Cultural Origins of Risk Taking in Financial Markets*

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Abstract

There are large cross-country differences in individual investors' tendency to participate in risky asset markets and their allocation of financial assets. This paper studies the role of cultural heritage in explaining the differences in risk taking in financial markets by combining data on the asset allocation of second-generation immigrants in Sweden with ancestral culture of risk taking in their parents' countries of origin. We find that descendants of risk-loving cultures are more likely to participate in equity markets and allocate a greater share of their financial wealth to equities. Moreover, they take more idiosyncratic risk by favoring directly held stocks over mutual funds, and, by doing so, form less diversified portfolios. We show that these findings are not driven by the selection of migrating parents or other country of origin attributes.

Keywords: culture, cultural transmission, diversification, investment behavior, risk preference.

JEL classification codes: G11, G40, G50, G51, Z10.

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1 Introduction

Substantial cross-country disparities in asset participation and allocation remain largely unexplained even after accounting for factors such as demographics, education, income, and wealth. Surprisingly, considerable variations exist also among similarly developed and geographically proximate countries (Badarinza et al., 2016; Christelis et al., 2013).

Cultural heritage may play a crucial role in understanding these disparities.[1] Extensive evidence has demonstrated the profound impact of culture on shaping beliefs, preferences, and individual decision-making, influencing various domains such as labor force participation, education, fertility, corruption, and violence.[2] Given the influence of preferences on financial behavior, it is plausible that cultural heritage, transmitted from parents to children, could explain some of the differences in portfolio compositions across countries. This paper examines this idea by assessing the effect of a distinct culturally transmitted attribute central to any theory of investment behavior –risk preferences– on the composition of financial portfolios.

Although previous research has not directly tested this hypothesis, existing evidence points to the potential influence of cultural traits on the formation of financial portfolios.[3] Guiso et al. (2008) find that trust, a cultural attribute with deep historical roots, affects households' willingness to participate in the stock market. Haliassos et al. (2017) use data on first-generation European migrants in Sweden, grouping them into six-country clusters based on their genetic proximity to native Swedes, and study the role of cultural differences

[1] For our purposes, culture is defined as a set of inter-generationally transmitted preferences, beliefs and attitudes in a society (Bisin and Verdier, 2001; Fernández, 2011; Fernandez and Fogli, 2009).

[2] Alesina et al. (2013); Fernández (2011); Fernández et al. (2004); Fernandez and Fogli (2009); Figlio et al. (2019); Fisman and Miguel (2007); Guiso et al. (2003, 2006); Miguel et al. (2011); Voigtländer and Voth (2012).

[3] Gomes et al. (2021) provide an overview of the literature on the link between culture and financial decision making.

in asset market participation. They find that individuals who spent more years in their home country during their working life tend to exhibit greater differences from the native culture.

Distinguishing the effect of culturally transmitted preferences on investment behavior from other institutional and economic factors poses a challenge. A particular culture, which might drive specific investment behaviors, could also give rise to institutions and policies that accommodate or incentivize such behaviors (Guiso et al., 2006). In such cases, it becomes difficult to disentangle whether a certain investment behavior can be attributed to institutional features or individuals' cultural attributes.

We overcome these concerns by relating the investment behavior of second-generation migrants in Sweden –a subsample of the Swedish population who were born in Sweden but have both parents born in a different country– with the ancestral culture of risk taking in their parents' countries of origin.[4] By considering the inter-generational transmission of attitudes from parents to children (Dohmen et al., 2012), our identification strategy exploits the opportunity to observe this subsample with diverse parental cultural backgrounds in a common environment. This approach allows us to isolate the impact of cultural factors from other influences, such as institutional and aggregate economic factors. Furthermore, the spatial separation of migrants from their countries of origin rules out reverse-causality and any other omitted factor must be inter-generationally transmissible. Thus, none of the usual confounders –such as institutions, the economic environment, technology and geography– can plausibly explain away our estimates.[5]

[4]Running the analysis including individuals with one Sweden-born parent does not change the main findings of the paper. But, since they could be different in many other ways, we prefer to limit our sample to those with both parents born outside Sweden.

[5]This identification strategy has been dubbed as the epidemiological approach in the literature and is based on the variation in outcomes across different immigrant groups residing in the same country (Carroll et al., 1994; Fernandez and Fogli, 2006, 2009; Fernández, 2011; Giuliano, 2007). The majority of this literature looks at first-generation immigrants who, unlike second-generation immigrants, have been exposed to institutional and economic factors in their countries of origin as well as to those of their host countries.

To investigate individuals' investment behavior, we start by looking at equity market participation and the share of financial wealth invested in equities. However, since participation in risky asset markets is influenced by risk preferences as well as other characteristics, such as wealth, access to information, and cognitive capacity, that affect individual ability to overcome fixed costs of participation, in this paper we are most interested in understanding whether a culture of risk taking influences the composition of risky asset portfolios, conditional on participation. More specifically, we aim to understand if those descended from risk-loving cultures take more idiosyncratic risk in their portfolios by investing more heavily in direct stocks at the expense of mutual funds.

Compared to investments in mutual funds, direct investments in stocks typically exhibit greater volatility with potentially more extreme returns, characteristics particularly appealing for risk-loving investors. Previous research has shown that individuals who invest in stocks, rather than mutual funds, tend to view trading as a form of gambling and may switch between the two activities as substitutes.[6] Dorn et al. (2015) demonstrate that variation in lottery prizes in Germany affects trading behavior in individual stocks and options, while mutual fund trading fails to provide the desired gambling experience sought by gambling-motivated investors. Gao and Lin (2015) find that higher lottery jackpot prizes in Taiwan lead to a decrease in trading volume among stocks preferred by individual investors. Kumar

Depending on the question, one or the other group could be the preferable sample to investigate. For example, as mentioned earlier, Haliassos et al. (2017) use data on first-generation migrants in Sweden to study the pace of migrants' financial-behavior assimilation. Similarly, Osili and Paulson (2008) investigate if the attitudes of the first-generation migrants towards institutions affect their financial decisions by asking if their likelihood of participation in the US stock market is influenced by the degree of protection of property rights in their home country and their length of exposure to the host country's institutions.

[6]Gambling, especially when the outcome is correlated with consumption, has been used to obtain measures of risk preference (e.g., Barsky et al. (1997) and Frey et al. (2017)) and numerous studies (e.g., Ali (1977), Asch et al. (1982), and Snyder (1978)) have suggested that those involved in gambling-type activities have higher risk tolerance.

(2009) discovers that individual investors prefer stocks with lottery-like features, such as low prices, high idiosyncratic volatility, and high idiosyncratic skewness.

For our main analysis, we combine administrative data on the portfolio composition of the population of second-generation migrants in Sweden with information on risk preferences in their parents' countries of origin, obtained from the Global Preference Survey (Falk et al., 2018). Global Preference Survey (GPS) is an experimentally validated survey dataset of economic (risk and time preferences) and social preferences (reciprocity, altruism, and trust) from 76 countries, representing approximately 90 percent of the global population. The extensive global coverage of the GPS allows us to assign second-generation migrants in Sweden to the measures of risk preferences in the country of ancestry.

We find that culturally transmitted risk preferences significantly increase the likelihood of participation in risky asset markets and the share of financial wealth invested in equities. Furthermore, we show that, conditional on participation in the equity market, individuals with immigrant parents from countries with a greater willingness to take risks are more likely to directly hold stocks, less likely to invest in mutual funds, and allocate a larger portion of their financial wealth to direct stock holdings. Importantly, our findings remain robust even after controlling for parental characteristics such as education, wealth, or income. This suggests that risk preferences in the country of ancestry are not merely capturing parental characteristics but plausibly have a direct effect on children's investment behavior.

A potential threat to our identification is the possibility that migration from different source countries and across time may occur for various reasons that could affect the investment behavior of children of immigrants beyond the average cultural characteristics of source countries. However, the robustness of our findings to controlling for parental characteristics mitigates this concern, as parental features are expected to pick up the effect of selection

of migrants from specific countries and across time to a large extent.[7] Nevertheless, we go beyond this to explicitly address this concern in a number of ways. First, we show that our findings remain unchanged when we control for source continents. Additionally, the findings are robust to controlling for the source countries' GDP per capita or life expectancy. Furthermore, trust has been shown to influence financial market behavior, especially among migrants (Guiso et al., 2004, 2008). If culturally transmitted risk preferences we study are correlated with trust, one might suspect children of migrants from different countries to behave differently due to varying levels of trust. We show that our results are robust to controlling for trust. Finally, institutional features may be confounding the influence of culture. Yet, the estimates on the culture of risk taking remain significant when we control for the rule of law as a measure of institutions in the origin country –even though institutions are arguably endogenous to culture. These exercises suggest that variations in some of the most important economic and social indicators of the source countries are unlikely to derive our findings.[8]

Another concern about the proposed interpretation of our findings is that investment behavior of children may not be directly affected by their cultural heritage but rather reflects their other outcomes such as cognitive ability, education, income, and wealth, which are related to investment behavior. However, one should note that, unlike the evidence we find for the effect of culturally inherited risk preferences, there is no reason to think that these individual characteristics would have opposite effects on investments in stocks and mutual funds. Additionally, we find that most of the relations between cultural attributes and the investment behavior of children of immigrants remain strong even after controlling for

[7] Results are also robust to controlling for age at migration of parents.

[8] Although the correlation between risk preferences and time preferences is not large across countries, in all our regressions we control for time preferences to solely pick up the effect of risk preferences. As expected, the findings are very similar without controlling for time preferences.

children's education, income, wealth, and IQ. The only exception is the share of financial wealth invested in risky assets, which is partially explained away when controlling for child's wealth. This suggests that the observed effect on the share of risky assets might be going through the descendants of individuals from risk-loving cultures being wealthier or that engaging in financial risks throughout their lives might have contributed to their wealth accumulation. Although this exercise suffers from adding "bad controls", it still indicates that cultural characteristics may be shaping portfolio compositions and allocation beyond their potential impact on other observable outcomes.

We also provide additional evidence that we indeed pick up the role of cultural heritage in our analysis. First, we corroborate our findings by examining risk-taking heritage that predates our outcomes by a very long time. While our primary focus in this study is on the impact of cultural heritage on risk taking in financial markets, rather than how cultural values are formed, this exercise provides an intuitive understanding of the origins of differing cultural norms and whether similar results are obtained when using characteristics of ancestral tribes or communities before any modernization occurred. To accomplish this, we use a separate dataset from the Ethnographic Atlas (Murdock, 1965), which contains information gathered by ethnographers reflecting various cultural and socio-economic characteristics of pre-modern societies before industrialization and European contact.[9] We proxy the ancestral culture of risk-taking in the parents' countries of origin with the prevalence of chance games in societies, as opposed to games relying on physical skills or strategies. Consistent with our baseline findings, we find that individuals whose ancestors participated in games with a significant element of chance are more likely to own stocks instead of mutual funds, and they also allocate more of their financial wealth to directly held stocks. This addresses the unlikely concern

[9]Recent literature has utilized the Atlas to capture ancestral cultures from ancient times (Alesina et al., 2013; Giuliano and Nunn, 2013; Michalopoulos, 2012; Nunn and Wantchekon, 2011)

that our main cultural preferences obtained from the GPS might have been influenced (even partially) by contemporaneous institutional and economic policies that could have affected the parents of immigrants in ways not reflected in their wealth, income, and education. By incorporating this additional evidence from pre-modern societies, we further strengthen the argument that cultural characteristics play a vital role in shaping investment behavior.

Second, we show that the relationships we find between ancestral risk preferences and financial behavior are stronger for individuals who descend from more persistent cultures. Giuliano and Nunn (2021) argue that in environments characterized by greater stability across generations, traits that have evolved up to the previous generation are more likely to be beneficial for the current generation. Hence, it becomes advantageous to maintain existing customs and cultural norms. We test this idea in our setting by approximating cultural persistence with exogenous measures of cross-generational climatic variability of the environment. We confirm our hypothesis, supporting the idea that the influence of cultural background on investment behavior is more pronounced when individuals come from cultures with higher levels of persistence.

Finally, consistent with the arguments of cultural transmission (Dohmen et al., 2012), we find that the role of cultural background in investment behavior is stronger when parents share the same country of origin. This suggests that the transmission of cultural values and preferences within the family plays a significant role in shaping the investment decisions of their children.

We make three main contributions to the literature. First, this paper contributes to our understanding of the determinants of cross-country variation in risk taking in financial markets (Badarinza et al., 2016; Christelis et al., 2013). We demonstrate that cultural differences in risk taking can help explain the disparities in portfolio composition.

Second, our findings have important implications for understanding under-diversification and lack of delegation among investors. Evidence suggests that household portfolios in many countries are poorly diversified (Roussanov, 2010). Moreover, portfolio diversification has often been viewed as a by-product of investors' trading decisions rather than a deliberate objective (Goetzmann and Kumar, 2008; Dorn and Huberman, 2010), since equity portfolio diversification is highly correlated with the propensity to delegate equity investments. The reduced willingness to delegate equity investment decisions leads to lower investments in mutual funds –which are generally better diversified (Alessie et al., 2004; Calvet et al., 2009; Gaudecker, 2015)– and, consequently, to more concentrated equity portfolios (Dorn and Weber, 2013). Our findings suggest that descending from more risk-loving cultures could result in forming under-diversified portfolios by investing less in mutual funds and more in directly held stocks. This cultural explanation of under-diversification could also help explain why we observe persistence of this behavior across time.

Third, this paper adds to our knowledge of the importance of family background in shaping individual investment behavior. Previous literature has primarily focused on the direct influence of the family on children's genetic traits, human capital, wealth or income (Barnea et al., 2010; Calvet and Sodini, 2014; Cesarini et al., 2010; Charles and Hurst, 2003), as well as the potential for parents to influence children's behavior (Black et al., 2017), all of which could in turn impact financial decisions. In this paper, we go beyond these existing explanations to show that the family could serve as a pathway for the influence of cultural heritage. More importantly, while it may be argued that the role of risk preferences in financial decision-making has long been established, we demonstrate that cultural heritage is a crucial determinant of individual risk preferences and it has direct effects on financial

decision-making, emphasizing its significance in shaping individuals' approach to risk and their subsequent financial choices.

2 Data

Outcome Variables Our outcome variables are various measures of asset allocation of the population of second-generation migrants in Sweden. These data come from the Swedish Wealth Registry (Förmögenhetsregistret) and were collected by Statistics Sweden (the government's statistical agency) for tax purposes. The data include all financial assets held outside retirement accounts at the end of a tax year, December 31st, reported by a variety of different sources, including the Swedish Tax Agency, welfare agencies, and financial institutions. Importantly, nontaxable securities and securities owned by investors below the wealth tax threshold were included in the reports (Calvet et al., 2007). With information based on statements from financial institutions and the full coverage of the population, issues of measurement error and selection bias –which are frequently substantial concerns– are negligible in our setting. We have data on assets (linked with the holders' country of birth) from 1999 to 2006.

In our analysis of second-generation migrants, we focus on wealth in the year 2006. Between 1999 and 2005, banks were not required to report small bank accounts to the Swedish Tax Agency unless the account accrued more than 100 SEK (about 11 USD) in interest during the year. From 2006 onward, banks were required to report all bank accounts above 10,000 SEK. Also, focusing on 2006 allows us to have more second-generation migrant children to be old enough to participate in the stock market than earlier in the sample.[10]

[10]We show that our findings are also robust to using data from year 2000.

We look at six outcome variables in total. The first is an indicator of participation in the equity market, through either stocks or mutual funds, and the second is the share of financial assets held in equities. Since participation could be influenced by both preferences *and* other individual characteristics, such as wealth and cognitive ability, that can affect overcoming barriers of entry into the markets, we are most interested in the analysis of portfolio composition conditional on participation that could best reveal the role of culturally transmitted preferences in investment behavior.

Outcomes that we use to analyze portfolio composition conditional on equity market participation include: i. an indicator for whether the individual owns stocks directly, which we refer to as stock market participation; ii. an indicator for owning mutual funds, which includes holdings of funds with only stocks as well as those with a mixture of stocks and other less risky financial instruments such as bonds; iii. the share of financial assets held directly in stocks; iv. the share of directly held stocks out of the total value of mutual funds and directly held stocks, which we refer to as two-way stock share.[11]

Variable of Interest Our variable of interest is a measure of risk taking culture captured by the risk preferences associated with second-generation migrants' ancestral countries (i.e. the country of origin of their parents). These data mainly come from the Global Preference Survey (GPS); an experimentally validated survey data set of the global variation in preferences (Falk et al., 2018).[12] GPS provides us with measures specifically designed to capture economic and social preferences from 80,000 people in 76 countries that represent

[11] Investment data from the wealth register that is linked with country of birth for the population of Sweden is only available to us at the aggregated level, meaning that we observe the total value of individuals' stocks and mutual funds but not the composition of stocks and fund portfolios.

[12] Available at https://www.briq-institute.org/global-preferences/home.

approximately 90% of the world population.[13] The surveys are carried out on representative samples within each country, and exhibit substantial heterogeneity in preferences across countries.[14]

Risk preferences (risk taking) were elicited through a series of related quantitative questions as well as one qualitative question (see Falk et al. (2018) for details). The quantitative survey measure consists of a series of five interdependent hypothetical binary choices, a format commonly referred to as a "staircase" (or "unfolding brackets") procedure (Cornsweet, 1962). Choices were between a fixed lottery, in which the individual could win x or zero, and varying sure payments, y.[15]

The qualitative item asks for the respondents' self-assessment of their willingness to take risks on an 11-point Likert scale, *"In general, how willing are you to take risks?"*. This qualitative subjective self-assessment has previously been shown to be predictive of risk-taking behavior in the field in a representative sample (Dohmen et al., 2011) as well as of incentivized experimental risk taking across countries in student samples (Vieider et al., 2015). The qualitative item and the outcome of the quantitative staircase measure were combined through roughly equal weights.

[13] Crucially, the authors also validate that variation in economic preferences actually predicts economically important real-life behavior (in addition to being experimentally validated).

[14] An alternative to GPS is the Hofstede data set with various cultural measures based on a set of qualitative survey questions (Hofstede, 2001). A cultural dimension is reminiscent of risk preferences: "uncertainty avoidance". However, as Falk et al. (2018) write, this measure includes individual components that are distant from risk preference and responses to individual items are not available, so one cannot use a subset of components for preference proxies. In contrast, the GPS data has the advantages of employing experimentally validated survey items (as opposed to ad hoc construction) and relying on nationally representative samples, hence, it better captures preferences.

[15] *"Please imagine the following situation. You can choose between a sure payment of a particular amount of money, or a draw, where you would have an equal chance of getting amount x or getting nothing. We will present to you five different situations. What would you prefer: a draw with a 50% chance of receiving amount x, and the same 50% chance of receiving nothing, or the amount of y as a sure payment?"*

Figure 1 shows the distribution of risk taking measure by quartiles across countries in our sample. Risk taking measure ranges between -0.79 and 0.97. For a complete list of countries and their risk taking scores, see Table A.1. Risk preferences vary substantially geographically, as well as within a set of countries with similar levels of development. For example, within Europe, while the Netherlands are in the top risk taking quartile, Spain and Germany are in lower quartiles.[16]

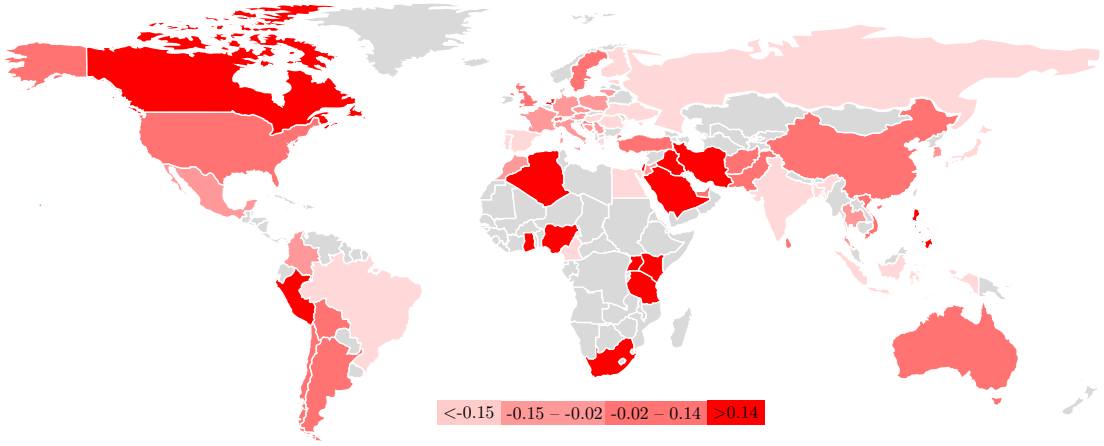

Figure 1 Risk Taking across Countries

Controls In our baseline regressions, we control for gender, year of birth, and time preferences. In our robustness exercises, we go further by taking into account parents' years of birth, education, income ranks and parental wealth ranks (both within parental birth

[16]Since we need individuals in our sample of analysis to be adults when we observe them in the wealth register and we don't have financial outcomes after 2006, parents should have migrated to Sweden far back in time for their children to have been born in Sweden early enough. Also, we require parents to be in data in 1999 (the earliest year of the wealth register), so that we have information on their wealth and financial behavior. Because of these, parents from European countries are overrepresented in our sample. For participants in the equity markets (38,702 observations), 88 percent have both their parents coming from European countries and 45 percent have both their parent coming from other Nordic countries. However, this does not pose any threat to the generalizability of our findings since, as mentioned above and is evident in Table A.1, variation in risk preferences across countries in Europe is almost as large as variation in the whole sample and, later in the paper, we show that our findings remain unchanged if we exclude those with Nordic parents.

cohort). We also investigate the mediating role of individuals' education level, income rank, and wealth rank.[17] All of the variables are provided by Statistics Sweden and are derived from administrative records, primarily from the Swedish tax authority.

Our final sample for the main analysis conditional on equity participation contains 38,702 observations (64,466 observations for unconditional outcomes). Table 1 provides summary statistics. Conditional on participation in equity markets, 45 percent directly hold stocks and 82 percent hold mutual funds. In the same sample, individuals allocate 16 percent of their financial wealth to direct stock holdings, and stock holdings make up 29 percent of risky assets (stocks and mutual funds).

3 Empirical Strategy

Our main specification relates an outcome of interest for the children of migrants in Sweden to the parents' cultural heritage. We estimate the following specification:

$$Y_{ic} = \alpha + \beta_R RiskTakingCulture_c + \gamma X_i + \varepsilon_{ic}, \tag{1}$$

where Y_{ic} denotes an outcome of interest for individual i from a heritage of origin c, where c is a mnemonic for *country*. $RiskTakingCulture_c$ is to capture children of migrants' cultural heritage of risk preferences in their parents' country of origin. Where parents come from two different countries, this variable indicates the average preferences of those countries. X_i refers to the set of control variables, which in the baseline regressions includes a dummy variable for the gender of the individual, year-of-birth dummies for the individual, and time

[17] Following the literature on intergenerational mobility, we calculate income ranks for parents as average income rank over several years, specifically 1990-1994.

Table 1 Summary Statistics

	Mean	Std. Dev.	Min	Max	Obs.
Outcomes, 2006					
Risky Participation	0.60	0.49	0	1	64466
Risky Share	0.34	0.39	0	1	64466
Stock-Market Participation	0.45	0.50	0	1	38702
Mutual-Fund Participation	0.82	0.38	0	1	38702
Stock Share of Financial Wealth	0.16	0.29	0	1	38702
Two-way Stock Share of Risky Assets	0.29	0.41	0	1	38702
Cultural Variable					
Risk taking culture	0.002	0.289	-0.8	1.0	62
Individual Characteristics					
Female	0.47	0.50	0	1	38702
Age	35.47	10.03	19	59	38702
Years of Education	12.66	2.08	8	20	38702
Labor Income	233	205	0	7064	38702
Financial Wealth	225	751	1.00	62093	38702
Parental Characteristics, 1999					
Age, Father, 1999	59.26	11.12	31	90	38702
Age, Mother, 1999	55.89	11.03	28	89	38702
Years of Education, Father	10.71	2.63	8	20	38702
Years of Education, Mother	10.52	2.44	8	20	38702
Labor Income 1999, Father	114.92	146.51	0	2415.20	34739
Labor Income 1999, Mother	92.03	109.96	0	1495.20	37339
Financial Wealth Parents	416.74	1284.84	0	122481.47	38702

Notes: Monetary values for income and wealth are denoted in thousands SEK.

preferences in parents' country of origin. X_i also includes parental, country of origin, and individual characteristics in subsequent regressions. ε_{ic} is the error term, two-way clustered at the level of parental countries of birth.

Identifying Assumption The key assumption of our empirical strategy is that, by including the risk preference measure in parents' countries of origin, we capture the effect of cultural preferences and not that of potentially omitted variables. By observing second-

generation immigrants in a common environment, we are able to distinguish cultural factors from institutional and economic ones, as these latter ones do not vary, while cultural heritage does. The assumption will be violated if proxies for cultural preferences are systematically correlated with other factors that affect financial behavior. One such example is if migrants from relatively risk-loving countries are wealthier (for other reasons than their high tolerance of risk) and children of wealthier parents are more likely to participate in equity markets. The fact that we can observe and control for other characteristics of parents greatly mitigates these concerns. In subsequent sections, we address the issue of confounding variables in detail and perform a number of robustness analyses.

4 Baseline Results

4.1 Equity Market Participation

We start our analysis by showing the effects of country of origin risk preferences on equity market participation, regardless of whether participation is through mutual funds or directly owned stocks. While in the literature the decision to participate in risky asset markets is partly ascribed to overcoming a fixed cost, we would expect those with higher risk preferences to be more likely to own equities. In all specifications, we control for year-of-birth and gender fixed effects. We do this because the previous literature has documented that the life cycle has important implications for equity-market participation (Fagereng et al., 2017), and men and women could behave differently in their investment behavior. As explained before, we also control for the country of origin time preferences, although the results are very similar without those. Column (1) in Panel A of Table 2 shows that culturally transmitted risk preferences raise the likelihood of participation in equity markets. Coefficient estimate

indicates that a one-standard-deviation increase in ancestral risk preferences (0.29) increases the probability of equity-market participation by 2.2 percentage points, compared to the mean of 60%.

Next, in the subsequent columns (2) and (3) of Panel A, we attempt to understand whether culturally transmitted risk preferences have compositional effects. We limit the sample of analysis to equity market participants and investigate the effects of risk preferences on stock-market and mutual-fund participation. Both estimates are economically meaningful and statistically significant. Coefficient estimates in columns (2) and (3) indicate that, while a culture of risk taking increases the likelihood of holding stocks directly, it decreases the probability of participation in mutual-fund market for those who participate in the equity markets. A one-standard-deviation increase in risk taking (0.29) increases the probability of stock-market participation by 6.1 percentage points compared to the mean of 45%, and decreases the likelihood of holding mutual funds by 2.6 percentage points relative to a mean participation of 82%.

An alternative way to get a sense of the quantitative significance of the effects in Table 2 is to compare individuals from countries in the top and bottom quartiles of risk-taking. For example, if a market participant with a Portuguese heritage (-0.79) had the risk taking preferences of someone with Algerian heritage (0.39), her probability of stock-market participation would go up by 25 percentage points, compared to the mean of 45%.

These findings suggest that culturally transmitted risk-taking preferences have a compositional effect on individuals' portfolios by inducing people to hold stocks directly. This is consistent with direct investments in stocks generally exhibiting higher volatility (with potentially more extreme returns) compared to investments in mutual funds –characteristics more appealing for risk-loving investors.

Table 2 Risk-taking in Financial Markets and Cultural Risk Preferences

Panel A:	Extensive Margin		
	(1)	(2)	(3)
	Risky asset participation	Stock participation	Mutual Fund participation
Risk taking culture	0.078**	0.212***	-0.089*
	(0.032)	(0.055)	(0.054)
Panel B:	Intensive Margin		
	Risky share	Stock share	Two-way Stock share
Risk taking culture	0.039**	0.099***	0.165***
	(0.019)	(0.030)	(0.051)
Cohort FE	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes
Observations	64466	38702	38702

Notes: Ordinary least squares. The dependent variable in Column 1 of Panel A is a binary variable taking the value 1 if the individual allocates some fraction of financial wealth to (a type of) risky assets. In Columns 2 and 3 of Panel A, the dependent variables are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In Column 1 of Panel B, the dependent variable is the share of financial wealth allocated to risky assets. In Column 2 of Panel B, it is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In Column 3 of Panel B, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. All columns include controls for year-of-birth, gender, and country of origin time preferences. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.2 The "Intensive Margin"

Next, in Panel B of Table 2, we investigate how culturally inherited risk preferences affect the intensive margins of investment in risky financial asset market by looking at the share of financial assets invested in equities and the composition of portfolios. The coefficient estimate in column (1) suggests that those descended from more risk-loving cultures assign a larger share of their portfolio to equities. A one-standard-deviation increase in ancestral risk-taking preferences leads to a 1.1 percentage-point increase in the share of financial wealth held in equities (compared to a mean of 34%). In light of what the prior literature has established, our findings show that culturally inherited risk preferences induce individuals to tolerate more risk in their financial portfolios.

In columns (2) and (3), we attempt to understand if descending from more risk-loving cultures would also lead to taking more idiosyncratic risk by investing (relatively) more in directly held stocks as opposed to investing in mutual funds, which would presumably also lead to forming less diversified portfolios. In column (2), we look at the share of directly held stocks, conditional on participation in the equity market. The coefficient estimate suggests that those from more risk-loving cultures assign a larger share of their portfolio to directly held stocks. While suggestive, this by itself does not establish taking more idiosyncratic risk by individuals with a more risk-tolerant cultural background since market participants could also increase share invested in mutual funds by similar proportions. In column (3), we instead look at the share of directly held stocks when the denominator is the the total value of funds and stocks. The estimate establishes that, conditional on participation, culturally inherited risk preferences lead to taking more idiosyncratic risk by inducing individuals to favor stocks over funds.

Findings from our baseline analysis indicate that the largest effects of cultural heritage seem to be on portfolio composition and taking idiosyncratic risk. That is to be expected, since participation in risky asset markets is influenced by risk preferences as well as other characteristics, such as wealth, access to information, and cognitive capacity, that affect individual ability to overcome fixed costs of participation. With this in mind, in the rest of the paper, we focus our attention on portfolio composition and relegate the robustness analysis of risky asset participation and the share of risky assets to the appendix.

5 Confounding Factors

So far, we have interpreted our findings as the *effect* of cultural preferences. However, potential confounders could be systematically correlated with cultural preferences and affect investment behavior. In this section, we address this concern in a variety of ways.

5.1 Selection of Migrating Parents

In our baseline analysis, we have found that the cultural heritage of second-generation migrants matters for investment behavior. The most important concern in interpreting the coefficients of interest as the effects of ancestral and cultural traits is selection of migrant parents —those who migrate from certain countries in which people have been historically more risk loving could display specific characteristics that affect their children's investment behavior. In other words, cultural traits could be correlated with the socioeconomic status of parents that might in turn determine children's financial-market behavior.

To the extent that parental characteristics are shaped by cultural traits, they do not pose a threat to our identification as those characteristics can be thought of as mechanisms

through which cultural traits affect children's behavior. If a parent is wealthy due to her risk-taking and wealth leads to more investment in equities, then wealth is not a confounder but a channel. Nevertheless, parental characteristics that cause children to behave in a certain way in the financial markets could co-vary with ancestral cultural traits in a non-random way without having been caused by those cultural traits. To address this concern, we control for the most important parental features that could arguably affect children's financial behavior and investigate how the coefficient estimates change.[18]

The results are in Tables 3 and 4.[19] Column (1) in all panels of both tables repeats the baseline findings in Table 2. Column (2) of Table 3 starts out with taking into account parental fixed effects for eight education levels and parental year of birth fixed effects in regressions of stocks and mutual fund participation.[20] The following two specifications add controls for parents' income rank (added separately) and their wealth quartiles in their birth cohorts. Compared to column (1), the coefficients of interest remain largely intact with slight reductions in magnitudes when we control for parental characteristics.

Table 4 scrutinizes the robustness of regressions of stock shares in financial wealth and the two-way stock shares to parental characteristics. All sets of regressions are robust to parental education, income, and wealth controls. This suggests that cultural traits do not simply proxy for and capture parental characteristics and they could have a direct effect

[18]See Black et al. (2017) for a discussion of how parents could affect children's behavior in the risky financial markets.

[19]See Table A.2 for the robustness of our findings for participation in equity markets and the share of financial wealth invested in equities to parental controls.

[20]Following the eight-level ISCED11 classification, we create eight categories for the Swedish education system.

Table 3 Participation in Stocks and Mutual Funds and Cultural Risk Preferences, Controlling for Parental Characteristics

Panel A:	Stocks Participation			
	(1)	(2)	(3)	(4)
Risk taking culture	0.212***	0.196***	0.210***	0.197***
	(0.055)	(0.065)	(0.067)	(0.064)
Altonji ratio		12.25	105	13.13
Panel B:	Mutual Funds Participation			
	(1)	(2)	(3)	(4)
Risk taking culture	-0.089*	-0.103**	-0.094**	-0.099**
	(0.047)	(0.054)	(0.043)	(0.040)
Altonji ratio		-15.5	-30	-22.75
Parental Education fixed effects	No	Yes	Yes	Yes
Income Rank, Father	No	No	Yes	Yes
Income Rank, Mother	No	No	Yes	Yes
Parental Wealth Quartiles	No	No	No	Yes
Parental Cohort FE	No	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Individual Cohort FE	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: Ordinary least squares. In Panel A, the dependent variable is a binary variable taking the value 1 if the individual participates directly in the stock market, conditional on participation in the equity market. In Panel B, the dependent variable is a binary variable taking the value 1 if the individual invests some fraction of financial wealth greater than zero in mutual funds, conditional on participation in the equity market. *Risk taking culture* is the average risk-taking score associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Columns 2–4 include parental and individual year-of-birth fixed effects and parental fixed effects for eight education levels. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4 Shares of Stocks in Financial Wealth and Risky Assets and Cultural Risk Preferences, Controlling for Parental Characteristics

Panel A:	Stock share			
	(1)	(2)	(3)	(4)
Risk taking culture	0.099***	0.097***	0.096***	0.094***
	(0.030)	(0.029)	(0.028)	(0.028)
Altonji ratio		48.5	32	18.8
Panel B:	Two-way Stock share			
	(1)	(2)	(3)	(4)
Risk taking culture	0.165***	0.162***	0.165***	0.159***
	(0.051)	(0.052)	(0.051)	(0.050)
Altonji ratio		54	NA	26.5
Parental Education fixed effects	No	Yes	Yes	Yes
Income Rank, Father	No	No	Yes	Yes
Income Rank, Mother	No	No	Yes	Yes
Parental Wealth Quartiles	No	No	No	Yes
Parental Cohort fixed effects	No	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Individual Cohort FE	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: In Panel A, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). In Panel B, the dependent variable is the share of directly held stocks out of the total value of mutual funds and directly held stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). *Risk taking culture* is the average risk-taking score associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Columns 2–4 include parental year-of-birth fixed effects and parental fixed effects for eight education levels. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

on children's financial behavior beyond inter-generational transmission of parental socio-economic characteristics.[21]

Importantly, we also assess the degree of omitted variable bias by studying the stability of the estimates –by comparing baseline estimates to fully controlled specifications with parental characteristics. The method of Altonji et al. (2005) allows us to evaluate how large selection on unobservables would have to be relative to the selection on observables in order to entirely explain away our result by an unobservable selection effect. For example, let us compare the baseline estimates in column (1) of Table 4 to the ones in column (4) while controlling for all of the parental characteristics.[22] In the share of stocks and two-way stock share regressions, Altonji ratios are 18.8 and 26.5, respectively. This suggests that selection on unobservables would have to be much stronger than selection on observables for our main result to be explained away by unobservable selection. Given that all of the Altonji ratios are well above the rule of thumb of one, our results are very unlikely to be biased by selection on omitted unobservables.

Overall, the findings presented in Tables 3 and 4 suggest that it is unlikely that parental selection is driving our baseline results.[23]

[21] When we carry out an R^2 decomposition exercise to assess the importance of cultural legacy relative to other factors in explaining individual financial behavior, risk-taking culture makes a substantial contribution to explaining financial behavior even when we take into account parental characteristics.

[22] To perform this test, we calculate the ratio of $\beta_F/(\beta_R - \beta_F)$, where β_F is the coefficient of interest from a regression with a full set of controls while β_R is the coefficient of interest from a regression with a restricted set of controls (Altonji et al., 2005). We take β_R from columns (1) of Tables 3 and 4.

[23] In Table A.3, we control for the corresponding financial behavior of parents in 1999 in addition to the other parental controls we have in column (4) of Tables 3 and 4. For example, in column (1) of Table A.3, we control for the stock market participation of parents, and, in column (3), we control for share of stocks in their financial wealth. Since parental financial behavior itself is a function of their culture and is also affected by their wealth and income, including it in the regressions is a clear case of having "bad controls" and we do not keep it in our regressions for the rest of the analysis. Nonetheless, it is noteworthy that including parental financial behavior does not have any significant effect on our findings. This could, of course, be the case partly because some of the effect of culture is already captured by parental income and wealth. But, importantly, this rules out the possibility that what we pick up in our analysis is the effect of bequest

5.2 Alternative Country of Origin Characteristics

Another possible scenario is that countries with higher measures of cultural risk taking might be different in other ways that affect the investment behavior of children of immigrants from those countries. One should note that, for this to be a threat to our identification, these potential effects should be in addition to their impact on the socioeconomic characteristics of the first-generation immigrants themselves, which we account for in the previous section.

To investigate this, in Tables 5 and 6, we add controls for GDP per capita and life expectancy of the source countries in columns (2) and (3). Data on GDP per capita are from the Penn World Tables, measured in 1995, and data on Life Expectancy are from the World Bank, WDI, measured in 2016.

Column (1) includes continent fixed effects on top of the parental controls we had in the last columns of Tables 3 and 4. The overall picture from Tables 5 and 6 shows that a few country clusters do not drive the results.[24] Estimates of the coefficients of interest in the following two columns are very similar to the previous estimates. GDP per capita and life expectancy coefficient estimates are both economically and statistically insignificant. This suggests that the level of development of the source countries is unlikely to drive our findings and it is not confounding the cultural variable of interest.

Alternatively one could argue that selection of immigrants from countries with differential levels of development is not what we are picking up in our regressions, but, rather, economic preferences could be correlated with social preferences affecting financial behavior.

or inter-vivo transfers from parents to children, and also indicates that the effect of culture goes beyond children simply imitating parents' financial behavior.

[24]The findings remain very similar if we divide Asia into the Middle East and the rest. Sweden has accepted many refugees from the Middle East fleeing from war and unstable circumstances during the past few decades. This exercise confirms the fact that people migrating for very different reasons do not drive our findings.

Table 5 Participation in Stocks and Mutual Funds and Cultural Risk Preferences, Other Cross-Country Controls

Panel A:	Stocks Participation				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.241***	0.196***	0.192***	0.205***	0.137*
	(0.072)	(0.063)	(0.059)	(0.073)	(0.070)
Panel B:	Mutual Funds Participation				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	-0.137***	-0.107***	-0.102***	-0.121***	-0.102***
	(0.042)	(0.040)	(0.038)	(0.046)	(0.036)
Continent Fixed Effects	Yes	No	No	No	No
Log GDP/Cap.	No	Yes	No	No	No
Life Expectancy	No	No	Yes	No	No
Trust	No	No	No	Yes	No
Rule of Law	No	No	No	No	Yes
Parental Education and Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Parental Income and Wealth Rank	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702	38702

Notes: In Panel A, the dependent variable throughout is a binary variable taking the value 1 if the individual participates directly in the stock market, conditional on participation in the equity market. In Panel B, the dependent variable throughout is a binary variable taking the value 1 if the individual invests some fraction of financial wealth greater than zero in mutual funds, conditional on participation in the equity market. *Risk taking culture* and *Trust* are the average scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6 Shares of Stocks in Financial Wealth and Risky Assets and Cultural Risk Preferences, Other Cross-Country Controls

Panel A:	Stock share				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.111***	0.096***	0.093***	0.102***	0.078**
	(0.033)	(0.028)	(0.026)	(0.033)	(0.034)
Panel B:	Two-way Stock share				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.194***	0.161***	0.158***	0.177***	0.129**
	(0.058)	(0.051)	(0.047)	(0.059)	(0.058)
Continent Fixed Effects	Yes	No	No	No	No
Log GDP/Cap.	No	Yes	No	No	No
Life Expectancy	No	No	Yes	No	No
Trust	No	No	No	Yes	No
Rule of Law	No	No	No	No	Yes
Parental Education and Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Parental Income and Wealth Rank	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702	38702

Notes: In Panel A, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). In Panel B, the dependent variable is the share of directly held stocks out of the total value of mutual funds and directly held stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). *Risk taking culture* and *Trust* are the average scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

This is not an argument against the role of culturally transmissible traits in general, but the coefficient estimates for our variable of interest could be biased. More specifically, Guiso et al. (2004, 2008) suggest that *trust* (or social capital in general) is a cultural factor shaping financial behavior. To address this, in column (4), we account for the *trust* measure from the GPS, which could potentially affect our outcomes independently. Results suggest that controlling for trust has no effect on the coefficients of interest.[25]

Lastly, one may be concerned about institutional characteristics of the origin countries confounding the influence of culture. It is worth noting that institutions are arguably endogenous to culture, and therefore, controlling for their quality would make for adding bad controls. Nevertheless, in the last column, we control for the rule of law as a measure of institutional quality in the origin country, extracted from the Worldwide Governance Indicators (Kaufmann et al., 2010), and our estimates on the culture of risk taking remain meaningful and statistically significant, indicating that culture plays a distinct role that is not explained by institutional differences.[26]

5.3 Role of Other Child Outcomes as Mediating Variables

We have so far documented that the cultural legacy of the country of origin is related to, and could have a direct influence on, second-generation migrants' financial behavior even after controlling for some of the most consequential parental and country of origin characteristics. One other possibility is that the investment behavior of children is simply a reflection of their other outcomes and is not directly affected by their cultural heritage. From the previous

[25] See Table A.4 for the robustness of our findings for participation in equity markets and share of financial wealth invested in equities to alternative country of origin characteristics. The coefficient estimates for risky share in Panel B are not statistically significant at conventional levels, but they remain positive and economically meaningful.

[26] We use data from 1996, which is the earliest date available.

literature we know that cognitive ability, education, income, and wealth are directly related to investment behavior. If cultural heritage affects these outcomes (and on top of the parental characteristics that we analyzed before), one might argue that the coefficient estimates for cultural heritage could reflect the direct effects on these other individual features and not investment behavior.

It should be noted that there is no reason to think that, conditional on participation in equity markets, the potentially influential individual characteristics mentioned above affect stock and mutual fund market participation in opposite directions, as we have found to be the case for risk taking preferences. This suggests that we should not expect the estimates for culturally transmitted risk preferences to simply, and fully, reflect their effects on other characteristics of children of immigrants. Nevertheless, to assess this possible scenario more formally, we discuss potential mediating factors that could affect investment behavior directly and also be affected by culturally transmitted preferences, and investigate whether adding those controls sequentially changes the estimates we found in Tables 3 and 4. We acknowledge that since these variables, by construction, are potentially influenced by culturally transmitted risk-taking, they could be described as "bad controls" in the terminology of Angrist and Pischke (2009), as the ceteris paribus assumption could be violated.[27] Note, though, that this is a standard mediation analysis, as our goal is to see how the risk-taking coefficient changes when we control for these variables. If adding a particular control changes the estimated coefficients considerably, it suggests that the effects on financial market behavior might be mediated by the effects of cultural traits on the variable included.

Tables 7 and 8 show the results for participation and shares, respectively. Column (1) in both tables repeat the findings in the last columns of Tables 3 and 4, controlling for all

[27]In other words, controlling for covariates that are affected by the treatment might bias the estimate of the treatment effect by capturing part of its impact.

parental characteristics. In column (2), we add controls for children's education, since the literature suggests that education could affect financial market behavior (Black et al., 2017; Cole et al., 2014; Cooper and Zhu, 2016). However, our coefficients of interest barely change in column (2) of both Tables 7 and 8 and they are not statistically different from those in column (1). Therefore, the effect of our cultural preference variable on portfolio composition does not seem to be mediated through education.

Higher earnings could affect financial behavior by acting as a higher stable return to human capital that can partially substitute for bond holding and increase risk-taking. Also, the literature suggests that wealth affects the extent of risk taking (Calvet and Sodini, 2014). In columns (3) and (4), we add earnings rank and wealth quartiles (both constructed within cohorts) as controls. Controlling for earnings or wealth has very little to no effect on the estimates. Controlling for all three variables at the same time in column (5) producse estimates very similar to controlling for only one of the variables. Therefore, a large portion of the associations found before remains intact, suggesting that these child outcomes are not large enough mediators, and the direct effect of ancestral risk taking on financial behavior remains important.[28]

In Table A.5, we additionally investigate the role of cognitive ability by controlling for IQ test scores, in addition to the controls in column (5) of Tables 7 and 8, in a subsample of our analysis. We get the IQ test scores from the military enlistment data that takes place at age 18 or 19 for enlisted men. We do not have this test score for all men in our sample of analysis, since it became less and less common through time for men to enlist in military service. The IQ test consists of four different parts, graded separately and transformed into

[28]Another concern might be that children of certain groups of migrants end up living in places that affect their financial decision making. When we add a dummy to our regressions indicating if they live in the three large cities in Sweden that include Stockholm, Gothenburg, and Malmo, our estimates remain largely unchanged.

Table 7 Participation in Stocks and Mutual Funds and Cultural Risk Preferences, Role of Individual Characteristics

Panel A:	Stocks Participation				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.197***	0.188***	0.201***	0.142***	0.115**
	(0.064)	(0.061)	(0.064)	(0.051)	(0.050)
Panel B:	Mutual Funds Participation				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	-0.099**	-0.101**	-0.096**	-0.109***	-0.108***
	(0.040)	(0.040)	(0.040)	(0.042)	(0.036)
Individual Education fixed effects	No	Yes	No	No	Yes
Individual Income Rank	No	No	Yes	No	Yes
Individual Wealth Quartiles	No	No	No	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes	Yes
Parental Wealth Quartiles	Yes	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702	38702

Notes: In Panel A, the dependent variable throughout is a binary variable taking the value 1 if the individual participates directly in the stock market, conditional on participation in the equity market. In Panel B, the dependent variable throughout is a binary variable taking the value 1 if the individual invests some fraction of financial wealth greater than zero in mutual funds, conditional on participation in the equity market. *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8 Shares of Stocks in Financial Wealth and Risky Assets and Cultural Risk Preferences, Role of Individual Characteristics

Panel A:	Stock share				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.094***	0.092***	0.093***	0.096***	0.081***
	(0.028)	(0.027)	(0.027)	(0.029)	(0.027)
Panel B:	Two-way Stock share				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.159***	0.155***	0.150***	0.142***	0.132***
	(0.050)	(0.049)	(0.050)	(0.046)	(0.044)
Individual Education fixed effects	No	Yes	No	No	Yes
Individual Income Rank	No	No	Yes	No	Yes
Individual Wealth Quartiles	No	No	No	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes	Yes
Parental Wealth Quartiles	Yes	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702	38702

Notes: In Panel A, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). In Panel B, the dependent variable is the share of directly held stocks out of the total value of mutual funds and directly held stocks, conditional on allocating a fraction greater than 0 to risky assets (mutual funds or stocks). *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

a general measure of cognitive ability with values 1 to 9. The findings in columns (1)-(4) of Table A.5 paint a very similar picture to those found in Tables 7 and 8.

6 Is It Really Culture?

In the previous sections, we have argued that risk preferences extracted from countries of the parents of second-generation immigrants capture the effect of cultural heritage, and we have tried to rule out potential competing narratives. Here, we provide additional evidence in support of our hypothesis by generating predictions that are compatible with the role of culture and testing those predictions in our setup.

6.1 Ancestral Risk Taking Proxied by Ethnographic Chance Games in Parental Birth Country

Part of the literature that studies the impact of cultural values on economic outcomes has focused on cultural variables that are measured before modernization and industrialization and that predate economic outcomes by a very long time (Alesina et al., 2013; Giuliano and Nunn, 2013; Michalopoulos, 2012; Nunn and Wantchekon, 2011). The advantages of using cultural variables measured very far back in time are twofold. First, it rules out reverse causality; for example, gender norms today cannot have caused plough usage centuries ago (Alesina et al., 2013). Second, it provides an intuitive understanding of where the differing cultural norms come from, as these measures capture characteristics of ancestral tribes or communities before any modernization and industrialization took place.

In our setup, with the spatial separation that our identification strategy relies on, reverse causality is already ruled out —there is no plausible mechanism by which cross-

sectional variance in financial decision-making in Sweden has a material impact on measured average risk preferences across countries. Furthermore, as we are mainly concerned with the impact of cultural values on financial decision-making, and not how those cultural values are formed, we prefer using a direct measure of risk preferences as our baseline. Nevertheless, using a "deeper" measure of cultural risk-taking provides an intuitive justification for where these differences may come from. Also, this addresses the unlikely concern that our main cultural preferences, obtained from the GPS, might have been formed (even partly) by contemporaneous institutional and economic policies that could have also affected parents of immigrants in ways not reflected in their wealth, income, and education.[29]

We draw on the Ethnographic Atlas from Murdock (1965) which allows us to approximate ancestral risk-taking culture. It further buttresses the interpretation of the GPS measure of risk-taking as capturing deeper cultural differences with an actual bearing on economic decisions, as opposed to solely reflecting some economic or institutional difference across countries that induces differences in survey-respondents' lottery certainty-equivalence.

The Ethnographic Atlas includes information gathered by ethnographers reflecting various cultural and socio-economic characteristics of pre-modern societies before industrialization and European contact.[30] The Atlas provides us with information on what types of games a given society had in their cultures. It classifies societies' games when any combination of the following three elements were present: i. chance, ii. physical skills, iii. strategy.[31] We proxy the ancestral culture of risk taking in the parents' country of origin with the share of

[29]One should note that preferences outlined in the GPS are correlated with deep cultural variables and their determinants, such as agricultural suitability, language structure, and religion.

[30]Most of the societies are observed in the 19th and early 20th centuries.

[31]E.g. dice games are chance games. Foot racing or wrestling are physical skill games. Chess would be an example of a strategy game.

people whose ancestors played chance games.[32] In Table 9, we present our findings using the alternative cultural measure of risk-taking described above. Namely, we investigate to what extent children descended from cultures in which their ancestors' games were more heavily based on chance, rather than strategy or physical activities, are more likely to take more risks in the financial markets, keeping the institutional setting constant.

Consistent with the baseline findings, in columns (1) to (4), we find that, conditional on equity market participation, children with an ancestral culture of risk taking are more likely to participate in the stock market and less likely in the mutual funds market. They also have a greater share of their financial wealth directly in stocks rather than mutual funds.

In sum, this analysis reassures us that cultural traits, defined in this analysis based on those descended from centuries ago, influence individuals' financial behavior today and the effect is similar to traits drawn from contemporary societies.

[32]We rely on the data from Giuliano and Nunn (2018) who aggregate the Ethnographic Atlas to the country level from the ethnographic society level.

Table 9 Ancestral Risk Taking and Investment in Stocks and Mutual Funds

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Ancestral Chance Games	0.120***	-0.071**	0.045**	0.092***
	(0.040)	(0.025)	(0.020)	(0.033)
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Ancestral Chance Games* is a measure of ancestral risk taking constructed from the Ethnographic Atlas of Murdock (1965), capturing to what extent chance games were played historically in the parental countries of origin. Parental *Income Rank* is the percentile labor earnings rank by birth cohort, averaged over the years 1990–1994. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.2 Cultural Persistence

The next analysis is based on the idea that cultural transmission is stronger for individuals whose parents come from countries in which maintaining cultural norms has been more beneficial across generations. Giuliano and Nunn (2021) study cultural persistence and change, and argue that similarity of environment across generations matters for cultural transmission. When the environment is more stable across generations, traits that have evolved up to the previous generation are more likely to be beneficial for the current one, and hence, the more beneficial it is to maintain existing customs. They empirically show that

populations whose ancestors lived in environments with more cross-generational instability exhibit less cultural persistence.

Based on this, we expect the relations we find between culturally transmitted preferences and financial behavior to be weaker for those from more unstable places, as cultural persistence is weaker. We test this idea by interacting our measure of risk taking culture from the GPS with an exogenous measure of cross-generational climatic variability of the environment built by Giuliano and Nunn (2021), where they calculate cross-generational climatic instability of the ancestors of individuals living in each country today by measuring the average temperature variation over 70 generations (20-year a generation) from years 500 to 1900 using sources of paleoclimatic data.[33]

Table 10 depicts a general pattern for individuals whose ancestors come from more unstable countries. The effects of culturally transmitted preferences on financial decision-making are mitigated. These results are consistent with the idea that variables of interest we use in our analysis indeed capture cultural transmission of economic preferences.[34] For instance, if we look at the share of directly-held stocks as the outcome of analysis in column (3), the net effect of risk-taking for those from highly unstable countries (90th percentile=0.41) is at 4 percentage points. Whereas, the net effect of risk-taking for those from highly stable countries (10th percentile of instability measure=0.12) is substantial at 15.5 percentage points (compared to the mean share of 16%).

[33]They first calculate standard deviations of temperature at the grid-cell level and then link these to the locations of pre-industrial ethnic groups, from which they create country-level measures by mapping ethnic groups to spoken languages (with a mean of 0.25, min of 0.05, and max of 0.52).

[34]Appendix Table A.6 repeats this exercise when we use the ancestral culture of risk taking extracted from Ethnographic Atlas instead of the one obtained from the GPS. The findings are very similar.

Table 10 Cultural Risk Preferences, Ancestral Climatic Instability, and Investment in Stocks and Mutual Funds

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.249	-0.211	0.203***	0.287***
	(0.155)	(0.153)	(0.075)	(0.148)
Risk taking culture × Ancestral Climatic Instability	-0.480***	0.555***	-0.398***	-0.609***
	(0.173)	(0.158)	(0.082)	(0.156)
Climatic Instability	Yes	Yes	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Country of Origin Time Preferences × Climatic Instability	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. *Ancestral Climatic Instability* is from Giuliano and Nunn (2021) and is a measure of cross-generational climatic variability of the environment between 500 and 1900 in the parental countries of origin (with mean 0.25, min 0.05, and max 0.52). Parental *Income Rank* is the percentile labor earnings rank by birth cohort, averaged over the years 1990–1994. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In addition, we explore a channel of cultural transmission and socialization (Bisin and Verdier, 2000). Dohmen et al. (2012) find that the correlation between parents' and children's cultural attitudes are stronger when parents are from similar cultures. To test this idea, we create a *Same Country* indicator –a binary variable equal to one if both parents originate from the samte country– and interact it with our risk taking measure. If cultural transmission is stronger when parents are from the same country, the relationship between risk preferences and investment behavior should be accentuated. The results in Table 11 are largely consistent

with this idea –the association between risk taking and outcome variables are much stronger for those with both parents from the same country.

Table 11 Parents from the Same Country, Cultural Socialization and Financial Decision Making

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.083*	-0.026	0.033	0.080**
	(0.045)	(0.030)	(0.022)	(0.037)
Risk taking culture × Same Country	0.143***	-0.095***	0.078***	0.100***
	(0.040)	(0.032)	(0.022)	(0.038)
Same Country	Yes	Yes	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Country of Origin Time Preferences × Same Country	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. *Same Country* is a binary variable indicating if both parents are from the same country. Parental *Income Rank* is the percentile labor earnings rank by birth cohort, averaged over the years 1990–1994. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

7 Additional Robustness Checks

7.1 Excluding Nordic Parents

As mentioned in Section 2, since we need our sample of analysis to be adults when we observe them in the wealth register and we do not have financial outcomes after 2006, parents of the individuals in our sample must have migrated to Sweden far back in time for their children to have been born in Sweden early enough to be in our sample. Also, we require parents to be in the dataset in 1999 (the earliest year of the wealth register), so that we have information on their wealth and financial behavior. Consequently, because migration of non-Europeans to Sweden was not a widespread phenomenon before the 1990s, parents from European countries, and especially other Nordic countries, are overrepresented in our sample. While it is clear from Table A.1 and Figure 1 that variation in risk preferences across European countries is almost as large as variation in the whole sample, we formally investigate how our findings change if we limit our sample to second-generation immigrants whose parents come from non-Nordic countries. Coefficient estimates in Table A.7 are very similar to our baseline findings, indicating that the large set of immigrants from other Nordic countries are not driving our results.

7.2 Outcome Data from an Earlier Year

For our outcome variables so far, we have used data from the year 2006. As discussed before in Section 2, there are two main reasons for that. One is that we want our sample of second-generation immigrants to be as old as possible when we observe them and make decisions about financial market behavior during their adult lives. The second is that, between 1999 and 2005, banks were not required to report small bank accounts to the Swedish Tax Agency

unless the account accrued more than 100 SEK (about 11 USD) in interest during the year. For 2006, banks were required to report all bank accounts above 10,000 SEK and, as a result, we have more complete information on financial wealth when we study risky share and stock share in our analysis. Nevertheless, in Table A.8, we present the findings when we use data from year 2000 instead. Note that, because we have more people with reported financial wealth of zero in that year, our sample of analysis is smaller. However, we get very similar results to our baseline, indicating that our analysis is not sensitive to the year from which we pick our data.

8 Conclusion

This paper investigates the cultural origins of risk taking in financial markets. More specifically, by combining Swedish wealth registry data on second-generation immigrants with risk preferences in their parents' countries of origin, we examine the influence of culturally transmitted risk preferences on individual investments in the equity market and portfolio composition. Children of immigrants from more risk-loving cultures are more likely to participate in equity markets and, conditional on that, more likely to hold stocks directly, invest a greater share of their financial wealth in stocks, and a smaller share in mutual funds.

We show that our results are not likely to be driven by the selection of migrating parents and culturally transmitted preferences have an independent and direct effect on individuals' financial decisions beyond their potential impact on parental and individual socio-economic characteristics.

In addition to advancing our understanding of the vast differences in investment behavior across countries, our findings have important implications for understanding under-

diversification and lack of delegation among investors. We also emphasize the role of culture, and intergenerational nature of it, as an explanation for how risk preferences are formed at the individual level and as another mechanism through which parents influence their children's economic behavior and outcomes: cultural attitudes towards risk, (partially) shaped by transmission from parents, have economically and statistically significant effects on investment behavior.

This paper remains silent about the possibility that some cultural traits might be associated with better expected returns on investment. For instance, more risk averse individuals might have a more diversified portfolio that could generate higher returns over the longer run. However, so far, we do not observe individual assets and their prices in our data that includes country of birth and cannot judge whether individuals from more risk-loving cultures are more or less successful in their investment decisions. Thus, whether certain cultural characteristics are more conducive to financial success is a question left for future research.

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Online Appendix for
"Cultural Origins of Risk Taking in Financial Markets"

A. Figures and Tables

Table A.1 List of Countries and their Risk Preferences

Country	Risk taking
Afghanistan	0.1207
Algeria	0.3915
Argentina	0.0415
Australia	0.1371
Austria	-0.0618
Bangladesh	-0.1980
Bolivia	0.1030
Bosnia Herzegovina	-0.1256
Brazil	-0.2505
Cameroon	-0.5350
Canada	0.1835
Chile	0.1253
China	-0.0198
Colombia	-0.0451
Croatia	0.0684
Czech Republic	-0.0204
Egypt	-0.2808
Estonia	-0.2954
Finland	-0.2827
France	-0.0301
Germany	-0.0444
Ghana	0.6184
Greece	-0.1570
Hungary	-0.4984
India	-0.2752
Indonesia	-0.3216
Iran	0.3378
Iraq	0.1657
Israel	0.2437
Italy	-0.0936
Japan	-0.3558
Jordan	-0.1248
Kenya	0.2439
Lithuania	-0.0459
Mexico	-0.1389
Morocco	-0.0689
Netherlands	0.1893
Nigeria	0.3859
Pakistan	0.0196
Peru	0.1549
Philippines	0.2946
Poland	-0.0735
Portugal	-0.7924
Romania	-0.2295
Russia	-0.3233
Saudi Arabia	0.6957
Serbia	-0.1296
South Africa	0.9705
South Korea	-0.0393
Spain	-0.1584
Sri Lanka	0.0627
Sweden	0.0518
Switzerland	-0.0193
Tanzania	0.4918
Thailand	-0.1235
Turkey	0.0234
Uganda	0.1625
Ukraine	-0.2186
United Arab Emirates	0.0865
United Kingdom	0.0486
United States	0.1165
Vietnam	-0.0086

Table A.2 Owning Equities and Cultural Risk Preferences, Controlling for Parental Characteristics

Panel A:	Equity Market Participation			
	(1)	(2)	(3)	(4)
Risk taking culture	0.078**	0.057**	0.082***	0.065***
	(0.032)	(0.023)	(0.025)	(0.019)
Altonji ratio		2.71	-20.5	5
Panel B:	Risky Share			
	(1)	(2)	(3)	(4)
Risk taking culture	0.039**	0.039**	0.040**	0.031*
	(0.019)	(0.019)	(0.020)	(0.019)
Altonji ratio		NA	-40	3.87
Parental Education fixed effects	No	Yes	Yes	Yes
Income Rank, Father	No	No	Yes	Yes
Income Rank, Mother	No	No	Yes	Yes
Parental Wealth Quartiles	No	No	No	Yes
Parental Cohort FE	No	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Individual Cohort FE	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	64466	64466	64466	64466

Notes: Ordinary least squares. In Panel A the dependent variable is a binary variable taking the value 1 if the individual participates in the equity market, either through holding stocks or mutual funds. In Panel B, the dependent variable throughout is the share of financial wealth invested in risky assets. *Risk taking culture* is the average risk-taking score associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Columns 2–4 include parental and individual year-of-birth fixed effects and parental fixed effects for eight education levels. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3 Investment in Stocks and Mutual Funds with Controls for Parental Investment Behavior

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.189***	-0.090**	0.085***	0.149***
	(0.058)	(0.037)	(0.024)	(0.044)
Parental Investment Behavior	Yes	Yes	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Parental Investment Behavior* controls for the parental outcome in 1999 for the corresponding outcome of investment in each column. *Risk taking culture* is the average risk-taking score associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4 Owning Equities and Cultural Risk Preferences, Other Cross-Country Controls

Panel A:	Equity Market Participation				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.054**	0.060***	0.059***	0.062***	0.055***
	(0.027)	(0.019)	(0.020)	. (0.020)	(0.019)
Panel B:	Risky Share				
	(1)	(2)	(3)	(4)	(5)
Risk taking culture	0.050**	0.029	0.028	0.029	0.030
	(0.020)	(0.019)	(0.019)	(0.020)	(0.019)
Continent Fixed Effects	Yes	No	No	No	No
Log GDP/Cap.	No	Yes	No	No	No
Life Expectancy	No	No	Yes	No	No
Trust	No	No	No	Yes	No
Rule of Law	No	No	No	No	Yes
Parental Education and Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Parental Income and Wealth Rank	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes	Yes
Observations	64466	64466	64466	64466	64466

Notes: In Panel A, the dependent variable is a binary variable taking the value 1 if the individual participates in the equity market, either through holding stocks or mutual funds. In Panel B, the dependent variable throughout is the share of financial wealth invested in risky assets. *Risk taking culture* and *Trust* are the average scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. All columns include parental and individual year-of-birth fixed effects, parental fixed effects for eight education levels, and gender. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5 Role of IQ in Cultural Transmission of Risk Preferences

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.123**	-0.115***	0.077***	0.135***
	(0.053)	(0.038)	(0.029)	(0.047)
Cognitive Ability Test	Yes	Yes	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	14264	14264	14264	14264

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. *Ability Test* is a test score akin to an IQ-test administered by the military during mandatory conscription tests; it ranges from 0 (worst) to 9 (best) and follows a normal distribution by construction. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6 Ancestral Risk Taking, Ancestral Climatic Instability, and Investment in Stocks and Mutual Funds

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Ancestral Chance Games	0.293***	-0.199***	0.130***	0.236***
	(0.098)	(0.066)	(0.045)	(0.082)
Ancestral Chance Games × Ancestral Climatic Instability	-0.542**	0.358**	-0.254***	-0.445**
	(0.217)	(0.154)	(0.098)	(0.179)
Climatic Instability	Yes	Yes	Yes	Yes
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Observations	38702	38702	38702	38702

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks. *Ancestral Chance Games* is a measure of ancestral risk taking constructed from the Ethnographic Atlas of Murdock (1965), capturing to what extent chance games were played historically in the parental countries of origin. *Ancestral Climatic Instability* is from Giuliano and Nunn (2021) and is a measure of cross-generational climatic variability of the environment between 500 and 1900 in the parental countries of origin (with mean 0.25, min 0.05, and max 0.52). Parental *Income Rank* is the percentile labor earnings rank by birth cohort, averaged over the years 1990–1994. Standard errors (in parentheses) are two-way clustered by parental country of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7 Participation in Stocks and Mutual Funds and Cultural Risk Preferences, Excluding Those with Both Parents from Nordic Countries

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.113**	-0.076**	0.072***	0.112***
	(0.049)	(0.036)	(0.025)	(0.039)
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	20985	20985	20985	20985

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8 Participation in Stocks and Mutual Funds and Cultural Risk Preferences, Using Data from Year 2000

	Stocks Participation	Mutual Funds Participation	Stock Share	Two-way Stock Share
	(1)	(2)	(3)	(4)
Risk taking culture	0.192***	-0.118***	0.126***	0.155***
	(0.046)	(0.043)	(0.036)	(0.039)
Parental Education fixed effects	Yes	Yes	Yes	Yes
Income Rank, Father	Yes	Yes	Yes	Yes
Income Rank, Mother	Yes	Yes	Yes	Yes
Parental Wealth Rank	Yes	Yes	Yes	Yes
Parental Cohort fixed effects	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Individual Cohort fixed effects	Yes	Yes	Yes	Yes
Country of Origin Time Preferences	Yes	Yes	Yes	Yes
Observations	35135	35135	35135	35135

Notes: The dependent variables in columns 1 and 2 are the stock market participation and mutual fund participation, respectively, conditional on participation in the risky asset market. In column 3, the dependent variable is the share of financial wealth allocated directly to stocks, conditional on participation in risky asset markets. In column 4, it is the share of directly held stocks out of the total value of mutual funds and directly held stocks *Risk taking culture* is the average risk-taking scores associated with the individual's parents' birth countries from the Global Preference Survey. Parental *Income Rank* is the average percentile labor earnings rank in 1990-1994 by birth cohort. The sample in all columns are restricted to those individuals with existing data on parental education, income, and wealth. Standard errors clustered by parental country of birth in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.