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Incompatible European Partners?
Cultural Predispositions and Household Financial Behavior

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Incompatible European Partners?
Cultural Predispositions and
Household Financial Behavior[#]

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Abstract

The Eurozone fiscal crisis has created pressure for institutional harmonization, but skeptics argue that cultural predispositions can prevent convergence in behavior. Our paper derives a robust cultural classification of European countries and utilizes unique data on natives and immigrants to Sweden. Classification based on genetic distance or on Hofstede's cultural dimensions fails to identify a single 'southern' culture but points to a 'northern' culture. Significant differences in financial behavior are found across cultural groups, controlling for household characteristics. Financial behavior tends to converge with longer exposure to common institutions, but is slowed down by longer exposure to original institutions.

JEL Classification: G11, E21
Keywords: Household Portfolios, Household Finance, Cultural Influences on Economic Behavior

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1. Introduction

The recent Eurozone crisis has inspired efforts and pressure for reforms contributing to the harmonization of institutions and policies across member countries. In the face of considerable cultural diversity in Europe, however, one wonders whether sizeable differences in economic behavior, reflecting cultural predispositions, could still exist and persist even in the face of common institutions and policies. If this is the case, particularly in the sphere of financial behavior, institutional harmonization may not be the right approach: differential institutions and policies may be necessary to neutralize cultural predispositions and harmonize economic behavior across a culturally diverse set of countries, to the extent necessary for the normal functioning of the European Union and adherence to its treaties.

This paper focuses on an important aspect of economic behavior, household financial behavior, which played an important role in some (though not all) of the recent crises and which could contribute to future crises. It asks whether there are sizeable differences in financial behavior linked to cultural predispositions and whether these differences are likely to persist in the face of a common set of relevant institutions and policies that did not arise from the original culture but is accepted by households of different cultural predispositions.

Our approach is to compare the financial behavior of households that belong to different cultural backgrounds but live in the same country and thus face a common institutional and policy environment. We utilize data from LINDA, a data set of unmatched quality and precision, on natives and immigrants from different European countries that have been exposed to the Swedish institutional and policy environment. We first group immigrants according to cultural background in a robust way, following two independent approaches: one based on genetic distance and the other based on Hofstede's (1980) cultural dimensions. We then adopt econometric methodology, which only recently has been applied to household financial behavior and is novel to immigrant studies, to study differences in financial behavior and immigrants' resilience to exposure to common (host country) versus original (home country) institutions. We

also study the role of exposure to formal versus informal institutions and established practices in the host country. This is because exposure to informal institutions is unlikely to be a feature of an EU harmonization experiment transplanting international best practices.

Recent research finds considerable variation in household financial behavior across countries, even among households of similar observable characteristics (Christelis, Georgarakos, Haliassos, 2013). Such differences can be attributed either to relevant institutions, markets, and constraints or to culture, with unclear divisions among them. Using LINDA, we can observe a wide range of household characteristics and assets (financial and real) and debts (both collateralized and uncollateralized), along with the national origin of each single person or partner living in Sweden and whether those people were born in Sweden or elsewhere. By studying native and immigrant behavior in a single country, we are in much better position to distinguish the role of cultural predispositions from that of institutions and policy environment.

We first devote considerable effort to defining the cultural groups of European countries in a robust way and independently of household financial behavior. We follow two independent approaches. In our benchmark results, which are presented in the paper, we use a measure of "genetic distance" of (dominant) populations in each European country (Cavalli-Sforza, Menozzi, and Piazza, 1994). Genetic distance measures are shown to capture the divergence in intergenerationally transmitted (biologically and/or culturally) traits such as norms, values, habits, and biases across populations (Spolaore and Wacziarg, 2009). Desmet et al. (2011) also document a close relationship between genetic distance and answers to the World Values Survey regarding norms, values, and cultural characteristics. An alternative approach we explore (in an Appendix available online) is the concept of cultural dimensions proposed by Hofstede (1980), based on IBM employees in different countries. We show that cultural groups are quite robust to both methods. Classification based on genetic distance or on Hofstede's cultural dimensions fails to identify a single 'southern' culture but points to 'northerners' as forming a cultural group.

Using these groups, we first document differences in asset and debt holdings between immigrants and native Swedes and their evolution over the length of our sample, from 1999 to 2007. We then employ modern econometric methods of counterfactual analysis to decompose the observed differences into those arising out of differences in participation-relevant household characteristics (i.e., covariate effects) and unobserved characteristics faced by households with similar characteristics (i.e., coefficient effects). In Section 2, we discuss how our approach avoids some arbitrary restrictions incorporated into the existing literature using immigrant samples and provide a broader view of the link between culture and financial behavior.

Because all households in our sample work with the same institutions and are subject to the same legal practices, statistically significant coefficient effects are more directly attributable to cultural predispositions than if we were to compare the original populations. Having shown that statistically significant differences in the participation behavior of different culture groups tend to show considerable persistence over the duration of our sample, we ask whether the estimated pattern of differences is a mere artifact of different lengths of time spent in Sweden by groups from different countries or whether it is an artifact of being differently allocated in areas that exhibit more or less friendly attitudes to foreigners. Using LINDA data on the length of stay in Sweden, along with auxiliary data on attitudes towards immigrants recorded in different Swedish provinces, we are able to show that differences in financial behavior are present even after accounting for those two sources of variation.

We then turn to the issue of resilience of cultural predispositions to exposure to common institutions. We first conduct a probit analysis of participation by different culture groups, allowing for region and time fixed effects, to show that length of stay in Sweden and age at immigration are statistically significant for participation in stockholding, debt, and homeownership, with signs that imply smaller differences for people who moved at younger ages or were exposed longer to host-country institutions.

Next, we divide the immigrants in each country group into two subgroups based on their length of stay in Sweden: those above the median stay for their group and those below. We decompose the differences in asset participation rates between the immigrants in each of those subgroups and Swedes separately. This exercise shows that the coefficient effects for those who have stayed longer tend to be smaller than those who have had less exposure to Swedish institutions.

We next explore the role of exposure to original (home) institutions during an immigrant's working life. As we observe age at immigration, we split the households in each country group into those who moved before turning 18 and those who moved after. We find that those who moved before turning 18 exhibit smaller differences from Swedes but that those differences tend to be statistically significant even for the group that did not themselves choose to move to Sweden. Finally, we divide immigrants in each culture group into households that have a Swedish citizen as household head and those who do not. Again, we find that having Swedish citizenship is linked to greater closeness to Swedish financial behavior. This effect is suggestive but not causal because having Swedish citizenship may partially reflect a greater willingness to assimilate.

Results based on immigrant populations are likely to provide lower bounds on the size of cultural differences between the host country and the various home countries of the immigrants. This is because immigration is a voluntary activity, and immigrants to a country are more likely to be culturally close to that country compared to those who have not chosen to move, taken as a whole. In this sense, our estimated differences in financial behavior are likely to underestimate the full size of the differences attributable to culture.

Conversely, immigrants are more likely to want to adjust to host-country behavior than are those who never chose to immigrate. It can be argued that this observation results in an overestimate of the degree to which cultural predispositions can be overcome by exogenously imposed exposure to common institutions. To examine the potential importance of this factor,

we also consider the behavior of those immigrants who were brought into the country (by their parents) before they were adults; and of those who left Sweden during our observation period. We find small, intuitive differences, which do not challenge the overall nature of our results. At any rate, our estimates are best interpreted as referring to a situation in which membership in the European Union and such institutional harmonization are adopted by domestic populations as worthwhile objectives rather than as measures imposed against or regardless of their will.

Section 2 discusses the existing literature and our methodological contribution. Section 3 describes the data. Section 4 presents key elements of the method for classifying countries into different culture groups. Section 5 documents differences in financial behavior among immigrant groups and the Swedish population and then estimates the differences, controlling for a range of household characteristics. This section also shows that differences remain even after controlling for each immigrant's length of stay in Sweden and for attitudes towards immigrants (and possible differential treatment in financial markets) at the location of the immigrant household. Section 6 studies the degree of resilience of cultural influences on financial practices to a common institutional environment; its dependence on whether the household was exposed to the original (home) institutions during its active economic life; and whether the head of household was intensely exposed to informal Swedish institutions through a Swedish-born partner with Swedish citizenship. Section 7 contains the conclusion. Appendix A describes the data; Appendix B describes in greater detail the method for classifying countries into culture groups; and Appendix C presents the results using the Hofstede dimensions for robustness. Online Appendix (O.A.) A describes how genetic distance is used to derive the cultural groups used in the main body of the paper. All of the tables and graphs of Appendix C, except for Table C.1, Tables O.A. 1-11c and Figures O.A. 1-2c are included in the Online Appendix.

2. Existing Literature

In recent years, the complex role of culture in explaining cross-country variations in

economic outcomes has received considerable attention. Following the conceptual framework outlined in Guiso, Sapienza, and Zingales (2006), culture can be subdivided into slow-moving components linked to religion and ethnicity and the fast-moving components that are shaped by social interactions, the latter of which are not our focus in this paper.[1] The slow-moving components can influence a range of economic outcomes, several of which have been explored in existing works.

A number of studies have linked economic outcomes directly to culture, represented either by religion/ethnicity or by the nature of the same outcome in the home country (e.g., stockownership in the host country regressed on stockownership in the home country of each immigrant) or by some key institutional feature in the country of origin (e.g., investor protection).

The first specification used by a number of studies employing household-level or individual data is essentially of the form

$$Z_{ij} = \alpha + \lambda' X_i + \sum_k \beta_k D_{ik} + \varepsilon_{ij} \tag{1}$$

where Z_{ij} is the outcome variable (for household i with country of origin j), X represents a vector of characteristics, and D is a dummy variable showing the country of origin j of household i. The second is of the form

$$Z_{ij} = \beta_0 + \beta_1' X_i + \beta_2 \tilde{Z}_j + \varepsilon_{ij} \tag{2}$$

where the variable $\tilde{Z}_j$ represents the average value of the outcome variable in the country of origin. Finally, the third specification is of the form

$$Z_{ij} = \beta_0 + \beta_1' X_i + \beta_2 S_j + \varepsilon_{ij} \tag{3}$$

where S_j represents some institutional feature of the home country (e.g., investor protection in the country of origin).

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[1] For the effects of social interactions on financial behavior, see Georgarakos, Haliassos, and Pasini (2014) and references to significant papers therein.

This significant literature has explored a number of different outcomes either at the country or at the individual level, including household saving rates (Caroll, Rhee, and Rhee, 1994),[2] use of basic financial instruments (Guiso, Sapienza, and Zingales, 2004; Osili and Paulson, 2008a), stock market participation (Osili and Paulson, 2008b), women's work and fertility behavior (Fernandez and Fogli, 2006, 2009; Alesina and Giuliano, 2010), international trade and investments (Guiso, Sapienza, and Zingales, 2009), regional economic development (Tabellini, 2010), and individual tax morale, i.e., the willingness to pay taxes (Kountouris and Remoundou, 2013).[3]

The channel through which slow-moving aspects of culture influence such economic outcomes is through preferences and beliefs (priors) and through political and institutional features. Several authors have provided evidence for the presence of such an operative culture channel. The literature typically regresses economic outcomes on household or country characteristics as appropriate for the data at hand and on a measure of preferences or beliefs instrumented by ethnicity or religion.[4] Other papers separate the channel into two different parts: from religion/ethnicity to preferences and beliefs, such as trust or preferences for redistribution; and from the latter to economic outcomes.[5]

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[2] Using individual-level data on immigrants to Canada, who potentially differ in their social preferences and beliefs, Carroll, Rhee, and Rhee (1994) analyze whether households' country of origin correlates with their saving behavior. The authors find no significant cross-country differences in the overall saving patterns among immigrants from different areas. They show that recent immigrants to Canada tend to save less than natives, and that their saving behavior seems to converge with that of natives over time.

[3] Borjas (2002) documents that immigrants' homeownership rates seem to vary significantly by country of origin, although he does not draw an explicit link to cultural or institutional factors. Bogaard and Pirinsky (2011) find that U.S. residents with ancestors from countries with higher financial development are more likely to be homeowners, to work in the financial industry, and to take on more debt. Oyelere and Belton (2012) show that immigrants from developed countries have higher self-employment probabilities than immigrants from developing countries, even though self-employment rates in developed countries are lower.

[4] Guiso, Sapienza and Zingales (GSZ 2003, 2006) show that thriftiness is influenced by religious denomination and use populations' religious composition as an instrument for the proportion of people who believe that teaching thriftiness is important. A regression of national saving rates on country characteristics and on the instrumented preference for teaching thriftiness yields suggestive but inconclusive results. GSZ (2003) finds an effect of religion on trust, controlling for demographics and country-fixed effects and using instruments relating to whether the respondent still practices or whether he or she was educated after opening religious dialog.

[5] GSZ finds an effect of ethnic origin on trust in the U.S. data (2006) and establishes a link between trust and stock market participation (2008). The work of GSZ (2006), Alesina and Giuliano (2011), and Luttmer and Singhai (2011) suggests that individual preferences for redistribution are affected by culture and in turn, can influence the relative importance of regressive to progressive taxes in a country (outcome).

Obviously, regressions of outcomes directly on ethnicity, on the nature of the outcome in each immigrant's home country or on a particular institutional feature of the home country are less informative about the nature of the channel through which culture influences economic outcomes than are studies that explore a particular channel. Conversely, the latter confront the problem that religion or ethnicity are likely to influence economic outcomes through a variety of channels beyond that specified in each paper, for which it may not be possible to control.

As illustrated by (1), (2), and (3), existing approaches typically focus on the coefficient of the "culture variable" and assume, for reasons of parsimonious modeling, that coefficients are common across cultures, including natives (with the obvious exception of the dummy coefficients β_k in equation (1) representing shifts in the relationship), are constant over time, and are invariant to the length of experience that immigrants have had in the host or home country.

The econometric approach we follow in this paper, described in section 5.2.1 below, allows an association of given household characteristics with different economic behavior depending on a household's cultural background and on the length and intensity of its exposure to home and host country institutions and polices. Indeed, our analysis, based on constructing counterfactual probabilities of participation and computing total "coefficient effects", suggests that such broader differences exist, are statistically significant, and are quite persistent but also subject to change following exposure to particular sets of institutions and policies, consistent with the idea that there are slow-moving aspects of culture that influence economic outcomes.

3. The Micro Data

We use the Longitudinal Individual Database (LINDA) provided by Statistics Sweden for the observation period from 1999 to 2007. LINDA consists of an annual cross-sectional sample of approximately 300,000 individuals, or approximately 3% of the entire Swedish population, and an annual immigration sample of approximately 200,000 individuals, or approximately 20% of all immigrants in Sweden. An individual is included in the immigrant sample if he/she was born

outside Sweden. Selected individuals and their family members are tracked over the years. The sampling procedure ensures that the panel is representative of the relevant population as a whole and that each annual cohort is cross-sectionally representative. The database provides detailed and highly accurate information on the financial and demographic characteristics of each sampled household. Furthermore, the data include detailed information on household assets (financial and real) and debts (both collateralized and uncollateralized) for the entire sample period, along with the national origin of each single person or partner in a marriage and whether they were born in Sweden or elsewhere.

When constructing the sample, we adopt the following procedure. First, we begin with all households in both the regular and immigrant LINDA databases. In LINDA, two adults are defined as in the same household in a given year if they are either married or legal partners or if they live together and have children in common (Betermier et al., 2012). To identify the reference person (head of household) in a given household, we follow the Canberra definition.[6] We then use the socioeconomic characteristics of head of household when defining household controls, which include age, gender, work status (unemployed, retired, student, employed), marital status, educational level (high school graduate, college graduate), separate indicator variables of whether the head of household works in the financial sector or for the government, municipality of residence, and country of birth. We aggregate the asset and debt holdings along with the income at the household level.

In our analysis, we restrict our attention to those (both Swedish and immigrant) households that existed for the entire sample period from 1999 to 2007, and in which the head couple (or the single head member) remained the same, resulting in a strongly balanced panel. Moreover, we exclude from the sample those observations in which the head of household is less than 18 years

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[6] The Canberra definition of the reference person in a household applies the following rule in the order provided: "one of the partners in a registered or de facto marriage, with children; one of the partners in a registered or de facto marriage, without dependent children; a lone parent with dependent children; the person with the highest income; the eldest person". See Canberra Group Handbook on Household Income and Statistics (2011) for more details.

of age, or the annual disposable household income is less than 10,000 SEK.[7] Finally, we restrict our immigrant sample to individuals born in a European country.[8]

We follow a conservative approach when we define a household as native (i.e., Swedish). In particular, in each year, if the household head and spouse (if any) were born in Sweden and both have Swedish citizenship, the household is regarded as native. If a household does not fulfill these criteria, we exclude it from the sample. Conversely, a household is defined as immigrant if the head of household was born outside Sweden. In other words, we do not impose any restrictions on the birth country or citizenship status of the remaining household members.

Overall, in the final sample, we have 143,217 households in the Swedish sample, and 72,740 households in the European immigrants sample for each year from 1999 to 2007, which results in approximately 1.94 million household-year observations.

4. Construction of the Cultural Groups

Here we describe how culture groups were obtained. We first describe the concept of genetic distance and explain its link to cultural distance. We derive country groupings based on this concept in two ways: first, based on the genetic distance of immigrants from the baseline Swedish population; second, based on genetic distance across all country pairs. We then form cultural groups based on an independently derived, time-honored set of measures, i.e., the cultural dimensions proposed by social psychologist Geert Hofstede (1980), and show that our baseline grouping based on genetic distance is quite consistent with the grouping based on the Hofstede cultural dimensions. In Online Appendix C, we report detailed results on household financial behavior using the Hofstede-based alternative, as a robustness exercise. Online Appendix A contains details on construction of cultural groups based on genetic distance.

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[7] The reason for excluding households with an annual household disposable income of less than 10,000 SEK is that these observations most likely represent erroneous data. We also exclude from the sample households with missing information on education and wealth and with multiple birth countries. In addition, there are 2,375 immigrant households that appear both in the regular and immigrant sample. We also drop those "repeated" observations from the sample.
[8] We use a geographical definition of Europe, which requires a country to have at least part of its territory in Europe.

4.1. Genetic Distance as a Measure of Cultural Distance

Genes are the hereditary factors responsible for traits, and DNA is the hereditary material of all life forms (except for some types of viruses). Organisms with similar DNA sequences are descended from a common ancestor. A *gene* is commonly defined as a sequence of *DNA* that encodes a protein. An *allele* is one of two or more versions of a gene. (For example, the specific gene for eye color is of different types, such as brown eye color and blue eye color, which are called alleles.) An allele is *selectively neutral* if it does not provide any advantage in the natural-selection process to the individual who has it.

Genetic distance between two populations measures the time that has passed since two populations existed as a single population. Smaller genetic distances imply that the populations share a recent common ancestor. Technically, genetic distance measures the difference in allelic frequencies across different populations, in which the considered alleles are selectively neutral. As Spolaore and Wacziarg (2009) argue, "*an intuitive analogue is relatedness between individuals: two siblings are more closely related than two cousins because they share more recent common ancestors—their parents rather than their grandparents*". Accordingly, populations with similar allelic frequencies are more likely to share similar traits and characteristics, which are transmitted across generations both biologically and culturally. Thus, genetic distance reflects divergence in beliefs, customs, habits, biases, conventions, etc., which are transmitted across generations with high persistence (Spolaore and Wacziarg, 2009).

How good a proxy is genetic distance for cultural distance? Desmet et al. (2011) provide empirical support that validates genetic distance as a proxy for cultural heterogeneity, showing a strong and robust correlation between cultural distances based on answers to the World Values Survey (WVS) and genetic distances across European populations.[9] They also show that the correlation between genetic distance and cultural distance based on the WVS remains positive

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[9] In particular, Desmet et al. (2011) show that European populations that share a recent common ancestor (i.e., are genetically closer) provide more similar answers to a set of 430 questions about norms, values, and cultural characteristics that are included in the 2005 WVS.

and significant even after controlling for languages and geography. Support from a different angle is provided by this paper, which shows that country groups based on genetic distance are quite similar to those generated by reference to Hofstede's cultural dimensions (see below and Appendix C).[10]

4.2. The Hofstede Cultural Dimensions

An alternative way to form country groups based on culture draws on the path-breaking work of social psychologist Geert Hofstede, who introduced the notion of "cultural dimensions" in his 1980 book *Culture's Consequences.* Those dimensions were derived from a statistical analysis of two databases containing answers to survey questions on attitudes: one of matched IBM employee samples from 40 countries collected in the period 1967-73; and the other (on a subset of questions) of Hofstede's executive students from 15 countries. Systematic differences between nations referred to "values", defined as broad preferences for one state of affairs over others.

Hofstede originally proposed four cultural dimensions (to which two more were later added), and we confine our attention to those original four for reasons of data availability and comparability to the country set covered by the genetic distance measures. These dimensions are as follows: the Power Distance Index, which captures the extent to which the less powerful accept and expect that power is distributed unequally; Individualism, which captures the extent to which ties between individuals are loose and everyone is expected to fend for him- or herself; Masculinity, which captures the (absolute and relative) degree of competitiveness and assertiveness between men and women, with greater variations across countries being observed among men and much smaller variations among women; and Uncertainty Avoidance, which

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[10] When analyzing the relationship between trust and economic exchange, Guiso, Sapienza, and Zingales (2009) also use genetic distance as an instrument for bilateral trust.

refers to the attitudes of different countries towards uncertainty and ambiguity. Recent studies have confirmed the relevance of Hofstede's cultural dimensions to financial behavior.[11]

For groupings according to Hofstede's cultural dimensions, we use the four original proposed dimensions, for which we have data for almost all of the countries covered under the alternative genetic distance measure. We first normalize each dimension so that it has a mean of zero and a standard deviation of one across all countries. We then calculate the Euclidean distance between each pair of countries based on all four dimensions.

4.3. Cultural Country Groups in Europe

We use a geographical definition of Europe, which requires a country to have at least part of its territory in Europe. This implies that we include Turkey, the Russian Federation, Belarus, and Ukraine in our analysis. We must exclude from the sample the following countries because data on genetic distance are not available for them: Albania, Andorra, Lichtenstein, San Marino, Monaco, and Vatican City. Because the data contain some immigrants from countries that no longer exist, we merge immigrants from the following countries:

- Slovakia, Czech Republic, and the former Czechoslovakia are merged under "Czechoslovakia";

- The former Socialist Federal Republic of Yugoslavia, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, former Serbia and Montenegro, Serbia, Montenegro, and Slovenia are merged under "Yugoslavia";

- Russian Federation and the former Union of Soviet Socialist Republics are referred to as "Russia"; and

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[11] For example, Chui, Titman, and Wei (2010) examine how cultural differences are linked to cross-country differences in investor behavior. More specifically, they use Hofstede's (1980) individualism index to measure cultural differences across countries, and show that the magnitude of momentum profits, trading volume, and volatility in the stock market are significantly higher in countries with more individualistic cultures. At the country level, Siegel, Licht, and Schwartz (2011) show that cross-country differences in culture, as measured by egalitarianism distance, have significant effects on cross-border flows of equity and bond issuance, syndicated loans, and mergers and acquisitions.

- The Federal Republic of Germany and the former German Democratic Republic are referred to as "Germany".

In forming cultural country groups, we must make three choices. The first relates to the measure of cultural distance: we consider genetic distance versus distance based on Hofstede's cultural dimensions. The second, relevant to the genetic distance measure, regards the ethnic groups to be compared across each country pair: the dominant group (in the sense of plurality) within each country versus all ethnic groups with their respective population weights. Once the relevant measures of distance are constructed, the third choice concerns the method for forming country clusters: we consider the *ruler* method versus the *inconsistency* method. We describe how we have implemented each of these alternatives for genetic distance and robustness across different choices in Online Appendix A.

Looking at Table 1, based on the genetic distance measure, perhaps the most striking fact is that although country groups are sometimes linked to geography (such as the Balkans, Finland and the Baltic countries, and several northern countries), in other cases it is particularly difficult to assign geographical names to the country groups that emerge. In terms of genetic distance, Italy is close to Russia and Spain is close to both Ireland and the UK. Turkey stands alone in terms of genetic distance. The Eurozone countries that have recently run into fiscal trouble span three different groups. This latter feature is also observed when we form country groups using Hofstede's dimensions (Table C.1). Moreover, in that four-group categorization, some "northern" countries (such as Germany and Austria) appear in the same cultural group as Italy and Ireland. These observations suggest caution in seeking a simple explanation for the pronounced tendency of some countries to run into budgetary problems linked to cultural predispositions, either measured by the recency of close interactions (genetic distance) or by the proximity of finance-relevant cultural attributes (Hofstede).

5. Differences in Participation Rates Among Cultural Groups

5.1. Differences between Immigrants and Swedes in Raw Data

Table 2 presents information on participation in stockholding, debt, and homeownership across the country groups derived from genetic distance. To give a summary indication of participation in an instrument and its duration within the sample period of 1999-2007, we report the percentage of relevant (household, year) pairs that record participation in each country group.

Our measure of stockholding includes both direct and indirect stockholding but excludes stocks held through retirement accounts.[12] We see that Swedish non-immigrant households (called "Swedish" from now on) exhibit high and persistent participation (73%) compared to all immigrant groups. We find some variation across immigrant groups, but the most striking finding is the particularly low participation rates in the Balkan group. Later, it will be important to explore whether this difference is linked to underlying characteristics of Balkan immigrants and how long they have been in Sweden or whether it represents a genuine difference in stockholding behavior for given relevant household characteristics.

Participation in all types of debt taken together (except for student loans) is even more pronounced (80% for Swedish households), with Balkans now closest to the indigenous population and others below the 70% mark. Balkan and Turkish immigrants exhibit the lowest homeownership rates by far, less than half of the 73% recorded for Swedes, whereas between half and two-thirds of the other country groups observed show homeownership.

Overall, the recorded participation among Swedish households is higher than that of all immigrant groups both in assets and in debts. Below, we explore possible reasons for immigrants' lower participation and for the variations across home-country groups: immigrants' inferior economic position, possible discrimination against immigrants in the asset markets, and a likely shorter horizon among immigrants who plan to go back to their home countries and

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[12] The reason for this is because the data were collected to assess wealth taxes. Stockholding under the mandatory first pillar of social security (part of which is invested in a fund) and in tax-deferred retirement accounts is not included because it is not part of the tax base.

therefore choose not to participate extensively in assets or debts in Sweden (while possibly owning assets or debts in their home countries).

5.2. Differences between Immigrants and Swedes - Controlling for Characteristics

5.2.1. The Distinction between Covariate and Coefficient Effects

Observed differences in participation rates can be decomposed into two components:[13] one, arising from differences in participation-relevant characteristics, is attributed to "covariate effects"; the other, arising from different behavior by households belonging to different country groups but sharing similar characteristics, is attributed to "coefficient effects". Both terms refer to the components of a (probit) participation regression that makes the latent variable (the utility differential between participation and non-participation) a function of observable characteristics ("covariates") whose influence depends on the sign and magnitude of coefficients.

In all cases, we must specify a "base" country, s, (Sweden, in our benchmark analysis) and then compare participation in each country group, indexed by i, for a given asset or debt involving interest. The decomposition of differences in observed participation rates into "coefficient" and "covariate" effects is represented by:

$$ pr^s - pr^i = \left\{ pr^s - \hat{p}^{\,b^s, X^i} \right\} + \left\{ \hat{p}^{\,b^s, X^i} - pr^i \right\} \tag{1} $$

The key here is the computation of the counterfactual participation rate, $\hat{p}^{\,b^s, X^i}$. Indigenous Swedish households would exhibit this average participation rate if they had the same characteristics as those of immigrants from country group i. The first difference term on the right-hand side represents the difference between the actual behavior of Swedish households and this counterfactual participation rate, so it represents "covariate effects". Both items in the second bracket refer to characteristics of immigrants from country i, but the counterfactual

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[13] See Christelis, Georgarakos, Haliassos (2013), the references therein, and Yun (2004).

probability term uses Swedish coefficients. Because the difference is due to the use of different sets of coefficients, this second bracket represents "coefficient effects".

From an economic point of view, we want to purge from the overall observed difference in participation rates those differences attributable to immigrant groups' different (often inferior) economic position and focus on differences in the systematic relationship between household characteristics and participation behavior observed among Swedish and among immigrant groups. In other words, whereas in the previous section we present the overall "raw" differences, in this section we discuss the second difference term on the right-hand side, i.e., coefficient effects.

To construct the counterfactual participation probability and derive the decomposition, we first run a participation probit regression for the relevant asset or debt among the base sample (in the benchmark case, this is the sample of indigenous Swedish households) and obtain the coefficients, b^s. We are able to control for a range of household characteristics (see the descriptive statistics in Table 3). Specifically, we include as regressors (log) disposable income, age categories, gender of head of household (following the Canberra definition of head of household), occupational dummies, marital status, household size (distinguishing between adults and children), educational attainment of head of household, dummy variables for whether the head of household works in the financial sector or for the government, and household net-wealth quartile.

Once the probit coefficient estimates are obtained, we draw (randomly and with replacement) vectors of household characteristics from the immigrant population from country group i, thereby respecting any tendency of that group to co-vary. For each immigrant household drawn, we use the coefficient estimates for the Swedish households to compute the probability of participation that the immigrant household would exhibit if it behaved like a Swedish household. These counterfactual probabilities for all immigrant households drawn from group i are then

averaged to determine the counterfactual probability in question and thus to compute the estimate of the coefficient effect. Using bootstrap analysis (with 200 replications), we also report p-values for the statistical significance of the coefficient effects or systematic differences in the average participation behavior across Swedish (base) and immigrant households from country group i.

5.2.2. Participation Regressions by Cultural Group

Although computation of coefficient effects, representing differences in group participation behavior after controlling for differential group characteristics, only requires probit estimation for the base group (Swedish households), we present in Tables 4a, b, and c a full set of participation probits for all of the household groups considered (both Swedish and immigrant). To gain perspective on the economic and statistical importance of each variable and how they differ across household groups, results are reported in the form of average marginal effects. In these tables, we pool all observation years and run the probit estimation for each household group with year effects and regional fixed effects, clustering at the household level.[14]

Table 4a presents results for stockownership. The results for Swedish households mirror standard findings in the participation literature. Higher position in net wealth distribution (after removing the value of stocks), higher educational attainment, work in the financial sector (but not in the government sector), and smaller number of adults all contribute positively to the probability of stock market participation outside retirement accounts. Interestingly, having a male head of household reduces the probability of participation.

The debt participation regression (Table 4b) similarly yields the expected results from the existing literature on debt. Income contributes positively to the probability of participation as do household size and employee status. High school and college graduates are both more likely to

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[14] In our tables and figures of results, we track the evolution of coefficient effects through time. To do so, we run a separate participation probit for Swedish households for each given year in the sample, including region fixed effects.

participate in debt than are high school dropouts, but the estimated marginal effect is much smaller for the most educated category. Working in the financial sector makes it more likely that a Swedish household will have outstanding debt but interestingly, the opposite is true for people working in the government. Given household income, a higher level of gross wealth[15] makes it less likely for household to be burdened with debt.

Homeownership is similarly linked to the control variables in standard ways (Table 4c): higher incomes, older age, employment, household size, educational attainment, and working for the financial sector are all positively correlated with the probability of homeownership for Swedish households, and marginal effects are statistically and economically significant. The position in the net wealth distribution (after removing home value) correlates negatively with homeownership. There is a reason for this whether we remove from the net wealth measure the value of the house only or the value of the house and of the mortgage.[16]

When we run analogous probit regressions for each immigrant group separately, we find broadly similar effects, although with variations in the size of marginal effects (and an occasional difference in the signs or statistical significance). Because average marginal effects exist across all households for each separate immigrant sample, these differences are partly due to different probit coefficients and partly due to differences in the configuration of characteristics of immigrant populations compared to the indigenous Swedish population. Moreover, these results represent average behavior across the entire sample period. In the decompositions presented below, we wish to control for differences in characteristics among the compared groups, and we wish to trace the evolution of these differences through time. Thus, we run

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[15] In the three participation regressions, we follow the principle of removing the financial instrument being considered from the net wealth measure. This amounts to considering gross wealth when running the debt regression.

[16] In the former case, homeowners' net wealth tends to become quite negative because the collateral asset is removed. In the latter case, we capture a tendency of many homeowners to run down their liquid assets to cover taxes or other transactions costs associated with house purchase that are not fully reflected in the house's value.

period-by-period probits and compute counterfactual average participation probabilities to uncover coefficient effects, as described in the methodological section.

Consideration of immigrant groups also allows us to use information about the age at which the head of household migrated and the number of years he or she has spent in Sweden.[17] This helps us determine whether on average over different households and years of observation, an additional year in Sweden (or an additional year of exposure to home institutions) has a systematic contribution to the probability of participation in an asset or a debt. The sum of these two regressors, of course, represents the age of the immigrant head of household, but separate inclusion of the two variables allows years spent in the home country to have a different influence on financial behavior compared to years spent in Sweden.

We find that both variables are statistically significant in the regressions for all of the immigrant groups and that estimated average marginal effects are different. This difference between them is probably linked to the different institutional and cultural environments to which the head of household was exposed in each of these two parts of his or her life, reinforcing the view that the cultural and institutional environment has effects on financial behavior and that these effects last longer than exposure to a particular environment per se.

In the case of stockholding, we find a relatively clear pattern: years in Sweden tend to increase the probability of participation for each immigrant group. Given that immigrant participation is lower than that of Swedish households on average, this effectively points in the direction of assimilation to the host country's stockholding participation practices. However, each additional year of exposure to home country practices, institutions and overall culture in adult life militates against this assimilation process and slows down the rate of convergence.

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[17] Year of immigration would not be defined for Swedish households and thus cannot be included in the Swedish group regression. Years in Sweden could, in principle, be a factor, if we were to single out Swedish households that have spent time abroad. However, this type of information is not available in our variable set.

We do not find such conflicting effects in the case of participation in debt. There seems to be declining debt participation as a head of household ages, and exposure to home institutions and culture are estimated to have the same sign and comparable average marginal effects as years in Sweden. For homeownership, years in Sweden contribute to the probability of owning a house in Sweden. In the case of real estate much more than in the cases of liquid stockholding or of debts, length of stay correlates not only with life-cycle stage as a function of age but also with a growing likelihood that the household in question intends to stay in Sweden for the longer run, which of course contribute to the decision to buy a home.

5.2.3. Decomposition Results

Figures 4a, b, and c (Tables O.A. 1a, b, c) report our results from a decomposition of observed differences in participation rates between Swedish households and each of the immigrant groups that we define based on cultural predispositions. We focus on coefficient effects, i.e., differences found when controlling for differences in household characteristics across groups. For stockholding, we find that Swedish households tend to exhibit higher participation than any immigrant group, even after controlling for characteristics. All of the differences are statistically significant, but the estimates are substantially higher for those differences related to Balkan immigrants throughout the observation period. Balkan immigrants are particularly less likely to invest in stocks throughout the period of observation, with a small rate of convergence to the Swedish group. The other immigrant groups tend to be clustered more closely together, with the RIP group coming second in distance to Swedish households.

With respect to debt participation (Figure 4b/Table O.A. 1b), the Balkans are very close to Swedes and the BALFIN group, once characteristics are controlled for, with the other three country groups lagging considerably behind Swedes. This very different behavior of the Balkans with respect to stocks (in which they underparticipate) than with debt (in which they match the participation by Swedes of similar characteristics) suggests that their limited stockholding

participation is unlikely to be due to a general lack of access to financial institutions and markets, but rather to a deliberate choice to abstain from stocks.[18] Turkish immigrants' behavior is quite extraordinary: they begin by exhibiting a sizeable difference from Swedish households, but they show a dramatically faster rate of convergence than anybody else during the 9-year period. A factor that is very important for debt behavior is income growth expectations: could it be that the observed differences are largely explained by different income prospects perceived by the different immigrant groups in their host countries? Figure 5 and Table O.A. 3 show that the participation pattern across culture groups does not admit such an easy explanation. Although (perfect-foresight) two-year income-growth expectations are statistically significant and have the right (positive) sign in augmented participation probits for debt behavior (nor reported here), we find a very similar pattern of coefficient effects whether or not we incorporate this factor.

Figure 4c (Table O.A. 1c) exhibits results related to homeownership. Here, Turkish and Balkan immigrants lag far behind Swedish households in their tendency to own a home, whereas immigrants from BALFIN and northern countries are very close to Swedish households, and the other two groups lie in between.

The figures and tables show that coefficient effects indicate convergence but tend to be quite persistent throughout the sample period, even though we find statistically significant effects of length of stay in the participation probits. We further explore this apparent conflict below.

5.2.4. Are Differences Explained by Length of Stay in Host Country?

The results on homeownership in particular raise the question of whether observed differences are trivially explained by the relative length of stay of different immigrant groups in Sweden rather than by deeply rooted cultural predispositions. The idea is that the decision to own a home, in the presence of down payment requirements and transactions costs, depends on

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[18] Interestingly, the start of our sample period coincides with a peak in stock market participation in Greece, followed by a burst of the stock market bubble in 2000 and an exodus of Greek households from the stock market. These dramatic developments in the home country are not mirrored at all in Balkans operating under Swedish institutions.

having time to accumulate assets and a long enough horizon or perspective related to living in the country. Having spent a longer time in Sweden both contributes to the former and indicates the latter. Are statistically significant coefficient effects rendered insignificant simply by controlling for households' length of stay in each immigrant group?

Exploring this conjecture requires a slight modification of the estimation strategy. Because computation of coefficient effects is based on the coefficient estimates of the base group, the indigenous Swedish population can no longer be used as the basis for comparison. Instead, we use the northern group, which is closest in terms of genetic distance from Swedes, as the base and run all participation probits for this group incorporating the length of stay in the host country. The estimated coefficient effects of differences are plotted in Figure 6 and reported in Table O.A. 2. Consistent with the findings noted in Figure 4, BALFIN immigrants are closest to those from the northern countries, and the groups are indistinguishable in terms of homeownership behavior. The remaining distance rankings are also consistent with findings in Figure 4. The main effect seems to be that incorporation of the length of stay serves to differentiate Turkish from Balkan immigrants, with the former exhibiting a significantly more limited tendency to own a home than the latter.

A further observation is that when we explicitly control for length of stay in the host country as a proxy for the ongoing assimilation process to host country institutions, the pattern of coefficient effects is clear and flat over the observation period. This is even more interesting because of the choice of immigrants as an object of study and the choice to restrict the sample to stable immigrant households present in Sweden throughout the sample period. One could expect that both factors would tend to understate cultural differences because of selection: those who emigrate to a country are more likely to find the culture of that country acceptable or consistent with their own personal predispositions, and those who stay are more likely to behave consistent with the behavior of locals. We estimate clear and persistent patterns of coefficient effects despite this unfavorable sample design.

5.2.5. Are Differences Explained by Attitudes towards Immigrants?

A further consideration is that the coefficient effects that we uncover do not primarily reflect differences in behavior across Swedes and immigrants of different cultural backgrounds but simply are the effects of differential treatment of Swedish versus immigrant households by the Swedish financial sector. Indeed, this situation could even generate a rich pattern of coefficient effects simply because of differences in the geographical distribution of immigrant groups to areas that have either more positive or more negative attitudes towards immigrants.

To account for this possibility, we rerun the baseline probit for Swedish households and explicitly introduce a proxy for regional attitudes towards immigrants. Specifically, we use survey data provided by FSI (org., *Forskningsgruppen för Samhälls- och Informationsstudier*) to construct such a measure. This survey is conducted every year on a representative sample of Swedish inhabitants from different municipalities over the period from 2000 to 2008 and includes different questions to capture respondents' attitudes about immigrants.[19] To measure people's attitudes towards immigrants at the regional level, we use the share of people answering "To a lesser extent" to the survey question (translated from Swedish), "Do you think that Sweden should continue taking in immigrants/refugees to the same extent as it does now?" in the province where the household resides.[20] One positive feature of this approach is that we can still consider coefficient effects using Swedish households as the base group, given that this is a regional variable defined both for indigenous Swedish households and for immigrants.

The resulting estimates of coefficient effects and their significance are reported in Tables O.A. 5a, b, and c and in Figures 7a, b, and c. It is evident from the results that discrimination

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[19] In a recent paper, Carlsson and Eriksson (2012) provide evidence that reported attitudes towards immigrants from the FSI survey correlate with actual discrimination in the Swedish housing market. Using a field experiment in the Swedish housing market, they find evidence for greater discrimination in the housing market in municipalities where a larger share of respondents of the FSI survey report negative attitudes towards immigrants.

[20] The total number of answers to the FSI survey in 20 provinces was 19,424, with a minimum of 285 persons surveyed per province. Out of 19,424 respondents, 55 percent reported a negative attitude towards immigrants, whereas 34 percent answered this question either with "To a larger extent" or "To the same extent", and the remaining 11 percent responded that they were "unsure or unwilling to answer".

against immigrants by the financial sector, even if present, is not an important factor in the coefficient effects that we are estimating. The same basic pattern of effects emerges, whether we focus on stockownership, debt participation or homeownership, reinforcing the view that these results are more likely to reflect differences in cultural backgrounds rather than differences in the treatment of foreigners versus Swedes by the financial sector.

6. The Interplay between Cultural Predispositions and Exposure to Institutions

Having derived and discussed significant differences in financial behavior across groups defined in terms of genetic distance as an indicator of cultural differences, we now turn to the resilience of cultural differences to exposure to one set of institutions and policies (in this case, those of Sweden). The previous section has already established two results relevant to this issue. First, length of stay in the Sweden is significant in all participation probit regressions for all financial instruments and for all country groups. Second, the pattern of differences does not seem to change substantially, with very few exceptions, over the period of observation (1999-2007). On their face, these two results appear to contradict each other and to call for further investigation. Are cultural predispositions completely impervious to exposure to one common set of institutions and policies, is the length of the sample period too short for us to observe major effects, or is there another important factor governing assimilation that still must be considered?

6.1. Decomposition of Differences by Length of Exposure to Host Institutions

To sharpen our understanding of the process of assimilation, we now look within immigrant groups sharing common cultural backgrounds and compare 'old-timers' to 'newcomers' to Sweden. In each case, we consider as 'old-timers' ('newcomers') those members of the immigrant group who have spent a longer (shorter) time in Sweden than the median time observed for members of that immigrant group. Figures 8a, b, and c and Tables O.A. 6a, b, and c

report the coefficient effects of differences from Swedish households for each of the subsamples within each immigrant group.

In the two cases of asset participation (stocks and home), we find a clear pattern of substantially higher coefficient effect among newcomers than among old-timers. In some country groups, we even find clear signs of convergence of newcomers to old-timers within our sample period, although in other cases, the differences in coefficient effects appear to be more persistent. These findings suggest that patterns of asset market participation are amenable to exposure to a particular set of institutions, even when those patterns have not arisen naturally from the cultural background of a particular household (as is the case for immigrants exposed to institutions built by Swedes).

The pattern that we find for debt exhibits considerable diversity but has two major common patterns across most groups. First, in five out of six groups, newcomers begin the observation period less likely to borrow than comparable Swedish households, and they gradually bridge this difference as they stay longer. The only exception to this pattern is Balkans, who plunge into debt participation early on and gradually phase it out. Second, in four out of six cases (with the exceptions of BALFIN and immigrants from the northern countries, who tend to be culturally closest to the Swedes), within-group differences between old-timers and newcomers' behavior relative to that of Swedes tend to diminish rather than to increase over time. In the two exceptional groups, the reason for divergence is the unusual behavior of old-timers, whereas newcomers exhibit a pattern of assimilation to Swedes' debt behavior consistent with that of most other groups. Clearly, the assimilation process seems much more complicated and diverse in the case of debt behavior than in the case of asset-ownership behavior.

6.2. Accounting for Horizon

It may be argued that the distance between those who have spent longer in the host country and newcomers is partly due to a difference in horizon: old-timers are more likely to have longer

horizons for staying in Sweden in addition to having had a greater chance to be influenced by their environment. We pursue two sensitivity tests. First, we look only at (first-generation) immigrants who, regardless of their length of stay in Sweden, have decided to become Swedish citizens. Presumably, these immigrants share long horizons and a great willingness to assimilate. Does length of stay still make a difference for those people, controlling for culture group and for a wide range of observables? Figures O.A. 1a, b, and c and Tables O.A. 10a, b, c in the Online Appendix show that old-timers and newcomers are now somewhat closer together, primarily because newcomers who have already chosen to become Swedish citizens are closer to Swedes in terms of financial behavior. However, differences between old-timers and newcomers are still observed and are sizeable in most cases (Balkan, Turkey, RIP, and BALFIN). Moreover, these differences are found even when stacking the cards against finding length-of-stay effects, i.e., by focusing on people who demonstrate their great willingness to assimilate by becoming Swedish citizens. Overall, length of exposure to a common set of institutions does seem relevant for the harmonization of financial behavior, even when we study people with similar horizons and willingness to assimilate.

Second, in all of our analysis, we include only (Swedish and immigrant) households living in Sweden throughout the observation period. Thus, we may have excluded from the sample households that revealed a shorter horizon for living under Swedish institutions and therefore, a greater reluctance to adjust their behavior. A priori, one might expect inclusion of such emigrants to yield greater differences in behavior (coefficient effects) with Swedish households of similar observable characteristics, thus increasing our estimates of cultural differences in financial behavior. The question is non-trivial, however, given that emigrants are also added to the Swedish subsample, and their inclusion could mitigate differences with the immigrant subsamples because all emigrants exhibit shorter horizons for life in Sweden. Even less clear is what inclusion of emigrants would imply for the rate and extent to which newcomers in any given culture group converge in behavior to the corresponding old-timers and to Swedes.

Tables O.A.11a, b, and c present estimated coefficient effects for a sample that includes immigrants and Swedes who left Sweden during the observation period.[21] We find that estimated coefficient effects vis-à-vis Swedish households are larger when emigrants are included in the sample, and this holds both for old-timers and for newcomers. Second, the increase in estimated coefficient effects is bigger for the newcomers than for the old-timers in each culture group. This implies an even greater adjustment in newcomers' financial behavior to that of old-timers than in our original sample. Unlike in the base sample, this greater adjustment is accomplished through two channels: adjustment of behavior and emigration of those who do not see themselves as working under Swedish institutions for long. Nevertheless, the estimated coefficient effects of old-timers are only marginally higher than those in the original sample, consistent with the notion that convergence to Swedish financial behavior does occur.

Tables O.A.11a, b, and c, together with Table 5, where the share of leavers is reported, confirm that the increase in estimated coefficient effects resulting from including emigrants tends to be greater for those culture groups that have a larger share of emigrants.[22] This serves to illustrate a further point: culturally motivated differences in financial behavior in the face of harmonized institutions are smaller, the greater the fraction of people in the population that have longer. In turn, longer horizons are associated with the perceived permanence of institutions and acceptance of them, which translates into willingness to stay in the country.

6.3. Decomposition of Differences by Prior Exposure to Home Institutions

A different angle on understanding the assimilation process with respect to financial behavior is obtained by examining the importance of the age at which a first-generation immigrant moved to Sweden. We resume consideration of the balanced sample (without emigrants) and distinguish between immigrants who moved prior to the age of 18 (whom we

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[21] Over time, the structure of this sample converges to that used in our baseline analysis as emigrant households depart.

[22] The shares are small, ranging from approximately 2.15% in Turkey to 7.25% in SUFI.

label "early") and those who moved when they were already adults (labeled "late"). We have two main motivations for studying this data split. The first is that those who moved as adults had been exposed to home institutions in their economic life and they may well have been influenced by the way things were done at home. We would expect these people to take longer to assimilate to host country practices. The second reason is that those who moved younger than 18 are likely a group less subject to selection than those who decided to migrate to Sweden. Because they were minors, they did not themselves choose to move to Sweden. Potential selection bias works in our favor when studying the presence of culture-based differences in behavior and against us when studying the degree of resilience of cultural predispositions to exposure to host country institutions. If it is indeed the case that those who move do so primarily because they like Swedish institutions and culture, we should be less likely to find significant, culture-based differences in behavior. On the other hand, if immigrants indeed are heavily selected in this way, we would expect to find a greater degree and speed of assimilation to the host country culture. If we manage to find statistically significant coefficient effects even for those who (were) moved to Sweden before they were adults, we strengthen the case for the importance of cultural factors to household financial behavior.[23]

Figures 9a, b, and c show coefficient effects when each immigrant group is split according to whether the head of household moved to Sweden as an adult ("late") or not ("early"), whereas Tables O.A. 7a, b, and c show the estimated magnitudes and *p*-values for the various coefficient effects. A glance at the tables shows that certainly for the case of the two assets (stocks and homes), coefficient effects remain statistically significant even for those who moved prior to adulthood. For debt participation, the picture is more mixed, but there is still ample evidence of statistically significant coefficient effects even for those who moved young.

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[23] Note that the use of first-generation immigrants is useful for the institutional harmonization experiment that we have in mind because our primary goal is to approximate short- to medium-run adjustment to the program. This depends on the response of people who were exposed to pre-existing institutions.

The figures show that with only two exceptions, those who moved prior to age 18 exhibit smaller or similar estimated coefficient effects to members of the same country group who moved during adulthood. One exception refers to northerners and homeownership and the other to Balkans and debt. Regarding northerners, it can be argued that Northern culture and institutions are the closest to Swedish ones and thus, exposure to the home country is equivalent to exposure to the host country. For the Balkans, we have already noted unusual behavior with regard to debt participation. Our findings here suggest that the unusually high participation rates relative to comparable Swedes in the early part of the sample period is primarily associated with Balkans who emigrated after age 18, and which stands in stark contrast to the debt behavior of those not exposed to home country institutions during their adult economic lives. Nevertheless, even in the case of late immigrants, Balkans appear to reverse this tendency quickly, so that by 2003 they already had begun to exhibit more limited debt participation than Swedish households with similar characteristics.

6.4. Exposure to Formal versus Informal Institutions

Although examination of immigrant behavior in the face of host country institutions and policies foreign to their own cultures can tell us a great deal about likely behavior under exogenously harmonized institutions and transplanted best practices, it can be argued that immigrants are exposed to more than the formal institutions. By living in Sweden, they come in contact with Swedes and learn informal aspects of Swedish culture that help them understand better how to operate under Swedish formal institutions. In a harmonization experiment, transplanted institutions might be new to all people in a country. Our analysis of immigrants could thus bias downward the estimates of the size of differences due to cultural predisposition and bias upwards the rate of assimilation to foreign institutions.

To get a sense of the likely bias, we identify and remove from the sample households whose head is married to a Swedish citizen born in Sweden. The idea is that such heads of

household learn a great deal both from their partner and from their partner's relatives and long-time friends. If our results are due to the presence of such intensive interaction for some households, we would expect estimated cultural differences to be considerably larger for the remaining sample and the rate of convergence to Swedish financial behavior considerably slower.

Results for this restricted sample are shown in Figures 10a, b, and c (Tables O.A. 8a, b, c).[24] Comparing those with the figures on the full sample (Figs. 8a, b, c), we find that the pattern of cultural differences, the rate at which newcomers converge to the financial behavior of old-timers in their group, and the difference between old-timers and natives are robust to the exclusion of such intensely interacting households in the full sample. Of course, households remaining in the sample also interact with Swedes, albeit to a more limited extent than those excluded, and sharpening our understanding of the effects of social interactions on the convergence of financial behavior is an ongoing project of ours. Nevertheless, findings for the restricted sample here are quite relevant to the institutional harmonization experiment because peripheral countries themselves include people familiar with the 'northern' institutions, e.g., because they have lived or studied there.

6.5. Decomposition of Differences by Presence of a Swedish Citizen

Finally, we split each immigrant sample depending on whether the head of household has Swedish citizenship. Deciding to apply for Swedish citizenship is a strong signal of assimilation to host country culture and a signal of a long horizon in the country. The results are shown in Figures 11a, b, and c and in Tables O.A. 9a, b, and c. Two observations stand out. First, immigrant households with a Swedish citizen head tend to exhibit smaller estimated differences in financial behavior compared to native Swedish households of comparable characteristics than

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[24] Interestingly, the percentages of immigrants married to a Swedish citizen born in Sweden differ across cultural groups in a way consistent with cultural distance. They are lowest for Turks and Balkans (3 to 5%), highest for northerners (31%), and in between for the other three groups (17 to 20%).

members of the same immigrant group whose head is not a Swedish citizen. Second, and perhaps more strikingly, even immigrants whose heads of household have obtained Swedish citizenship tend to exhibit statistically significant coefficient effects compared to indigenous Swedish households.

7. Conclusions

In this paper, we compare the financial behavior of Swedish non-immigrant households to that of immigrant households, grouped by alternative measures and procedures, based on genetic distance or Hofstede's cultural dimensions. We derive a robust classification of European countries into cultural groups. Next, we find statistically significant differences in financial behavior between immigrant groups and Swedish households even when controlling for numerous characteristics. These differences refer to the link between household characteristics and financial behavior, thus relaxing the assumption that culture influences outcomes through a single channel or that the influence of household characteristics is independent of culture. We show that these differences are not an artifact of different groups' recency of immigration or of discrimination linked to attitudes towards immigrants. We find evidence that participation in both assets and in debt is sensitive to the number of years an immigrant has been in the country and to whether the immigrant was exposed to home country institutions during his or her early economic life. We present varied evidence suggesting that differences in financial behavior between immigrants and Swedish households, controlling for characteristics, indeed respond to exposure to host country institutions and policies, even for those who spent the early part of their economic lives in their home countries. However, statistically significant differences remain across different cultural groups, even among those who have spent the longest amounts of time in the host country and even among those who have become so assimilated that they have taken Swedish citizenship.

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Appendix A: Data Appendix

Construction of the Swedish and of the Immigrant samples

In constructing the estimation sample and in allocating households to the Swedish subsample versus the immigrant subsamples, we adopt the following procedure:

1) Start with all households in LINDA (both in the regular sample and in the immigrant LINDA sample)

2) Define the household head in accordance with the Canberra definition

3) Use the individual characteristics of the household head. Aggregate asset holdings and income at the household level

4) Construct the balanced sample:

   a. The household has to be included in LINDA for all years 1999-2007

   b. Every individual who is household head a single year has to be a member of the household for all years 1999-2007 (in other words, if a former household head leaves the household, that household is dropped)

   c. Exclude households where the household head is younger than 18 in any year, where the minimum income level is not fulfilled etc.

5) Construct the country groups:

   a. For each year, if the household head and the spouse (if any) are born in Sweden and are Swedish citizens, that household is included in the Swedish group.

   b. To be included in, for example, the German group, whoever is the household head in each year has to have been born in Germany. There is no restriction on the birth country of the remaining household members.

   c. Construct country groups based on genetic distance (and on Hofstede dimensions for the robustness exercise), as described in Appendices B and C below.

Variable Definitions

- **Stockownership:** A binary variable that is set to one if the household holds stocks, and zero otherwise. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts in year t.
- **Having debt outstanding:** A binary variable that is set to one if the household has outstanding debt, and zero otherwise. Debt includes all forms of debt (including consumer debt and mortgages) but not student loans.
- **Homeownership**: A binary variable that is set to one if the household owns its home, and zero otherwise. Home is sum of single-dwelling houses and tent-owner dwellings (i.e., via cooperatives) in year t.

- **Household disposable income:** Household disposable income in year t. *This variable includes labor income, capital income (if any), student aid (if any), pension income (if any), unemployment benefits(if any), and welfare support net of taxes.*
- **Age<30:** Household head is younger than 30 years old in year t.
- **30≤Age<45:** Household head is (equal to or) older than 30 years old and younger than 45 years old in year t.
- **45≤Age<60:** Household head is (equal to or) older than 45 years old and younger than 60 years old in year t.
- **60≤Age:** Household head is or is older than 60 years old in year t.
- **Male:** Household head is male.
- **Unemployed:** Household head has received unemployment benefits or does not qualify for any other occupation category in year t.
- **Retired:** Household head has received pension greater than labor income and does qualify for any other occupation category in year t.
- **Student:** Household head has received student aid at least equal to one semester government student aid in year t.
- **Employed:** Household head is not retired nor student and has received positive labor income in year t.
- **Married:** Household head is married in year t.
- **Number of adults:** The number of household members who are at least 18 years old in year t.
- **Number of children:** The number of household members who are younger than 18 years old in year t.
- **High school graduate:** Household head has a high school education in year t.
- **College graduate:** Household head has a college (or more) education in year t.
- **Household net wealth:** Household net wealth in Swedish Kroners (SEK), calculated as the sum of all real and financial assets minus all debt, except student loans
- **Working in the financial sector:** Household head has worked in the financial sector in year t.
- **Working for the government:** Household head has worked for the local or central government in year t.
- **Regional Dummy I:** Household is living in the greater *Stockholm* province in year t. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy II:** Household is living in the *Uppsala* or *Södermanland* provinces in year t. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy III:** Household is living in the *Östergötland* or *Jönköping* provinces in year t. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy IV:** Household is living in the *Kronoberg* or *Halland* provinces in year t. This variable is constructed from primary information regarding the 5-digit zip code of residence.

- **Regional Dummy V:** Household is living in the *Kalmar* or *Gotland* or *Blekinge* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy VI:** Household is living in the *Skåne* province in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy VII:** Household is living in the *Västra Götaland* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy VIII:** Household is living in the *Värmland* or *Örebro* or *Västmanland* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy IX:** Household is living in the *Dalarna* or *Gävleborg* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy X:** Household is living in the *Västernorrland* or *Jämtland* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Regional Dummy XI:** Household is living in the *Västerbotten* or *Norrbotten* provinces in year *t*. This variable is constructed from primary information regarding the 5-digit zip code of residence.
- **Time in Sweden:** Number of years living in Sweden in year *t*. This variable is only defined for immigrant households.
- **Age at immigration:** Age at immigration to Sweden. This variable is only defined for immigrant households.
- **Attitudes towards immigrants:** This variable measures attitudes towards immigrants in the province of household residence, as a proxy for potential differential targeting or treatment of immigrants in asset or debt markets. Share of people answering "Take in less" to the survey question "Do you think that Sweden should continue taking in immigrants/refugees to the same extent as now?" in the province where the household is residing. Total number of answers to the survey in 20 provinces was 19,424 individuals, with a minimum of 285 persons in one single province.

Appendix B

Table B.1: Dominant Genetic Distance (F_{ST}) of the Sample Countries to Sweden

Country I	Country II	F_{ST}	Country Grouping
Czechoslovakia	Sweden	0	Northern
Federal Republic of Germany	Sweden	0	Northern
Sweden	Czech Republic	0	Northern
Sweden	Slovakia	0	Northern
Austria	Sweden	0	Northern
Sweden	Switzerland	0	Northern
Sweden	Germany	0	Northern
Netherlands	Sweden	0	Northern
Sweden	German Democratic Republic	0	Northern
Denmark	Sweden	0	Northern
Norway	Sweden	0	Northern
Iceland	Sweden	21	SUFI
Spain	Sweden	21	SUFI
Ireland	Sweden	21	SUFI
France	Sweden	21	SUFI
Sweden	United Kingdom	21	SUFI
Poland	Sweden	21	SUFI
Luxembourg	Sweden	21	SUFI
Belgium	Sweden	21	SUFI
Sweden	Ukraine	72	RIP
Italy	Sweden	72	RIP
Belarus	Sweden	72	RIP
Sweden	U.S.S.R.	72	RIP
Portugal	Sweden	72	RIP
Malta	Sweden	72	RIP
Russian Federation	Sweden	72	RIP
Greece	Sweden	191	Balkan
Bulgaria	Sweden	191	Balkan
Sweden	Slovenia	191	Balkan
Sweden	Croatia	191	Balkan
Romania	Sweden	191	Balkan
Sweden	Macedonia	191	Balkan
Sweden	Yugoslavia	191	Balkan
Moldova	Sweden	191	Balkan
Cyprus	Sweden	191	Balkan
Sweden	Turkey	820	Turkey
Finland	Sweden	828	BALFIN
Estonia	Sweden	828	BALFIN
Lithuania	Sweden	828	BALFIN
Latvia	Sweden	828	BALFIN
Hungary	Sweden	828	BALFIN

Note: Dominant genetic distance (i.e., the F_{ST} measure) of the sampled European countries to Sweden. The table data come from Cavalli-Sforza, Monozzi, Piazza (1994) and Spolaore and Wacziarg (2009).

Appendix C:

Country Grouping Using Hofstede Cultural Dimensions

Table C.1: European Countries Grouped by Hofstede's Cultural Dimensions

East	*Nordic*	*Central*	*Midwest (Cwest)*
Bulgaria	Denmark	Belgium	Austria
Greece	Estonia	(Former) Czechoslovakia	Germany
Portugal	Finland	France	Hungary
Romania	Netherlands	Malta	Ireland
Russian Federation	Norway	Poland	Italy
(Former) Yugoslavia	Sweden	Spain	Luxembourg
Turkey			Switzerland
			UK

Note: This table presents the European countries grouped by the Hofstede dimensions of national culture. Our sample includes all European countries, for which the Hofstede's cultural dimensions are available. The Hofstede dimensions of nation culture are *Power Distance, Individualism, Masculinity, and Uncertainty Avoidance*. The groupings are constructed using hierarchical clustering method. The data on the Hofstede's cultural dimension come from the website of Geert Hofstede.

Tables and Figures:

Table 1: European Countries Grouped by the F_{ST} Dominant Genetic Distance Measure

Balkan	*BALFIN*	*SUFI*	*Northern*	*RIP*	*Turkey*
Bulgaria	Estonia	Belgium	Austria	Belarus	Turkey
Croatia	Finland	France	Czech Republic	Italy	
Slovenia	Hungary	Iceland	Denmark	Malta	
Bosnia & Herzegovina	Latvia	Rep. of Ireland	Germany	Portugal	
Cyprus	Lithuania	Luxembourg	Netherlands	Russian Federation	
FYROM		Northern Ireland	Norway	Ukraine	
Greece		Poland	Slovakia	(Former) Soviet Union	
Moldova		Spain	*Sweden*		
Montenegro		United Kingdom	Switzerland		
Romania			(Former) Czechoslovakia		
Serbia			(Former) German DR		
(Former) Serbia & Montenegro					
(Former) Yugoslavia					

Note: This table presents the European countries grouped by the F_{ST} measure of genetic distance across countries based on the dominant population group within each country in the sense of plurality. The data on the F_{ST} measure come from Cavalli-Sforza, Monozzi, Piazza (1994) and Spolaore and Wacziarg (2009). Our sample includes all European countries except Albania, Andorra, Lichtenstein, San Marino, Monaco, and Vatican City. The exclusion of these countries from the sample is dictated by the data availability on the F_{ST} measure. F_{ST} genetic distance is the bilateral distance between county pairs and is directly computed from the allele frequencies of the major ethnic groups of each country in a pair. The groupings are constructed using the single-link hierarchical method as described in Jain and Dubes (1988).

Table 2: Sample Participation Rates by Country Groups

Percentage of relevant (Household, Year) pairs recording participation events

	Full Sample	Sweden	Balkan	BALFIN	SUFI	Northern	RIP	Turkey
Dependent variables								
Stockownership	64%	73%	32%	51%	52%	55%	49%	45%
Having debt outstanding	77%	80%	79%	69%	70%	68%	61%	65%
Homeownership	66%	73%	37%	59%	53%	63%	49%	32%
Number of Households	215,957	143,217	18,652	27,916	6,861	13,327	2,020	3,964
Number of Observations	1,943,613	1,288,953	167,868	251,244	61,749	119,943	18,180	35,676

Note: This table presents the sample participation rates for stockownership, having debt outstanding, and homeownership rates of households in the LINDA database. The sample is a balanced panel of 215,957 households for the years 1999-2007 (i.e., 9 years). The participation rates for each group are calculated on the full pooled sample. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts; debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans; and homeownership includes both single-dwelling houses and tenant-owner dwellings (in the form of residential cooperatives). The country groupings are based on genetic distance (see notes to Table 1). *Source:* Author computations using LINDA data from Statistics Sweden.

Table 3: Household Control Variables by Country Groups

	Full Sample	Sweden	Balkan	BALFIN	SUFI	Northern	RIP	Turkey
Disposable income (in SEK)	319,219	343,287	279,175	259,555	288,915	276,839	268,866	278,883
Log disposable income	12.49	12.56	12.40	12.29	12.36	12.33	12.29	12.38
Age < 30	4%	4%	4%	1%	4%	2%	3%	8%
30 ≤ Age < 45	32%	34%	40%	17%	28%	18%	28%	49%
45 ≤ Age < 60	37%	36%	38%	43%	46%	32%	34%	31%
60 ≤ Age	28%	25%	18%	39%	21%	48%	35%	11%
Male	65%	69%	66%	55%	52%	61%	58%	61%
Unemployed	11%	9%	23%	11%	16%	10%	18%	26%
Retired	24%	20%	20%	36%	20%	40%	29%	18%
Employed	64%	69%	55%	52%	62%	49%	51%	54%
Student	1%	1%	2%	1%	2%	1%	3%	2%
Married	56%	56%	72%	45%	50%	50%	52%	83%
Number of adults	1.85	1.87	2.05	1.66	1.76	1.68	1.75	2.40
Number of children	0.75	0.84	0.91	0.35	0.60	0.39	0.49	1.51
High school graduate	46%	46%	50%	44%	43%	48%	32%	33%
College graduate	29%	31%	23%	20%	41%	27%	41%	10%
Household net wealth (in SEK)	982,965	1,184,234	210,580	665,298	700,838	939,069	654,908	385,739
Working in the financial sector	1%	2%	0%	1%	1%	1%	1%	0%
Working for the government	20%	23%	13%	17%	21%	16%	18%	14%
Time in Sweden	-	-	17.4	34.6	22.5	33.8	24.4	21.1
Age at immigration	-	-	30.2	20.8	27.3	22.9	28.0	22.9
Year of immigration	-	-	1985.6	1968.4	1980.5	1969.2	1978.6	1981.9

Note: This table presents the mean values for characteristics of households in the LINDA database. The sample is a balanced panel of 215,957 households for the years 1999-2007 (i.e., 9 years). The mean values are calculated on the full pooled sample. All monetary values are defined in SEK. For variable definitions, please see the Data Appendix. The country groupings are based on genetic distance (see Notes to Table 1). *Source:* Author computations using LINDA data from Statistics Sweden.

Table 4a: Stockownership: Probit Regressions

			Regressand: Stockownership Dummy				
	Sweden	Balkan	BALFIN	SUFI	Northern	RIP	Turkey
Log disposable income	0.17183***	0.26576***	0.26573***	0.18168***	0.20473***	0.22515***	0.20895***
30<Age<45	-0.01182***	-	-	-	-	-	-
45<Age<60	-0.05501***	-	-	-	-	-	-
60<Age	-0.02068***	-	-	-	-	-	-
Male	-0.00726***	-0.01220**	-0.03452***	-0.01115	-0.02465***	-0.07176***	-0.00113
Unemployed	-0.06219***	-0.02181*	-0.06830***	-0.05802**	-0.03705	0.01378	-0.02329
Retired	-0.03948***	-0.00573	-0.05416**	-0.05565**	-0.02061	0.01433	-0.01682
Employee	-0.01255***	0.0211	-0.02008	0.0121	-0.00763	0.04995	0.04907
Married	-0.0001	-0.00648	-0.00784	-0.01895	-0.03951***	-0.01862	0.02934
Number of adults	-0.00417***	-0.03063***	-0.03362***	0.01876**	0.01550**	0.00947	0.01626**
Number of childiren	0.02323***	-0.01303***	0.00488	0.03836***	0.00596	0.01179	-0.00699
High school graduate	0.04205***	0.04714***	0.04205***	0.06227***	0.05373***	0.03202	0.05846***
College graduate	0.10869***	0.11784***	0.10544***	0.12548***	0.08967***	0.09225***	0.13814***
Working in the fin. sector	0.07277***	0.0016	0.05679*	0.08586	0.0905	0.31897***	-0.09477
Working for the gov.	-0.02266***	-0.01336*	-0.02497***	-0.04681***	-0.03049***	-0.03237	-0.03230*
Years in Sweden	-	0.00541***	0.00415***	0.00534***	0.00153***	0.00359***	0.00470***
Age at Immigration	-	-0.00669***	-0.00051	-0.00203***	-0.00340***	-0.00588***	-0.00380***
Household Net Wealth II	0.09271***	0.08524***	0.13950***	0.09023***	0.11909***	0.06654***	0.07590***
Household Net Wealth III	0.18477***	0.18442***	0.26949***	0.18791***	0.25166***	0.17559***	0.24760***
Household Net Wealth IV	0.26912***	0.26268***	0.37450***	0.26723***	0.35222***	0.27744***	0.36822***
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,288,950	154,667	174,771	53,610	88,049	15,138	27,703

Note: This table presents the marginal effects for probit models that are estimated for Sweden and for each European country grouping separately. The sample period includes 9 years from 1999 to 2007. The dependent variable is an indicator variable for stockownership. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The standard errors are corrected for any heteroskedasticity by clustering at household level. We control for both time fixed effects and regional fixed effect by including year dummies and regional dummies. For brevity, we do not present the estimates on these variables; however, they are available upon request. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 4b: Having Debt Outstanding: Probit Regressions

	Sweden	Balkan	BALFIN	SUFI	Northern	RIP	Turkey
				Regressand: Having Debt Outstanding			
Log disposable income	0.09520***	0.10032***	0.14532***	0.10952***	0.11728***	0.18061***	0.12521***
30<Age<45	0.06837***	-	-	-	-	-	-
45<Age<60	0.06994***	-	-	-	-	-	-
60<Age	-0.00234	-	-	-	-	-	-
Male	0.01581***	0.02194***	0.02079***	0.02720***	0.04742***	0.04505***	0.03399***
Unemployed	0.06487***	0.03461***	0.12040***	0.09209***	0.12151***	0.05691*	0.04116
Retired	0.00973***	-0.04189***	0.09852***	0.07152***	0.06033**	-0.03165	0.04809*
Employee	0.09839***	0.03111***	0.14772***	0.14902***	0.15217***	0.09508***	0.09352***
Married	0.00950***	-0.01276**	-0.01237*	-0.00023	-0.00813	-0.01187	0.0048
Number of adults	0.03641***	0.03104***	0.06335***	0.04116***	0.05423***	0.03628***	0.03233***
Number of childiren	0.04294***	0.01848***	0.02231***	0.01889***	0.02835***	0.00151	-0.00502
High school graduate	0.03382***	0.01886***	0.03172***	0.02382**	0.00402	0.03932*	0.03501***
College graduate	0.00886***	-0.00281	0.01255	0.01142	-0.03457***	0.02123	0.07700***
Working in the fin. sector	0.03284***	0.01088	0.02505	0.06885	0.03413	0.21478***	0.25194**
Working for the gov.	-0.01740***	0.01142*	-0.00474	-0.02276**	-0.00416	-0.02199	-0.00842
Years in Sweden	-	-0.00540***	-0.00883***	-0.00479***	-0.00559***	-0.00447***	-0.00383***
Age at Immigration	-	-0.00338***	-0.00914***	-0.00621***	-0.00440***	-0.00848***	-0.00818***
Homeownership Dummy	0.15212***	0.18529***	0.17704***	0.19049***	0.19422***	0.21841***	0.24612***
Household Net Wealth II	-0.09998***	-0.15672***	-0.15387***	-0.12402***	-0.14333***	-0.14956***	-0.14159***
Household Net Wealth III	-0.10317***	-0.12257***	-0.17477***	-0.07951***	-0.14503***	-0.10969***	-0.08717***
Household Net Wealth IV	-0.15185***	-0.11637***	-0.20230***	-0.08583***	-0.16205***	-0.10393***	-0.04996*
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,288,921	154,667	174,771	53,610	88,049	15,138	27,703

Note: This table presents the marginal effects for probit models that are estimated for Sweden and for each European country grouping separately. The sample period includes 9 years from 1999 to 2007. The dependent variable is an indicator variable for having debt outstanding. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The standard errors are corrected for any heteroskedasticity by clustering at household level. We control for both time fixed effects and regional fixed effect by including year dummies and regional dummies. For brevity, we do not present the estimates on these variables; however, they are available upon request. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 4c: Homeownership: Probit Regressions

	Sweden	Balkan	BALFIN	SUFI	Northern	RIP	Turkey
			Regressand: Homeownership Dummy				
Log disposable income	0.09889***	0.17331***	0.17977***	0.14400***	0.10846***	0.11801***	0.08177***
30<Age<45	0.06310***	-	-	-	-	-	-
45<Age<60	0.12099***	-	-	-	-	-	-
60<Age	0.18126***	-	-	-	-	-	-
Male	0.02449***	-0.01541***	-0.02548***	0.01173	-0.02077**	-0.00611	-0.03296**
Unemployed	0.00929*	0.08810***	0.07946***	0.06089**	0.00699	0.02604	0.01113
Retired	0.04577***	0.12611***	0.11938***	0.10624***	0.04294	0.08157*	0.01856
Employee	0.08742***	0.17137***	0.15637***	0.13267***	0.07136**	0.13365***	0.09490***
Married	0.07894***	0.06824***	0.12768***	0.07288***	0.11974***	0.11175***	0.06339***
Number of adults	0.03417***	-0.05883***	-0.02306***	-0.01101	0.02745***	-0.02905*	-0.0038
Number of childiren	0.01867***	-0.01955***	-0.01448***	0.00901*	0.01005*	-0.0108	-0.00521
High school graduate	0.02035***	0.02544***	0.01532**	0.03258**	0.05149***	0.01797	0.04065***
College graduate	0.02555***	0.03354***	0.04724***	0.06294***	0.08950***	0.04641*	0.08526***
Working in the fin. sector	0.01933***	0.03004	0.01548	0.04282	-0.00525	-0.05733	0.00224
Working for the gov.	-0.02076***	-0.04603***	-0.03929***	-0.02530**	-0.02891**	-0.05098**	-0.09871***
Years in Sweden	-	0.00923***	0.00772***	0.00737***	0.00592***	0.00837***	0.00764***
Age at Immigration	-	-0.00129***	0.00514***	0.00229***	0.00341***	0.00138	-0.00021
Household Net Wealth II	-0.24964***	-0.38591***	-0.27017***	-0.34052***	-0.28899***	-0.37707***	-0.39264***
Household Net Wealth III	-0.31060***	-0.42241***	-0.35957***	-0.42599***	-0.38847***	-0.46920***	-0.45226***
Household Net Wealth IV	-0.18775***	-0.31360***	-0.24488***	-0.28808***	-0.25507***	-0.34452***	-0.30438***
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,288,921	154,667	174,771	53,610	88,049	15,138	27,703

Note: This table presents the marginal effects for probit models that are estimated for Sweden and for each European country grouping separately. The sample period includes 9 years from 1999 to 2007. The dependent variable is an indicator variable for homeownership. Homeownership includes both single-dwelling houses and tenant-owner dwellings.. The standard errors are corrected for any heteroskedasticity by clustering at household level. We control for both time fixed effects and regional fixed effect by including year dummies and regional dummies. For brevity, we do not present the estimates on these variables; however, they are available upon request. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 5: Sensitivity of Results to Inclusion of Households who Emigrated from Sweden

	Balkan		BALFIN		SUFI		Northern		RIP		Turkey	
	Long	*Short*	*Long*	*Short*	*Long*	*Short*	*Long*	*Short*	*Long*	*Short*	*Long*	*Short*
A. Stocks												
Baseline Sample	0.160	0.404	0.069	0.136	0.073	0.186	0.061	0.144	0.047	0.255	0.099	0.212
Considering Emigrants	0.162	0.405	0.070	0.146	0.075	0.207	0.062	0.163	0.052	0.267	0.100	0.213
B. Debt												
Baseline Sample	0.061	-0.070	0.02	0.021	0.034	0.104	0.01	0.021	0.056	0.212	0.204	0.287
Considering Emigrants	0.064	-0.068	0.02	0.027	0.035	0.118	0.006	0.035	0.064	0.217	0.204	0.287
C. Homeownership												
Baseline Sample	0.152	0.45	-0.005	0.051	0.064	0.111	0.007	0.062	0.061	0.18	0.275	0.331
Considering Emigrants	0.154	0.447	-0.005	0.053	0.066	0.117	0.009	0.069	0.061	0.178	0.278	0.331
Number of Emigrants (as of 1999)	474		1,295		497		822		129		85	
Share of Emigrants (as of 1999)	2.54%		4.64%		7.24%		6.17%		6.39%		2.14%	

Note: This table presents the decompositions of differences in stockownership rates (Panel A), having debt outstanding (Panel B), and homeownership rates (Panel C) between the Swedish and other European households for year 1999. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The differences due to coefficients are reported. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The raw differences and estimates on the differences due to covariates are available upon request. All decompositions refer to differences with respect to Sweden. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). *Source:* Author computations using LINDA data from Statistics Sweden.

Figure 1: European Country Clusters Based on the F_{ST} Dominant Genetic Distance Measure – Dendrogram

Note: This figure presents the European countries grouped by the F_{ST} measure of Cavalli-Sforza, Monozzi, Piazza (1994). Our sample includes all European countries except Albania, Andorra, Lichtenstein, San Marino, Monaco, and Vatican City. The exclusion of these countries from the sample is dictated by the data availability on the F_{ST} measure. F_{ST} genetic distance is the bilateral distance between county pairs and is directly computed from the allele frequencies of the major ethnic groups of each country in a pair. The clusters are constructed using the single-link hierarchical clustering method described in Jain and Dubes (1988). The data on the F_{ST} measure come from Cavalli-Sforza, Monozzi, Piazza (1994) and Spolaore and Wacziarg (2009).

Figure 2: European Country Clusters based on the F_{ST} Weighted Genetic Distance Measure – Dendrogram

Note: This figure presents the European countries grouped by the F_{ST} measure of Cavalli-Sforza, Monozzi, Piazza (1994). Our sample includes all European countries except Albania, Andorra, Lichtenstein, San Marino, Monaco, and Vatican City. The exclusion of these countries from the sample is dictated by the data availability on the F_{ST} measure. F_{ST} genetic distance is the bilateral distance between county pairs and is directly computed from the allele frequencies of the major ethnic groups of each country in a pair. The clusters are constructed using the single-link hierarchical clustering method described in Jain and Dubes (1988). The data on the F_{ST} measure come from Cavalli-Sforza, Monozzi, Piazza (1994) and Spolaore and Wacziarg (2009).

Figure 3: European Country Clusters Based on the Hofstede Cultural Dimensions – Dendrogram
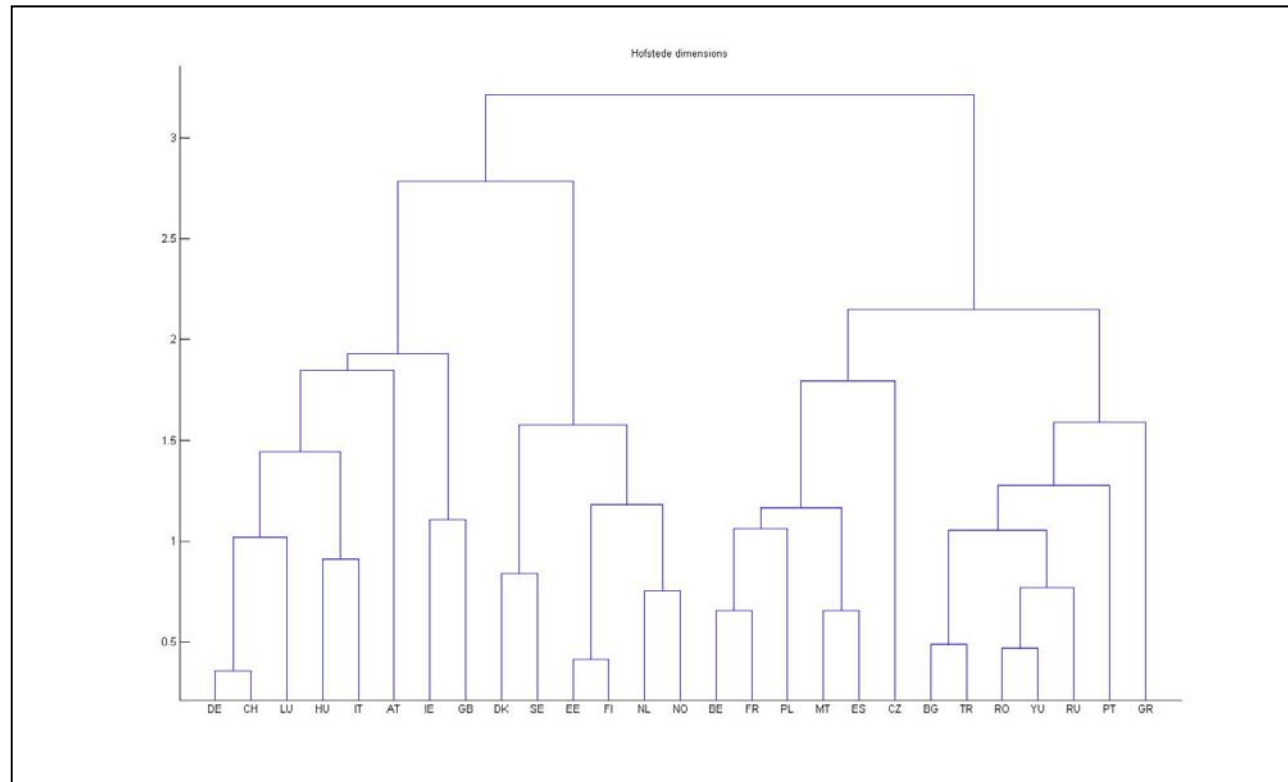
Note: This figure presents the European countries grouped by the Hofstede dimensions of national culture. Our sample includes all European countries, for which the Hofstede's cultural dimensions are available. The Hofstede dimensions of nation culture are *Power Distance, Individualism, Masculinity, and Uncertainty Avoidance*. The clusters are constructed using the single-link hierarchical clustering method described in Jain and Dubes (1988).The data on the Hofstede's cultural dimension come from the website of Professor Geert Hofstede.

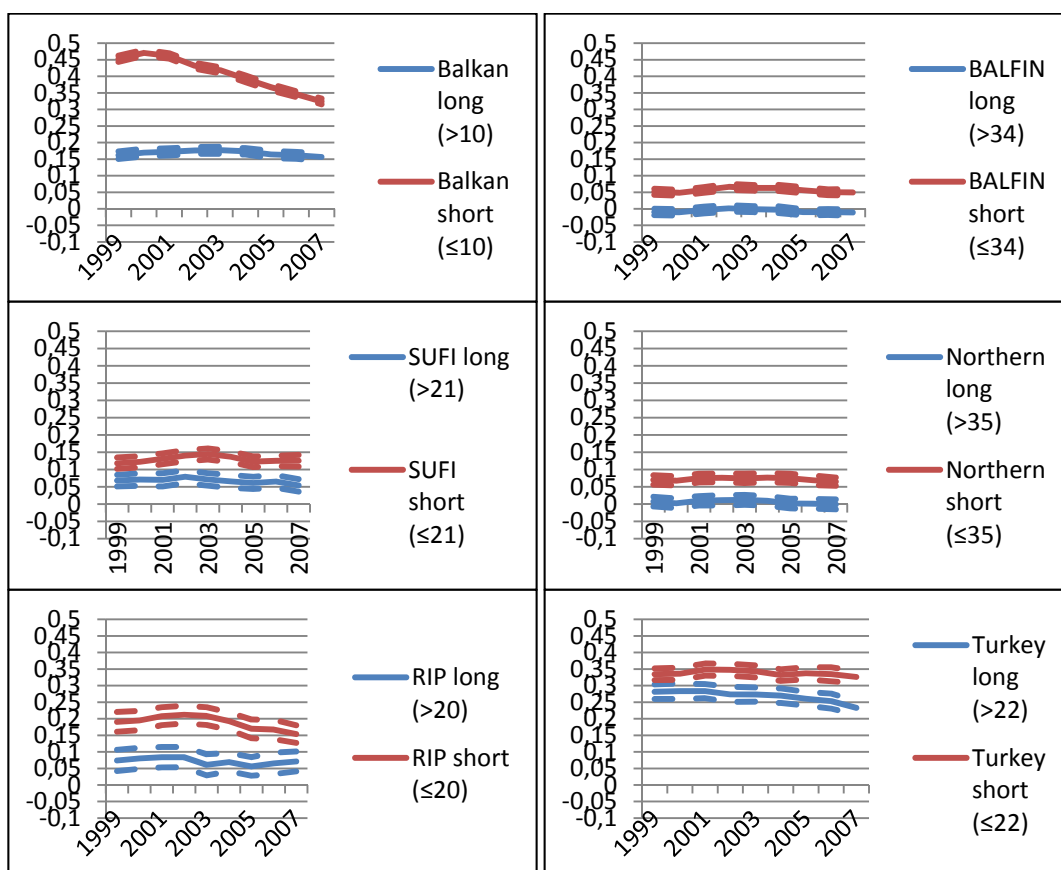**Figure 4a: Stockownership: Differences in Participation Rates due to Coefficients**
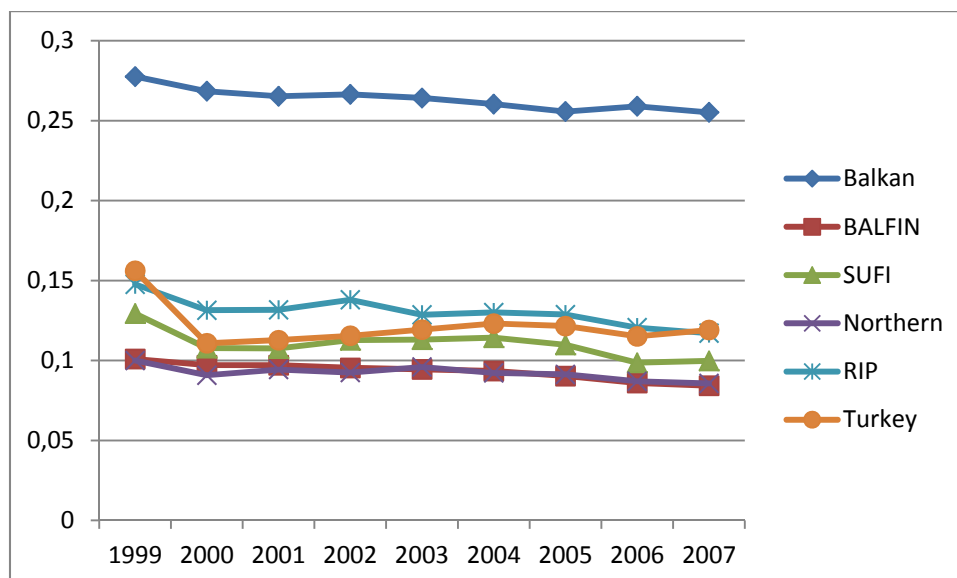
Note: This figure depicts the mean differences in stockownership rates due to coefficients between Swedish and other European households. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All decompositions refer to shortfalls relative to Swedish households. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 4b: Having Debt Outstanding: Differences in Participation Rates due to Coefficients
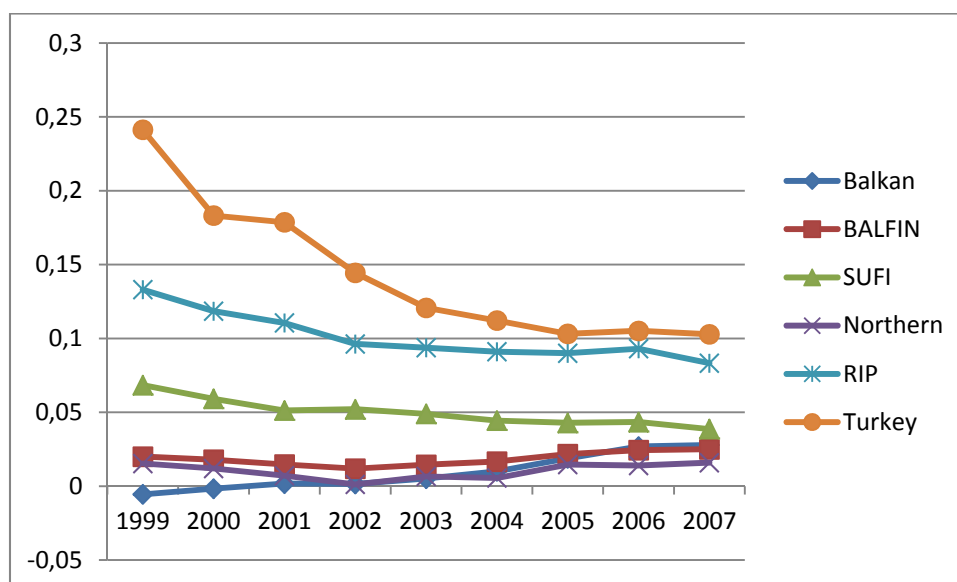
Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to shortfalls relative to Swedish households. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 4c: Homeownership: Differences in Participation Rates due to Coefficients
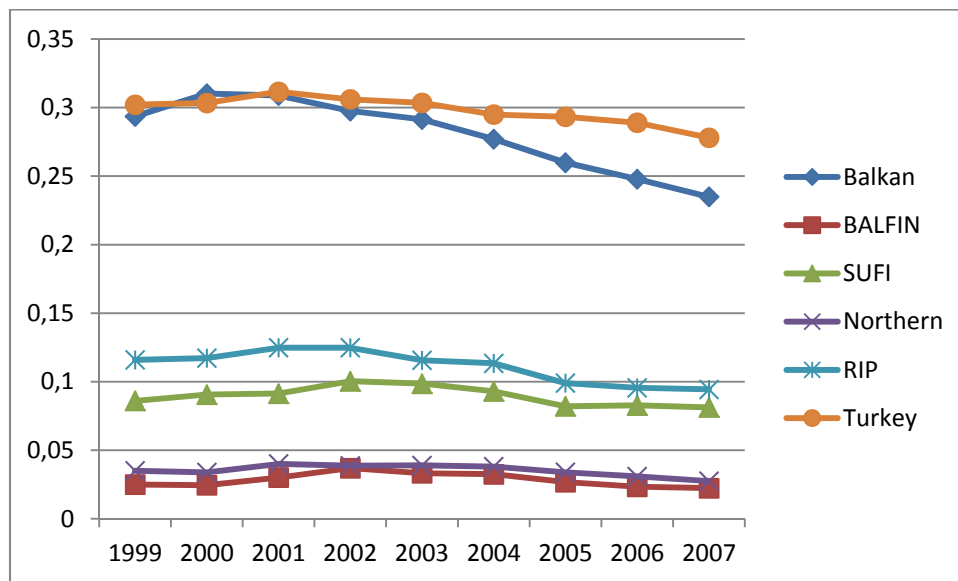
Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to shortfalls relatives to Swedish households. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

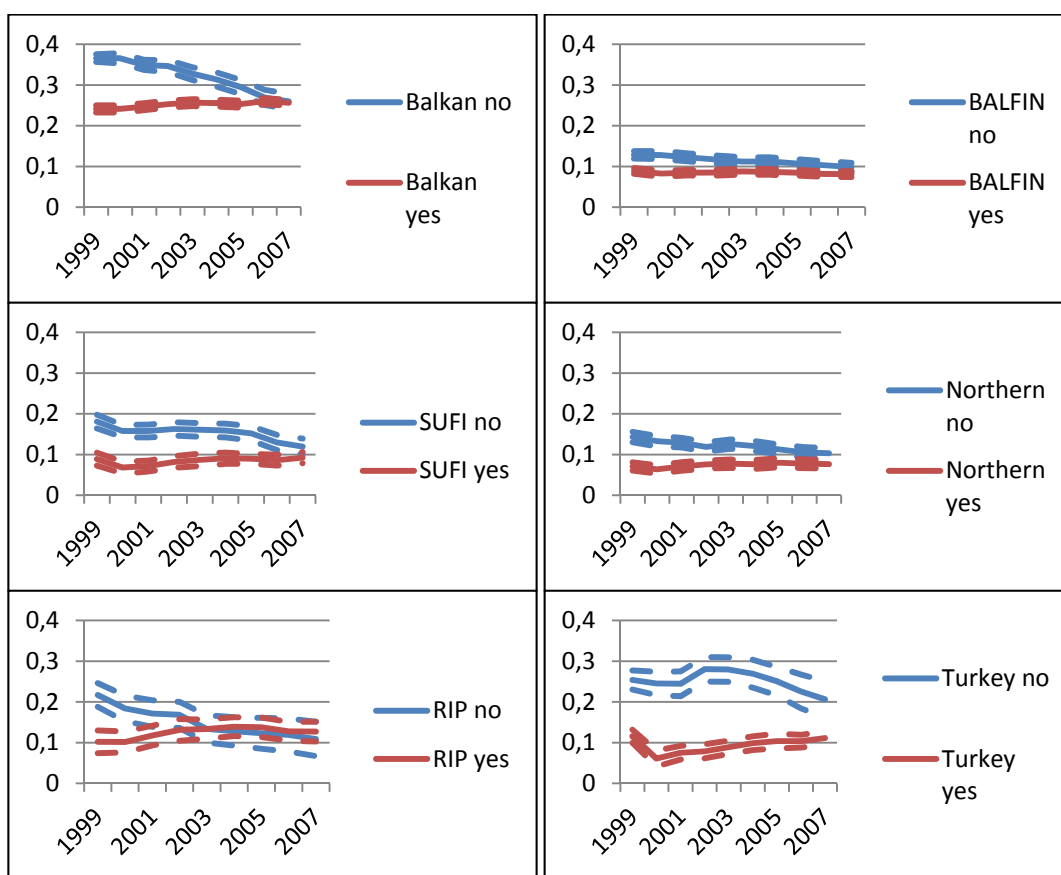**Figure 5: Having Debt Outstanding: Controlling for Income Growth Expectations**
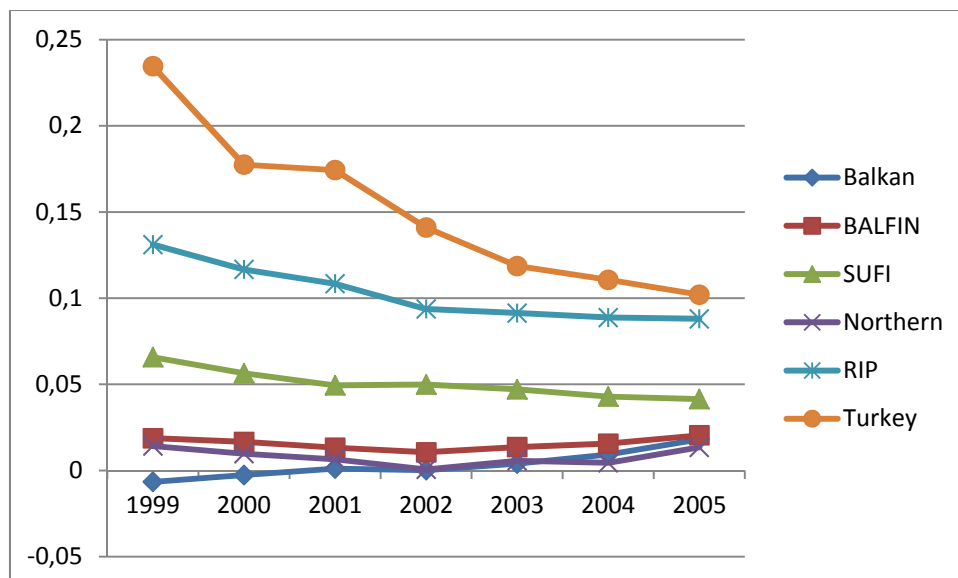
Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 7 years from 1999 to 2005. All decompositions refer to shortfalls relative to Swedish households. An additional control variable for *income growth expectations* is also included in the regressions. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 6: Homeownership: Controlling for Years in Sweden
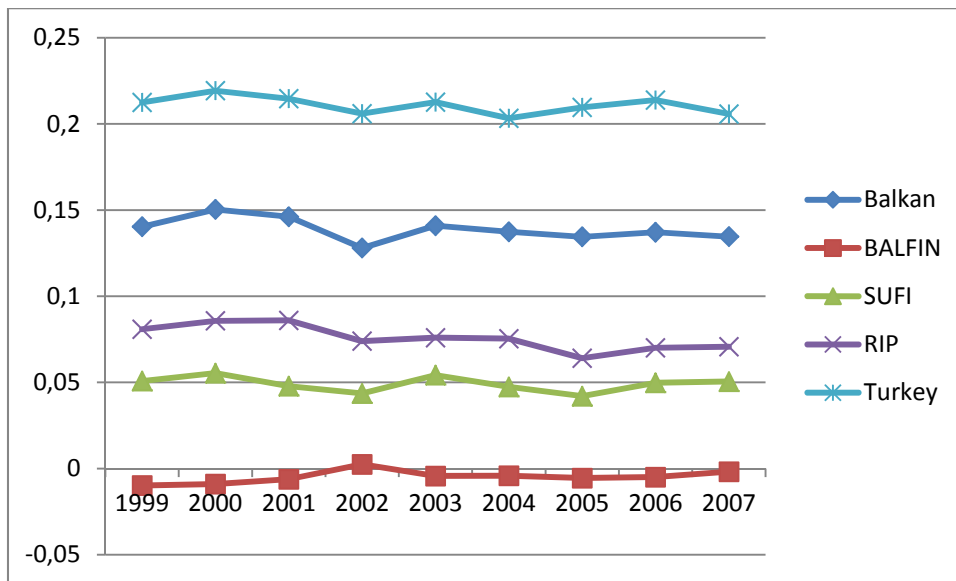
Note: This figure depicts the mean differences in homeownership rates due to coefficients between the northern European and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. An additional control variable for *years in Sweden* is also included in the regressions. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 7a: Stockownership: Controlling for Province Attitudes towards Immigrants

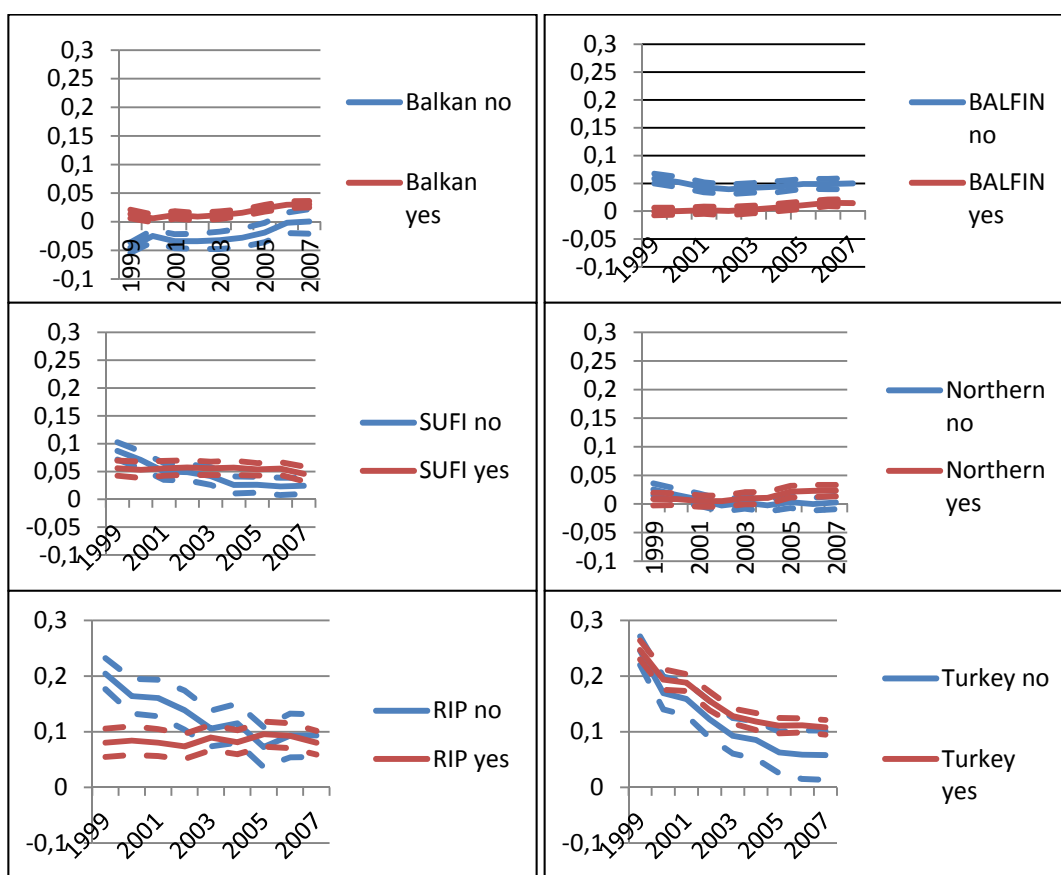**Note:** This figure depicts the mean differences in stockownership rates due to coefficients between Swedish and other European households. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. An additional control variable for attitudes towards immigrants (see "attitudes towards immigrants" in data appendix). Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). The source data come from Statistics Sweden and Forskningsgruppen FSI.

Figure 7b: Having Debt: Controlling for Province Attitudes towards Immigrants

Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. An additional control variable for attitudes towards immigrants (see "attitudes towards immigrants" in data appendix). Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). The source data come from Statistics Sweden and Forskningsgruppen FSI.

Figure 7c: Homeownership: Controlling for Province Attitudes towards Immigrants
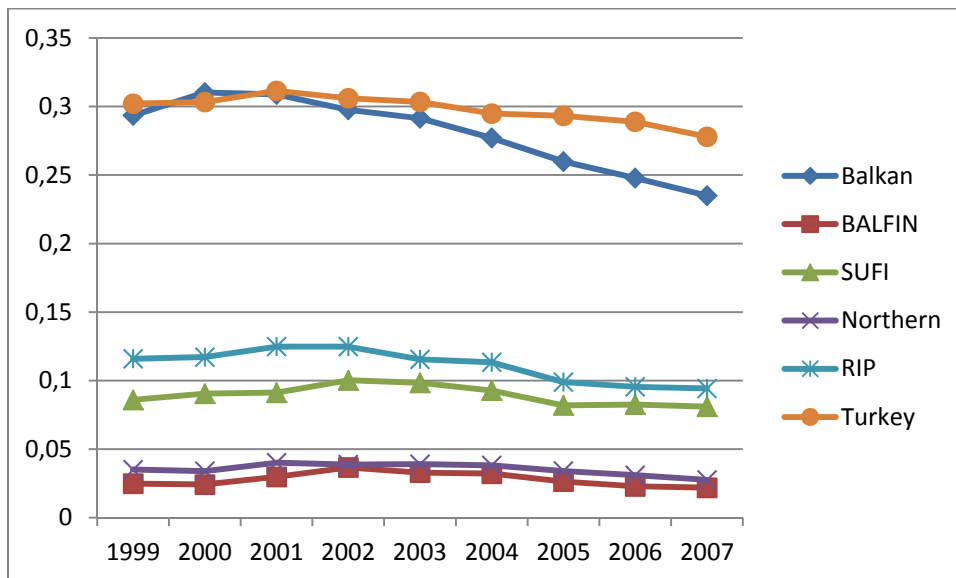
Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to shortfalls relative to Swedish households. An additional control variable for attitudes towards immigrants (see "attitudes towards immigrants" in data appendix) is also included in the regressions. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). The source data come from Statistics Sweden and Forskningsgruppen FSI.

Figure 8a: Stockownership: Differences in Participation Rates due to Coefficients – By Length of Stay in Sweden
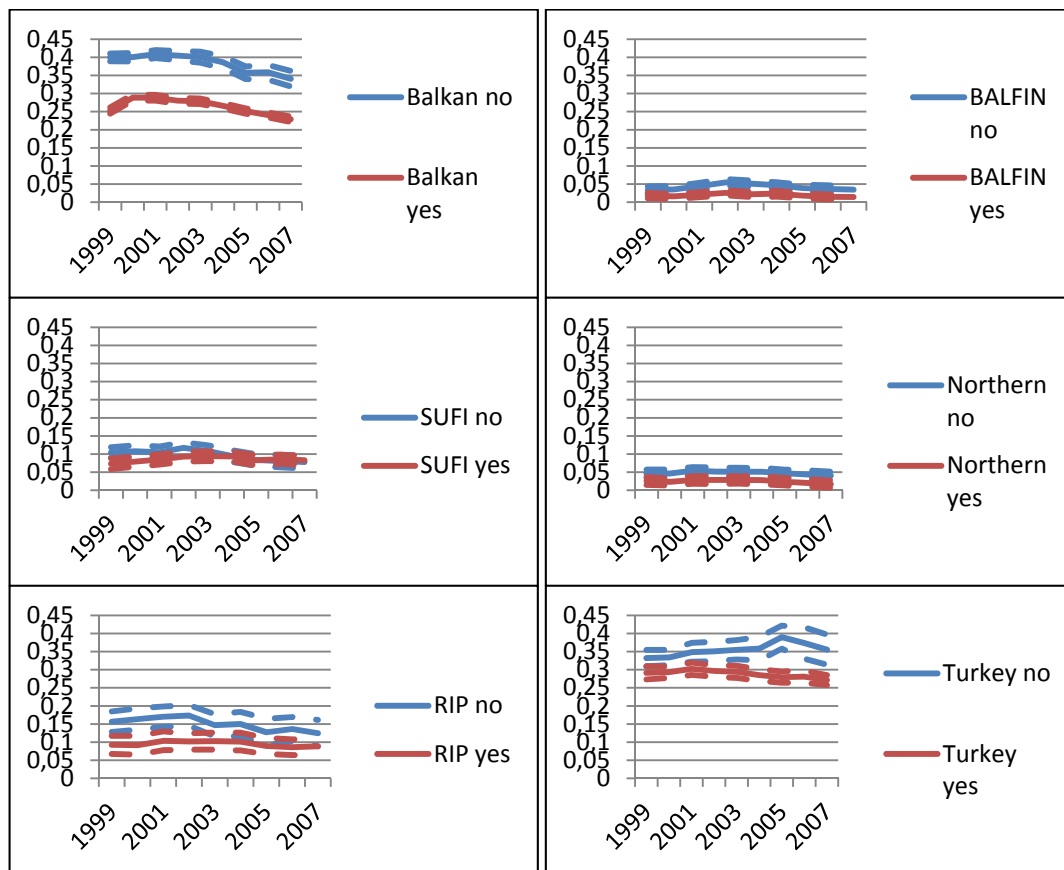

Note: This figure depicts the mean differences in stockownership rates due to coefficients between Swedish and other European households. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 8b: Having Debt Outstanding: Differences in Participation Rates due to Coefficients – By Length of Stay in Sweden

Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 8c: Homeownership: Differences in Participation Rates due to Coefficients – By Length of Stay in Sweden

Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 9a: Stockownership: Differences in Participation Rates due to Coefficients – Age at Immigration

Note: This figure depicts the mean differences in stockownership rates due to coefficients between Swedish and other European households. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their age at immigration. *Early* comers are those who arrive in Sweden prior to their 18th year; *late* comers are those who arrive after their 18th year. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 9b: Having Debt Outstanding: Differences in Participation Rates due to Coefficients – Age at Immigration

Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their age at immigration. *Early* comers are those who arrive in Sweden prior to their 18th year; *late* comers are those who arrive after their 18th year. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 9c: Homeownership: Differences in Participation Rates due to Coefficients – Age at Immigration

Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their age at immigration. *Early* comers are those who arrive in Sweden prior to their 18th year; *late* comers are those who arrive after their 18th year. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 10a: Stockownership: Decomposing the Differences in Participation Rates – Formal Institutions & Length of Stay
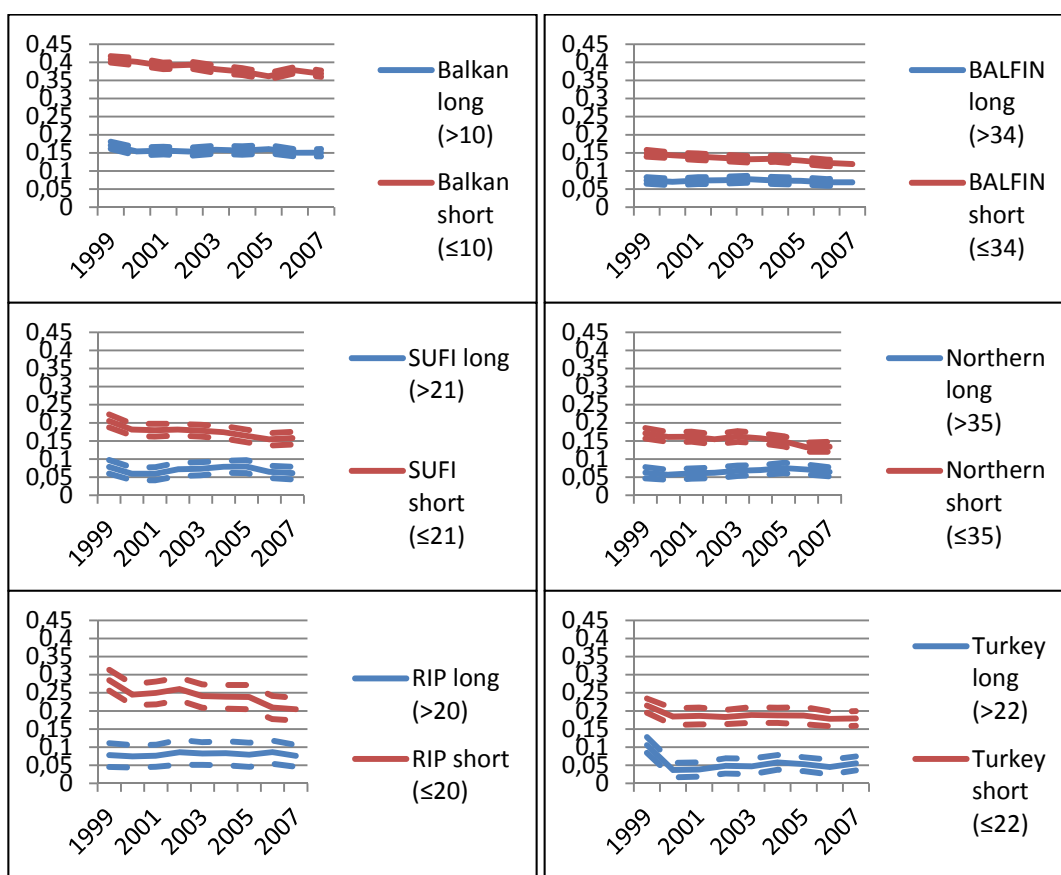
Note: This figure depicts the mean differences in stockownership rates due to coefficients between Swedish and other European households, excluding immigrant households where the spouse of the household head was born in Sweden and has Swedish citizenship. This allows us to focus on those less likely to have intense exposure to informal parts of Swedish culture. Stocks include all forms of direct and indirectly held stocks, except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 10b: Having Debt Outstanding: Decomposing the Differences in Participation Rates – Formal Institutions & Length of Stay
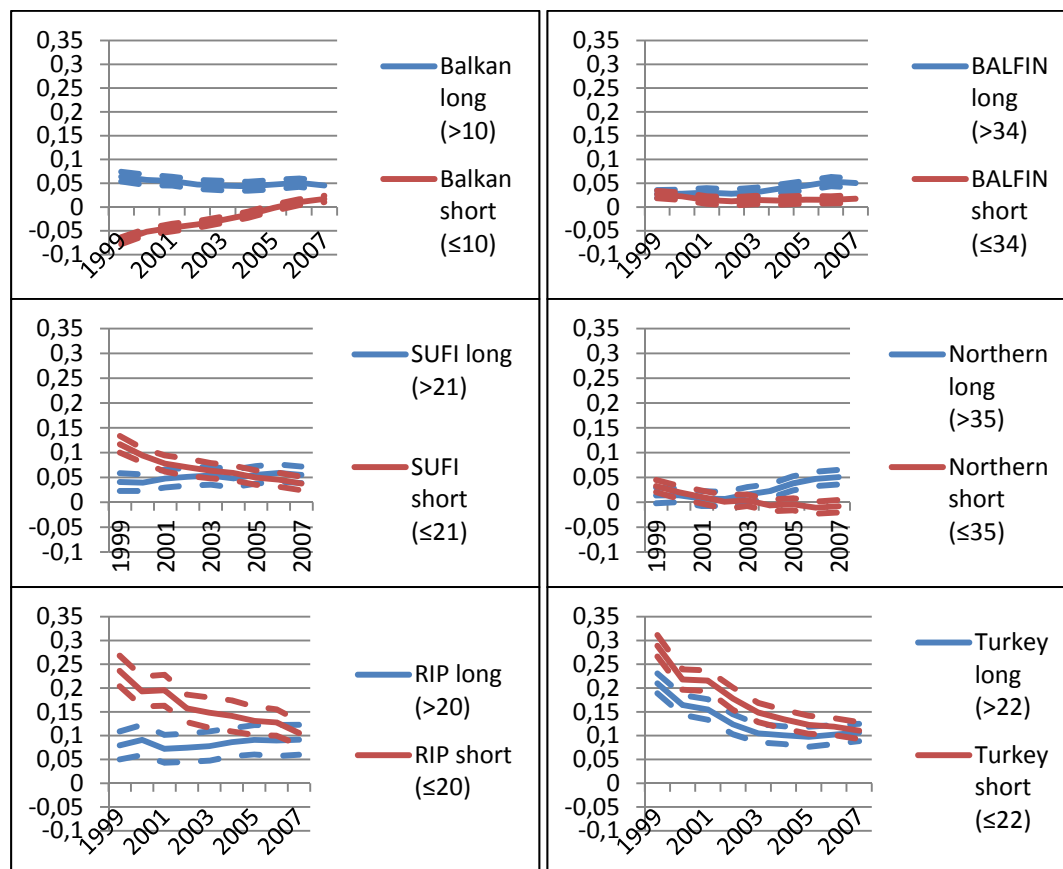
Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households, excluding immigrant households where the spouse of the household head was born in Sweden and has Swedish citizenship. This allows us to focus on those less likely to have intense exposure to informal parts of Swedish culture. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 10c: Homeownership: Decomposing the Differences in Participation Rates – Formal Institutions & Length of Stay

Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households, excluding immigrant households where the spouse of the household head was born in Sweden and has Swedish citizenship. This allows us to focus on those less likely to have intense exposure to informal parts of Swedish culture. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on their length of stay in Sweden. *Long* stays are defined as those above the median number of years in Sweden for the relevant county group; *Short* stays are those below the median number for the group. The numbers in the parentheses represent the median value for the length of stay in Sweden for the immigrant households in each cultural group as of year 2003. Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

**Figure 11a: Stockownership: Differences in Participation Rates due to Coefficients –
Having a Swedish Citizenship**

Note: This figure depicts the mean differences in stockownership rates due to coefficients between
Swedish and other European households. Stocks include all forms of direct and indirectly held stocks,
except stocks held through retirement accounts. The sample period includes 9 years from 1999 to 2007. All
decompositions refer to differences with respect to Sweden. We divide up the households in each group
into two subgroups based on having a Swedish citizenship (*yes versus no*). Standard errors are computed
using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table
1). Source: Author computations using LINDA data from Statistics Sweden.

Figure 11b: Having Debt Outstanding: Differences in Participation Rates due to Coefficients – Having a Swedish Citizenship

Note: This figure depicts the mean differences in having debt outstanding due to coefficients between Swedish and other European households. Debt includes all forms of debt (e.g., consumer credits, mortgages), except student loans. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on having a Swedish citizenship (*yes versus no*). Standard errors are computed using 200 bootstrap replications. The country groupings based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

**Figure 11c: Homeownership: Differences in Participation Rates due to Coefficients –
Having a Swedish Citizenship**

Note: This figure depicts the mean differences in homeownership rates due to coefficients between Swedish and other European households. Homeownership includes both single-dwelling houses and tenant-owner dwellings. The sample period includes 9 years from 1999 to 2007. All decompositions refer to differences with respect to Sweden. We divide up the households in each group into two subgroups based on having a Swedish citizenship (*yes versus no*). Standard errors are computed using 200 bootstrap replications. The country groupings are based on genetic distance (see Notes to Table 1). Source: Author computations using LINDA data from Statistics Sweden.

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