a concentrated geographic who applied to a specific program and received similar application scores, I have controlled for potential confounding unobservables, such as local institutions or farmer ability, effort, and entrepreneurship. One tradeoff associated with this restriction is that, while internally valid, the results could be driven by differences unique to Suceava that are not generalizable in a larger sense. In order to address this, I explore persistence in preferences and savings behaviors using the European Bank for Reconstruction and Development Life in Transition Survey II (EBRD LiTS II), which contains nationally representative data for Romania. The questionnaire does not include measurements of time preferences, but it does include unincentivized stated preference questions on risk tolerance and trust in financial institutions, as well as measures of savings. I use this data to approximate the estimations presented in Tables 2 and 3.

I run a spatial RD across the imperial boundary. As previously discussed, one of the identifying assumptions necessary for a spatial RD requires that there are no discontinuous jumps in covariates across the border. Table A4 in the Appendix shows normalized differences in means for a host of covariates and indicates no statistically significant differences across the two groups on average, with the exception of elevation. Figure A1 in the appendix, however, shows that there are some significant discontinuities at the border for age, female headed households, education, consumption, and elevation. To the extent that some of these factors may be influenced by imperial history directly and thus constitute bad controls, I run two specifications: one controlling for elevation, only, and another controlling for all discontinuous covariates.

[27] Results available upon request. This result is also found in Grosjean (2011*a*) using the same data.

Table 8: Results from a Nationally Representative Sample

	(1) Risk	(2) Risk	(3) Risk	(4) Trust	(5) Trust	(6) Trust	(7) Save	(8) Save	(9) Save
Panel A: Controlling only for elevation									
Habsburg	0.585	1.275	0.681**	0.538*	0.326	0.218	48.46*	62.33*	36.49
	(0.816)	(0.976)	(0.322)	(0.310)	(0.363)	(0.222)	(25.59)	(34.01)	(25.17)
N	773	773	773	773	773	773	773	773	773
Panel B: Including discontinuous controls									
Habsburg	-0.0922	-0.163	0.735**	0.549*	0.170	0.186	40.11***	43.71**	21.31
	(0.655)	(0.734)	(0.353)	(0.293)	(0.336)	(0.216)	(14.56)	(17.50)	(13.16)
N	602	602	602	602	602	602	602	602	602
Mean DV	4.21	4.21	4.21	2.00	2.00	2.00	33.59	33.59	33.59
Clusters	58	58	58	58	58	58	58	58	58
f(location):	Linear Lat/Lon	Quad Lat/Lon	Quad Dist	Linear Lat/Lon	Quad Lat/Lon	Quad Dist	Linear Lat/Lon	Quad Lat/Lon	Quad Dist

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Data obtained from the EBRD Life in Transition Survey II (LITS II). Estimates restricted to all primary sampling units (PSUs) in Romania. Robust standard errors in parentheses and clustered at the PSU level. Risk tolerance is measured with a subjective question: "On a scale of 1 to 10 how willing are you to take risk?". Trust in Banks is a categorical variable on a scale from 1 to 5, where 1 represents complete distrust in banks and the financial system, and 5 represents complete trust. Save is the average amount of Lei per month the respondent reports to save each month. Panel A controls for PSU elevation and PSU $f(location)$, only. Panel B controls for age, age^2, female head of household, higher education, average monthly consumption, PSU elevation, and PSU $f(location)$.

Table 8 shows that in both Panels A and B, and across various specifications of the RD polynomial, there is no robust evidence of an imperial effect on risk preferences. It is worth noting that contrary to my results in Table 3, the LiTS results suggest that Habsburg imperial history is positively correlated with risk, although this effect is only statistically significant in column (3). Turning to savings, there is a consistent positive correlation between Habsburg imperial history and savings in columns (7) and (8). Moreover, the magnitude of these coefficients does not change considerably after controlling for the covariates that are discontinuous at the border. While in both Panels A and B the Habsburg coefficient in column (9) is smaller in magnitude and statistically insignificant, this is possibly driven by the fact that elevation and distance to the border are highly collinear in this sample.[28] Overall, the results suggest that respondents living in Habsburg regions save between 40 and 60 Lei more per month than respondents in non-Habsburg regions.

In columns (4)-(6) I explore an additional potential channel of transmission: trust in banks. In

[28]The raw correlation coefficient for distance to the border and elevation is -0.58.

both Panels A and B, and across various specifications of the RD polynomial, there is no evidence of an imperial effect on trust in banks. The coefficients are positive, but the standard errors are large. I interpret this evidence as ruling out an unexplored channel – mistrust in financial institutions – as a potential mechanism of persistence in savings behaviors.

The results presented in Table 8 are consistent with the primary results. Respondents in Habsburg regions save significantly more per month than non-Habsburg respondents and there is no evidence that imperial history has any effect on risk preferences. These findings lend external validity to my original results. In the next section, I explore the extent to which the original results are sensitive to possible placebo effects.

6.2 Falsification Tests

A potential concern with the primary results is that perhaps farmers living in Habsburg regions save more or have better financial access because they are closer to Western Europe, rather than from a causal effect of imperial legacy (Becker et al., 2016). As a robustness check, I arbitrarily move the imperial border to the northwest and southeast in order to rule out a pseudo Habsburg effect. If the primary findings are robust, there should not be a statistically significant Habsburg effect on savings and financial access after moving the border.

To rule out a pseudo effect on savings, I first move the border 4.39 km to the northwest (the median distance for the Habsburg sample) and replace the Habsburg dummy with zeros for villages to the southeast of the new placebo border. I then rerun the savings regressions on the Habsburg sample only, excluding all observations on the non-Habsburg side of the true border. I do the same for the non-Habsburg sample, moving the border 2.74 km to the southeast (the median distance for the non-Habsburg sample) and replacing the Habsburg dummy with 1 for villages to the northwest of the placebo border (excluding all observations on the Habsburg side of the true border). I repeat this exercise at the village level in order to explore a pseudo effect on financial access. That is, I move the border 12.6 km to the northwest and 5.5 km to the southeast (the median distances for Habsburg and non-Habsburg villages, respectively) and rerun the estimates in Table 5.

There is no evidence in Table 9 of a placebo Habsburg effect on savings. All of the coefficients are statistically insignificant and the signs vary across specification of the RD polynomial. In addition, the results in Table 10 also show no evidence of a pseudo effect on distance to ATM, with

Table 9: Falsification Test: Savings

	(1) Save> 1000 Lei	(2) Save> 1000 Lei	(3) Save> 1000 Lei	(4) Save Amount	(5) Save Amount	(6) Save Amount
Placebo Habsburg	0.0129	0.0933	-0.0594	-47.61	109.2	-135.9
(Habsburg Sample)	(0.160)	(0.0604)	(0.109)	(283.5)	(103.7)	(186.2)
N	123	123	123	123	123	123
Placebo Habsburg	-0.0378	-0.0618	0.00586	-122.0	-148.5	9.622
(non-Habsburg Sample)	(0.0846)	(0.124)	(0.135)	(161.6)	(247.4)	(276.5)
N	155	155	155	155	155	155
$f(location_v)$	Linear Lat/Lon	Quad Lat/Lon	Quad Dist	Linear Lat/Lon	Quad Lat/Lon	Quad Dist

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer in the M141 sample. Robust standard errors in parentheses and clustered at the village level. In the first row, the sample is restricted to Habsburg respondents and "Placebo Habsburg" is defined as being to the northwest of a placebo border that is moved 4.4 km (the median distance for Habsburg respondents) to the northwest of the true border. In the second row, the sample is restricted to non-Habsburg respondents and "Placebo Habsburg" is defined as being to the northwest of a placebo border that is moved 2.7 km (the median distance for non-Habsburg respondents) to the southeast of the true border. All estimates include the following covariates: village soil quality, ruggedness, elevation, distance to Suceava city, population, and $f(location_v)$

many statistically insignificant coefficients and signs that contradict the original findings.

7 Discussion

In the previous sections, I have presented robust evidence that suggests that there is a positive correlation between Habsburg imperial history and savings today. Moreover, there is consistent evidence that an important channel through which this effect operates is through persistence in financial access on the Habsburg side of the border, rather than through preferences or cultural channels. Nonetheless, it is possible that other mechanisms are also important drivers of persistence. For instance, financial underdevelopment in non-Habsburg regions could have fostered mistrust in formal financial institutions, which might negatively impact savings behaviors today. When I explore nationally-representative secondary data in Table 8, however, I find no robust evidence that Habsburg respondents trust banks any more than non-Habsburg respondents.

Another potential explanation is that with better financial access, people living on the Habsburg

Table 10: Falsification Test: Financial Access

Dependent variable: Geodesic distance to ATM	(1)	(2)	(3)	(4)	(5)	(6)
Placebo Habsburg	0.0280	0.270	0.266*	0.320**	0.320	0.313
(Habsburg Sample)	(0.188)	(0.182)	(0.159)	(0.158)	(0.274)	(0.244)
N	238	238	238	238	238	238
Placebo Habsburg	-0.204	-0.243	-0.0852	-0.147	-0.127	-0.0219
(non-Habsburg Sample)	(0.169)	(0.154)	(0.153)	(0.154)	(0.206)	(0.207)
N	169	169	169	169	169	169
Additional controls	No	Yes	No	Yes	No	Yes
$f(location_v)$	Linear Lat/Lon	Quad Lat/Lon	Quad Dist	Linear Lat/Lon	Quad Lat/Lon	Quad Dist

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a village in Suceava County. Robust standard errors in parentheses and clustered at the comuna (district) level. The dependent variable in all columns is the inverse hyperbolic sine (IHS) of the geodesic distance of a given village to the nearest bank-affiliated ATM. In the first row, the sample is restricted to Habsburg villages and "Placebo Habsburg" is defined as being to the northwest of a placebo border that is moved 12.6 km (the median distance for Habsburg villages) to the northwest of the true border. In the second row, the sample is restricted to non-Habsburg villages and "Placebo Habsburg" is defined as being to the northwest of a placebo border that is moved 5.5 km (the median distance for non-Habsburg villages) to the southeast of the true border. Columns (1), (3), and (5) control only for $f(location_v)$. Columns (2), (4), and (6) include the following additional controls: village elevation and village distance to Suceava city.

side of the border have developed more financially literacy. Financial literacy should positively impact savings decisions, especially for people who have had exposure to sophisticated financial instruments that have a higher rate of return. To elucidate this mechanism, I use data from the 2010 World Bank Romania Financial Literacy and Financial Services Survey to conduct a spatial RD within 100 km, 75 km, and 50 km bandwidths of the imperial border. This exercise produces no evidence of differences in financial literacy across the border (Table A5).

Lastly, it is possible that remittances from migration explains differences in savings. A quarter of respondents in my sample have a migrant in their household, and 60 percent of these respondents receive remittances from abroad. Remittances, which are typically not reported for tax reasons and often stored in informal savings mechanisms, could potentially understate savings in the non-Habsburg sample if migration is more prevalent in that region. In this case, the observed savings differences would be purely driven by reporting-bias. Within the Suceava sample I examine the extent to which migration is more prevalent on either side of the border in Table 1 and find that Habsburg households are no more likely to have a migrant or receive remittances, conditional on

having a migrant.

Alternatively, if there is differential variation across the border of migration to Suceava county, this could also confound the results. To explore this, I verify whether the Habsburg effect on savings varies with the amount of time the respondent's family has lived in the same village. Table A6 in the Appendix shows that Habsburg farmers whose families have lived in their village for 50 years or more save significantly more, suggesting that the primary results are driven by persistence and not migration. If anything, there is some weak evidence that new migrants to Habsburg villages – those whose families arrived in their village less than 50 years ago – save less.

While imperial persistence in savings behaviors and financial development is interesting in its own right, one may question the welfare implications of such disparities if other outcomes such as income, wealth (independent of savings), and education are nearly identical, as they are in my sample. In this sense, the macroeconomic effects may be ambiguous if savings imbalances do not translate into investment outcomes. On the microeconomic scale, however, savings is crucial for consumption smoothing and protection against economic shocks. Imperial savings disparities could therefore have important implications for economic welfare in the region.

Using data from the EBRD LiTS II survey for Romania, I find that savings is strongly correlated with lower exposure to household shocks in the wake of the global financial crisis. A one percent increase in average monthly savings is significantly and negatively correlated with the probability of having to reduce consumption, postpone or miss a medical visit, stop medication, shut off utilities, sell an asset, or be forced to move during the global financial crisis (results in Table A7). In regard to mitigating economic shocks, the possible welfare implications of imperial savings differentials are meaningful.

8 Conclusion

Imperial history has an important and lasting influence on savings behaviors today. In my sample, the most conservative estimates suggest that Habsburg farmers are 18 percentage points more likely to have accumulated savings in excess of 1,000 Lei – the equivalent of a month's salary – and have saved roughly 320 Lei (75 USD) more than non-Habsburg farmers. The Habsburg effect is proportional to a 45 percent increase over average non-Habsburg savings, making the imperial

effects less than trivial.

I carefully explore several channels through which this relationship persists and find no evidence that transmission operates through risk and time preferences or cultural savings norms. Rather, the results suggest that an important mechanism is financial access. Disparities in financial development across the Habsburg border within Romania were documented as early as 1911 (Mendelski and Libman, 2011). The evidence presented above suggests that these disparities persist today. I measure financial access as distance to a bank-affiliated ATM and find that Habsburg villages in Suceava county are 2.2 km closer to a bank-affiliated ATM than non-Habsburg villages. Moreover, financial access is significantly correlated with savings. A one standard deviation increase in the proximity to an ATM is associated with a 0.10 standard deviation increase in total accumulated savings. Additional evidence suggests that historical differences in financial access encourages people with lower financial access to substitute savings into informal assets such as animals, grain inventory, or jewelry, which have a lower rate of return than formal savings accounts. Households living in non-Habsburg regions are 25 percent more likely to save in an informal asset and saving in informal assets is associated with 27 percent lower accumulated savings.

Falsification tests rule out a placebo West-East trend in savings behaviors and financial access. Moreover, robustness checks using nationally-representative data within Romania generate consistent findings, lending external validity to my initial results. Such evidence suggests that the local average treatment effects observed in Suceava county are generalizable to a larger context.

The evidence of hysteresis in savings presented in this paper helps to explain why it has been so difficult to promote savings through policy without understanding the historical nuances at play. A careful examination of the mechanisms suggests that future policy should focus on constraints around financial access in this geographic area, rather cultural and preferences-related factors. Nonetheless, it remains unclear why disparities in financial access exist today and whether or not there is a causal relationship to savings. Future work should explore the industrial-organizational differences for why banks still choose to locate in Habsburg regions, as well as create empirical counterfactuals to test whether improving access to formal financial institutions disproportionately improves savings on the non-Habsburg side of the border.

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Appendix A Appendix

Appendix A.1 Additional Results

Table A1: Determinnts of Participation

	(1) Participate
Habsburg	-0.100
	(0.0751)
Year applied	0.0208
	(0.0887)
Cooperative	0.00736**
	(0.00324)
M214	0.0168***
	(0.00583)
LFA	0.0390
	(0.0833)
Age<40	0.0888
	(0.0677)
Plan to invest	-0.0385
	(0.111)
Constant	-41.22
	(178.4)
R^2	0.0254
N	522

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer recruited to participate in the study. Robust standard errors in parentheses and clustered at the comuna level, the level at which participants were notified of the study.

Table A2: Durables, Production, and Land Differences

	(1) Durables Index	(2) Durables Index	(3) IHS(Crop Output)	(4) IHS(Crop Output)	(5) IHS(Land Holdings)	(6) IHS(Land Holdings)
Habsburg	0.148	0.181	-0.214*	-0.211*	0.0206	0.0186
	(0.295)	(0.298)	(0.112)	(0.112)	(0.140)	(0.142)
Risky Choices		-0.0142		-0.0706		-0.0171
		(0.0966)		(0.0471)		(0.0281)
Discount Rate		5.493*		-0.890		-0.701
		(2.851)		(1.816)		(1.731)
N	261	261	261	261	261	261

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Unit of observation is a farmer in the sample. The durables index variable runs from 0 to 11. Columns (1)-(2) are Tobit Estimates. Columns (3)-(6) are OLS estimates. Robust standard errors in parentheses and clustered at the village level. All estimates include the following covariates: age, post-secondary education(0/1), female (0/1), household size, village soil quality, village ruggedness, village elevation, vilage distance to Suceava city, and a quadratic polynomial of latitude and longitude.

Table A3: County-level Differences

	N	Habs	N	Non-Habs	Norm. Diff.
Excluding Suceava					
Avg. nominal monthly earnings (1996-2008)	221	434	312	460	-0.051
Population (1997-2014)	306	298916	432	341668	-0.170
% Loans overdue (2005-2014)	170	0.069	230	0.060	0.105
Excluding Bucharest and Suceava					
Avg. nominal monthly earnings (1996-2008)	221	434	299	452	-0.036
Population (1997-2014)	306	298916	414	299508	-0.004
% Loans overdue (2005-2014)	170	0.069	220	0.060	0.103

Normalized differences for counties in Romania. Data obtained from the Romanian National Institute of Statistics.

Table A4: Normalized Differences: LiTS Romania Sample

	N	Habsburg	N	Non-Habsburg	Normalized Difference
Age	385	52.226	693	53.209	-0.042
Female HoH	385	0.475	693	0.382	0.133
Household size	385	2.306	693	2.491	-0.106
Post-HS education (0/1)	385	0.270	693	0.248	0.035
Monthly Consumption (Lei)	239	1147.543	555	1231.439	-0.070
Ruggedness index	385	58.785	693	48.246	0.174
Soil quality (0/1)	385	0.706	693	0.716	-0.014
Elevation	385	323.649	693	129.472	0.944
Km to border	385	88.525	693	97.924	-0.115

Table A5: Financial Literacy

	(1) Interest	(2) Purchasing Power	(3) Purchasing Power II	(4) Discount	(5) Credit
Panel A: 100 km bandwidth					
Habsburg	0.073	0.032	-0.037	0.133*	0.015
	(0.058)	(0.065)	(0.067)	(0.067)	(0.052)
N	1279	1279	1279	1279	1279
R^2	0.03	0.06	0.05	0.10	0.04
Panel B: 75 km bandwidth					
Habsburg	0.014	-0.016	0.005	0.115	0.068
	(0.054)	(0.064)	(0.077)	(0.073)	(0.060)
N	949	949	949	949	949
R^2	0.05	0.06	0.07	0.08	0.04
Panel C: 50 km bandwidth					
Habsburg	-0.031	-0.029	-0.051	0.082	0.095
	(0.085)	(0.093)	(0.120)	(0.099)	(0.087)
N	575	575	575	575	575

* p< 0.10, ** p<0.05, *** p < 0.01. OLS estimates. Data obtained from the World Bank Romania Financial Literacy and Financial Services Survey 2010. Standard errors in parenthesis and clustered at the comuna (district) level. Dependent variable is whether or not the respondent correctly answered the following questions: (1) A 10,000 Lei deposit in an account at 10% annual interest rate is how much in 5 years? (2) A 10,000 Lei deposit in an account at 8% interest and 10% inflation buys more, the same, or less than a year ago? (3) In 2012, income doubles and consumer prices double, can you buy more, exactly the same, or less than today? (4) A 1000 Lei TV is discounted by 150 Lei and another is 10% off, which is a better discount? (5) Consider a 10000 Lei loan to be paid back over a year in equal monthly payments. The credit charge is 600 Lei. What is the annual interest on your credit? All estimates include the following controls: age, female (0/1), post-high school education (0/1), and quadratic distance of the respondent's comuna to the border.

Table A6: Savings and Migration

	(1) Save> 1000 Lei	(2) Save> 1000 Lei	(3) Save> 1000 Lei	(4) Save Amount	(5) Save Amount	(6) Save Amount
Habsburg	0.238***	0.246***	0.278***	436.6***	456.7***	486.4***
	(0.0770)	(0.0800)	(0.0653)	(147.9)	(154.5)	(129.5)
Lived in village $<$ 50 years	0.0438	0.0408	0.0381	109.2	104.8	97.11
	(0.111)	(0.114)	(0.112)	(193.1)	(195.9)	(193.8)
Habsburg $\times$ $<$ 50 years	-0.269	-0.256	-0.270	-530.6*	-507.8*	-522.6*
	(0.166)	(0.170)	(0.165)	(285.2)	(290.7)	(283.5)
N	236	236	236	236	236	236
$f(location_v)$	Linear Lat/Lon	Quadratic Lat/Lon	Quadratic distance	Linear Lat/Lon	Quadratic Lat/Lon	Quadratic distance

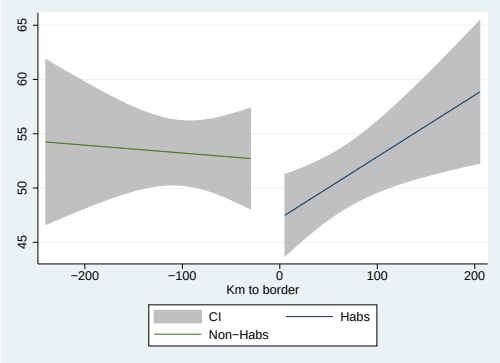
* p$<$ 0.10, ** p$<$0.05, *** p $<$ 0.01. OLS estimates. Unit of observation is a farmer in the sample. Robust standard errors in parentheses and clustered at the village level. All estimates include the following covariates: village soil quality (0/1), ruggedness, elevation, population, distance to Suceava city, and $f(location_v)$.

Table A7: Savings and Economic Shocks

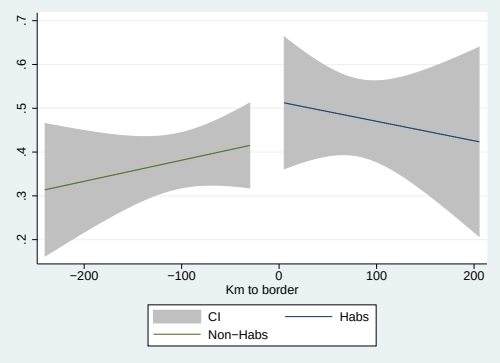
	(1) Reduce Consump	(2) Postpone Dr. Visit	(3) Stop Buy Meds	(4) Late Utilities	(5) Utilities Shut off	(6) Loan Default	(7) Sell Asset	(8) Forced to Move
Save	-0.053***	-0.016***	-0.020***	-0.011	-0.010***	-0.005	-0.007***	-0.002***
	(0.007)	(0.005)	(0.006)	(0.012)	(0.003)	(0.005)	(0.002)	(0.001)
N	866	866	866	866	866	866	866	866
Mean of DV	0.452	0.136	0.178	0.269	0.047	0.064	0.027	0.008

* p$<$ 0.10, ** p$<$0.05, *** p $<$ 0.01. Data obtained from the EBRD Life in Transition Survey II (LiTS II). Sample is all observations in Romania. Robust standard errors in parentheses and clustered at the PSU level. *Save* is the inverse hyperbolic sine (IHS) of the average Lei the respondent reports to save each month. Each dependent variable is a binary variable equal to 1 if the event occurred in the past 2 years. Additional controls include: age, household size, higher education (0/1), female (0/1), employed (0/1), PSU elevation, PSU ruggedness, PSU soil quality, and PSU distance to border.

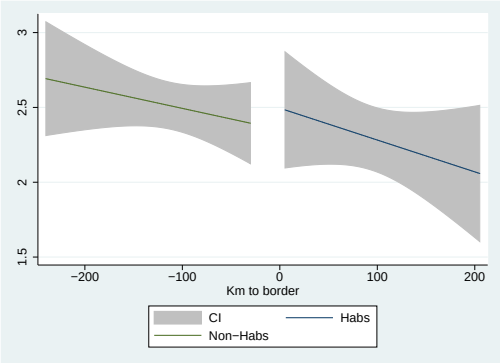
Appendix A.2 Additional Figures



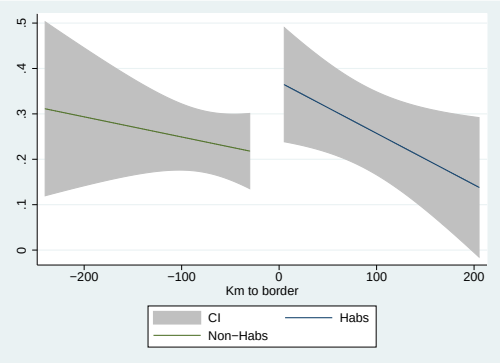
(a) Age



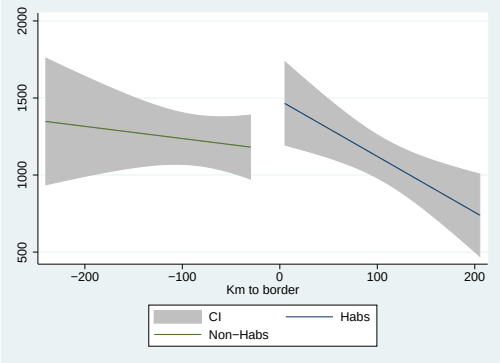
(b) Female HoH



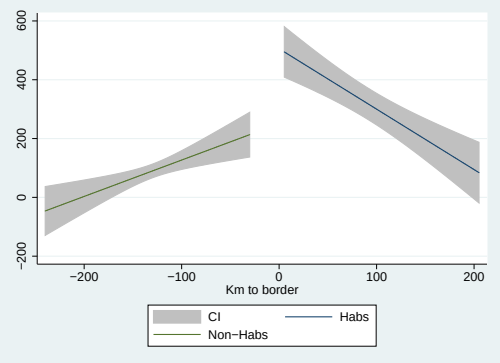
(c) HH size



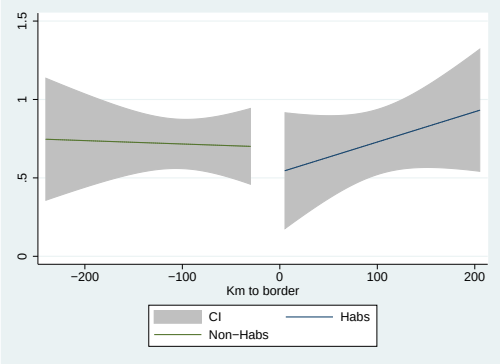
(d) Education



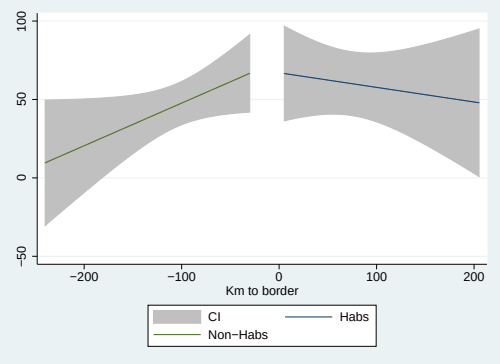
(e) Consumption



(f) Elevation



(g) Soil quality



(h) Ruggedness

Figure A1: Tests for discontinuous covariates: LiTS II Romania Data

Data comes from the EBRD LiTS II survey. Data restricted to PSUs in Romania. Linear fit with standard errors clustered at the PSU level.

Appendix A.3 Theoretical Model

Appendix A.3.1 Environment and Equilibrium Conditions

Assume an infinite sequence of representative agents, each who lives two periods. In the first period, the agent earns exogenous income (Y_1) and saves a portion of this income (S_1), which she can invest in either a "formal" (e.g., bank deposits) or "informal" asset (e.g., livestock, grain inventory, or an informal risk-sharing network without full commitment). Let ω represent the portion of savings invested in the "informal" asset and $(1-\omega)$ represent the portion invested in the "formal" asset. I impose "iceberg" transaction costs in the formal financial sector – which could be due to a lack of financial infrastructure, rampant corruption, etc., all potentially rooted in history – such that a portion τ of all savings invested in the formal asset "melts" away.[29] The formal asset receives a known rate of return $(1+r)$, while the informal asset receives a stochastic rate of return, Z, such that the weighted rate of return on first period savings is: $[(1-\omega)(1+r)\tau + \omega Z]$, where for simplicity $Pr(Z=\lambda) = 1/2$ and $Pr(Z = 1/\lambda) = 1/2$, as Samuelson (1969) assumes.

In the second period the agent does not earn labor income and instead lives entirely off of her accumulated savings, while a new agent commences his first period decisions. Therefore, define the utility maximization problem for a given agent as:

$$\begin{aligned} &\max_{C_1, C_2, S_1, \omega} U(C_1) + \mathbb{E}\,\beta U(C_2) \\ &\text{s.t. } Y_1 = C_1 + S_1 \\ &\quad S_2 = S_1[(1-\omega)(1+r)\tau + \omega Z] \\ &\quad C_2 = S_2 \end{aligned} \tag{4}$$

where $\tau \in [0,1]$; $\beta \equiv \frac{1}{(1+\delta)}$; $\delta \geq 0$; $Z = \begin{cases} \lambda & w.p.\ 1/2 \\ \frac{1}{\lambda} & w.p.\ 1/2 \end{cases}$; and $\lambda \geq 0$. Note that C_1 is consumption in period 1 and C_2 is consumption in period 2, δ is the discount rate (impatience) and β is the discount factor (patience).[30]

Let utility follow logarithmic form, such that a precautionary motive for savings is preserved (Kimball, 1990). Plugging the constraints from equation (4) into the objective function and taking the first order conditions with respect to the choice variables defines the optimal conditions:

$$\begin{aligned} C_1^* &= f(Y_1, \beta) \\ S_1^* &= f(C_1^*, Y_1, \beta) \\ \omega^* &= f(\tau, r, \lambda) \\ S_2^* = C_2^* &= f(S_1^*, \omega^*, \tau, r, \lambda) \end{aligned} \tag{5}$$

The equilibrium above reveals a few important conclusions. The first is consistent with Samuelson (1969) and shows that the optimal portfolio allocation decision is *independent* of the optimal consumption/savings decision. The transaction cost τ, however, factors directly into both the optimal portfolio allocation decision, as well as the second-period accumulated savings. To the extent that these transaction costs are rooted in history, this finding could have important implications for understanding the direct effects of history on savings. Similarly, note from S_1^* that time preferences indirectly affect accumulated savings S_2^* through the decision of how much to save in the first period. With CRRA utility defined as $U(C) = \frac{C^{1-\alpha}}{1-\alpha}$, risk preferences will also determine accumulated savings (S_2^*). I perform comparative statics in the next section to show the specific predictions.

[29] Note that $\tau \in [0,1]$, such that $\tau \to 1$ implies decreasing transaction costs and $\tau \to 0$ implies increasing costs.

[30] Since $\beta \equiv \frac{1}{(1+\delta)}$, a higher discount rate δ implies a lower discount factor β and hence less patience for future consumption decisions.

Appendix A.3.2 Comparative Statics and Predictions

Equation (5) shows that the savings decision is a function of time preferences. Taking the partial derivative of S_2^* with respect to $\beta \equiv \frac{1}{1+\delta}$ proves that savings is increasing in patience (proof in online appendix).

$$\frac{\partial S_2^*}{\partial \delta} < 0 \tag{6}$$

This result is formalized in the hypothesis below.

Hypothesis 1. *Individuals who are more impatient have lower accumulated savings.*

With utility defined according to CRRA preferences, where $U(C) = \frac{C^{1-\alpha}}{1-\alpha}$, specific predictions on risk aversion emerge. Taking the partial derivative of S_2^* with respect to α – the degree of relative risk aversion – shows that total accumulated savings is increasing in risk aversion (proof in online appendix).

$$\frac{\partial S_2^*}{\partial \alpha} > 0 \text{ if } r* > \delta \tag{7}$$

where $r*$ is what Samuelson (1969) refers to as the subjective or "util-prob" mean return on the portfolio (formal plus informal assets), taking into account diminishing marginal utility. Equation 7 shows that if the subjective mean return on the portfolio is greater than the discount rate – that is, the current price of consumption is high relative to future consumption such that households are incentivized to forgo consumption today for higher consumption in the next period – total accumulated savings is increasing in risk aversion, highlighting the interdependence of risk and time preferences. The prediction is formalized in the hypothesis below.

Hypothesis 2. *Individuals who are more risk averse have higher accumulated savings if the subjective return on the savings portfolio is higher than the discount rate.*

Note that the theoretical predictions on preferences are contemporaneous and do not address the process through which preferences persist over time. Instead of sketching this phenomenon within the existing theoretical framework, I defer to richer models of cultural transmission, which argue that cultural and economic norms persist either "vertically" through inter-generational family transfers or "horizontally" through socialization (Bisin and Verdier, 2001; Hauk and Saez-Marti, 2002). Throughout my analysis I assume that historical persistence in risk and time preferences occurs through the cultural transmission dynamics described in the literature.

Equation (5) shows that the optimal allocation of savings to the informal asset is a function of transaction costs. Taking the partial derivative of ω^* with respect to τ predicts that this decision is *increasing* in the level of transaction costs:

$$\frac{\partial \omega^*}{\partial \tau} < 0 \text{ if } \mathbb{E}(Z) > \frac{2(r+1)\tau}{(1+r)^2\tau^2+1} \tag{8}$$

which holds for any $r > 0$ and $\lambda > 1$. Since $0 \leq \tau \leq 1$, the result from (8) implies that as transaction costs *decrease*, individuals will decrease the allocation of savings to the informal asset and increase the allocation to the formal asset. This result is formalized in Hypothesis 3.

Hypothesis 3. *As transaction costs in the formal financial sector decrease, the allocation of savings to informal assets decreases and the allocation to formal assets increases.*

How might transaction costs affect total accumulated savings? In equation (5), τ enters S_2^* directly through the weighted rate of return on savings, but it also enters through the optimal

portfolio choice ω^*. Taking the partial derivative of S_2^* with respect to τ shows that total accumulated savings is decreasing in transaction costs:

$$\frac{dS_2^*}{d\tau} > 0 \text{ if } (1+r)\tau > 1 \tag{9}$$

Equation (9) predicts that as transaction costs decrease, total accumulated savings should increase, as long as the interest rate on formal savings after adjusting for transaction costs is greater than 1.

Hypothesis 4. *As transaction costs in the formal financial sector decrease, total accumulated savings increases.*

Since portfolio choice is affected by transactions costs, one might also be interested in understanding how portfolio choice affects savings, holding transaction costs constant. To see this, take the partial derivative of S_2^* with respect to ω^*, holding τ constant.

$$\frac{\partial S_2^*}{\partial \omega^*} > 0 \text{ if } \mathbb{E}(Z) > (1+r)\tau \tag{10}$$

Equation (10) shows that as the proportion allocated to the informal asset increases, total accumulated savings will increase only if the return on the informal asset is larger than the return on the formal asset (after transaction costs). This is formalized in the hypothesis below.

Hypothesis 5. *Increasing the portion of savings allocated to the formal asset increases total accumulated savings if the return on the formal asset is greater than the return on the informal asset, holding transaction costs constant.*

It is crucial to note that the parameter τ is an exogenous feature of the model and does not fully describe how history might affect savings. As a thought experiment, let the first period represent the imperial era and the second period the present. To the extent that τ varied exogenously across the Habsburg-Ottoman border in the first period and carried forward to the second period, historical legacies in savings may persist through transactions costs.

To formalize this process, restate τ in the first period as τ_1 and let the demand for banks in the first period equal demand for formal assets. That is: $D_1^F = S_1^*(1-\omega^*)$. In addition, let the supply of financial institutions in the second period be a function of the demand for banks in the first period: $Q_2^F = f(D_1^F)$, where $\frac{\partial f(D_1^F)}{\partial D_1^F} > 0$. Financial markets are in equilibrium, such that an increase in the demand for banks in the first period increases the quantity supplied in the second period. Furthermore, normalize $Q_2^F \in [0,1]$, which implies an upper bound on the supply of financial institutions (i.e., $Q_2^F = 1$ indicates a fully developed financial sector).

Let the supply of financial institutions in the second period equal transaction costs in the second period: $Q_2^F = f(D_1^F) = f(Y_1, \beta, r, \lambda, \tau_1) = \tau_2$, such that the next agent in the sequence is faced with transaction costs that are a function of the previous period. That is, $\tau_2^i = \tau_1^j$, where i represents the first agent in the sequence and j represents the next agent. It is easy to show that changes in period 1 transaction costs τ_1 will determine future costs. To begin, note that demand for banks is increasing as period 1 transaction costs decrease:

$$\frac{\partial D_1^F}{\partial \tau_1} > 0 \text{ if: } \mathbb{E}(Z) > \frac{2(1+r)\tau_1}{(1+r)^2\tau_1^2 + 1} \tag{11}$$

which is satisfied for all $r > 0$ and $\lambda > 1$. Furthermore, since $Q_2^F = f(D_1^F) = \tau_2$, and $\frac{\partial f(D_1^F)}{\partial D_1^F} > 0$ and $\frac{\partial D_1^F}{\partial \tau_1} > 0 \Rightarrow \frac{\partial \tau_2}{\partial \tau_1} > 0$. If initial transaction costs are low, second period transaction costs will

be low (and vice versa). When current transaction costs are low, savings is high. The hypothesis is formalized below.

Hypothesis 6. *Financial institutions were more developed in the Habsburg empire and therefore more prevalent in these regions today. Access to financial institutions increases savings, such that people in Habsburg regions have accumulated more savings than people in Ottoman regions.*