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Kleinhempel, Johannes and Klasing, Mariko and Beugelsdijk, Sjoerd

Copenhagen Business School, University of Groningen, University of Groningen

December 2022

Cultural Roots of Entrepreneurship: Evidence from Second-Generation Immigrants

Johannes Kleinhempel[*] **Mariko J. Klasing**[†] **Sjoerd Beugelsdijk**[‡]

ABSTRACT

Does national culture influence entrepreneurship? Given that entrepreneurship and the economic, formal institutional, and cultural characteristics of nations are deeply intertwined and co-vary, it is difficult to isolate the effect of culture on entrepreneurship. In this study, we examine the self-employment choices of second-generation immigrants who were born, educated, and currently live in one country, but were raised by parents stemming from another country. We argue that entrepreneurship is influenced by durable, portable, and intergenerationally transmitted cultural imprints such that second-generation immigrants are more likely to become entrepreneurs if their parents originate from countries characterized by a strong entrepreneurial culture. Our multilevel analysis of two independent samples –65,323 second-generation immigrants of 52 different ancestries who were born, raised, and live in the United States and 4,165 second-generation immigrants of 31 ancestries in Europe– shows that entrepreneurial culture is positively associated with the likelihood that individuals are entrepreneurs. Our results are robust to alternative non-cultural explanations, such as differences in resource holdings, labor market discrimination, and direct parent-child linkages. Overall, our study highlights the durability, portability, and intergenerational transmission of entrepreneurial culture as well as the profound impact of national culture on entrepreneurship.

Keywords: Entrepreneurship, National culture, Cross-Cultural Studies

Please cite as:

Kleinhempel, J., Klasing, M. J., Beugelsdijk, S. (2022) Cultural Roots of Entrepreneurship: Evidence from Second-Generation Immigrants. *Organization Science*. https://doi.org/10.1287/orsc.2022.1645.

[*] Copenhagen Business School, Department of Strategy and Innovation, Kilevej 14A, 2000 Frederiksberg, Denmark. E-Mail Address: jkl.si@cbs.dk.

[†] University of Groningen, Faculty of Economics & Business, PO Box 800, 9700 AV Groningen, The Netherlands. E-Mail: m.j.klasing@rug.nl.

[‡] University of Groningen, Faculty of Economics & Business, PO Box 800, 9700 AV Groningen, The Netherlands. E-Mail: s.beugelsdijk@rug.nl.

1. INTRODUCTION

How do socio-cultural imprints affect the decision to become an entrepreneur? One line of inquiry has highlighted the role of individual- or organization-level social imprints such as parental role modeling (Lindquist et al., 2015; Sørensen, 2007), peer effects (Kacperczyk, 2013; Nanda & Sørensen, 2010; Qin & Estrin, 2015), and mentors (Azoulay et al., 2017; Roach & Sauermann, 2015; Rocha & Van Praag, 2020). This literature stresses the importance of socially transmitted *individual-level* differences in attitudes and preferences regarding entrepreneurship. Another line of inquiry at the national level has argued that *cross-national* differences in cultural values, preferences, and dispositions are socially imprinted and consequential for entrepreneurship (Autio et al., 2013; Mitchell et al., 2000; Stephan & Uhlaner, 2010). The purpose of our study is to better understand the relationship between national culture and individual-level entrepreneurship by drawing attention to the critical role of durable, portable, and intergenerationally transmitted national cultural imprints.

Although it has long been argued that certain cultural values may foster entrepreneurship –for example, high levels of individualism and low levels of uncertainty avoidance (Hayton et al., 2002; McGrath et al., 1992; Shane, 1993)– recent reviews of the literature demonstrate that the overall evidence is inconclusive and partially conflicting (Hayton & Cacciotti, 2013; Stephan, 2022). For example, uncertainty avoidance values have been associated with entrepreneurship positively (Hofstede et al., 2004; Stephan & Pathak, 2016; Wennekers et al., 2007), nil (Autio et al., 2013), and negatively (Bowen & De Clercq, 2008; Shane, 1993). Given that entrepreneurship, economic development, formal institutions, and culture are deeply intertwined and co-vary across nations, it is difficult to isolate the effect of culture on entrepreneurship (Acs et al., 2008; Hayton et al., 2002). Understanding the role of national culture in entrepreneurship hence poses a critical challenge.

To address this theoretical and empirical challenge, we analyze the occupational choices of second-generation immigrants of different ancestries, i.e., individuals who were born and educated in the same country and face the same economic and institutional environment, but who were socialized in families that come from different countries (Fernández & Fogli, 2009). We argue that because culture is durable and

portable, the intergenerational transmission of cultural dispositions will also take place outside of the environment in which the cultural imprints were originally formed. If certain cultural dispositions are important for decision-making regarding entrepreneurship and if culture is durable, portable, and transmitted intergenerationally, we would expect individuals of different ancestries to make different occupational choices despite being embedded in the same economic and institutional context. This leads us to hypothesize that second-generation immigrants whose parents stem from a country characterized by a strong entrepreneurial culture are more likely to be entrepreneurs than second-generation immigrants whose country-of-ancestry culture is less entrepreneurial.

To test our hypothesis, we analyze the occupational choices of 65,323 second-generation immigrants who were born and raised in the United States (U.S.) and whose parents stem from 52 different countries of origin. We cross-validate our analysis using data on 4,165 second-generation immigrants of 31 different ancestries who were born and raised in Europe. To conceptualize entrepreneurial culture, we follow a revealed preference approach that captures country-level differences in entrepreneurial behavior. Our findings demonstrate that a strong entrepreneurial culture in the parents' county of origin increases the chances that second-generation immigrants are self-employed, both in the U.S. and in Europe. We also show that second-generation immigrants in one locality (the U.S. or Europe) are more likely to be self-employed if their hypothetical second-generation 'cousins' –that is, second-generation immigrants of the same ancestry who were born and live in another locality (Europe or the U.S.)– exhibit a higher propensity for entrepreneurship. We corroborate these findings using instrumental variable regressions and an alternative measure of entrepreneurial culture derived from stated preferences. Our results are robust to a number of alternative explanations often put forward in the (immigrant) entrepreneurship literature (Fairlie & Lofstrom, 2015), such as the potential role of unobserved entrepreneurship-specific human capital, financial resources, labor market discrimination, family support, and direct parent-child linkages, including parental self-employment status (Lindquist et al., 2015; Sørensen, 2007). We also show that the effect of entrepreneurial culture is stronger –i.e., positively moderated– if immigrants stem from cultures that practice more intensive parenting styles, a result that directly speaks to the intergenerational transmission of cultural dispositions. These

findings highlight the intergenerational transmission and persistence of entrepreneurial culture in various contexts and its importance for understanding why some people become entrepreneurs and others do not.

Our work contributes to three important streams of literature. We contribute to the entrepreneurship literature that has highlighted the social transmission of individual- or organizational-level attributes (Kacperczyk, 2013; Nanda & Sørensen, 2010; Qin & Estrin, 2015; Sørensen, 2007) by emphasizing the critical role of national cultural imprints in the social transmission of entrepreneurial dispositions. Our findings also speak to comparative international entrepreneurship research (Autio et al., 2013; Estrin, Mickiewicz, et al., 2013; Stephan et al., 2015; Terjesen et al., 2016) by highlighting the intergenerational transmission of entrepreneurial dispositions as a particular channel through which culture influences entrepreneurial activity. We moreover demonstrate the persistence of entrepreneurial culture over at least two generations even outside of the context where these cultural imprints were initially formed. Our study of second-generation immigrants advances a methodology that allows us to disentangle national cultural effects from other contextual and country-specific determinants such as economic and institutional conditions. This complements existing work on the role of culture in entrepreneurship that has typically relied on comparing the prevalence of entrepreneurial behaviors across countries (Hayton et al., 2002; Stephan, 2022). The methodological advantages presented in this study are also relevant for cross-cultural research more broadly since the challenge of isolating national cultural effects extends beyond entrepreneurship research (Beugelsdijk et al., 2017; Devinney & Hohberger, 2017; Kirkman et al., 2006).

In sum, while researchers have long sought to understand the determinants of entrepreneurship and past research has studied an abundance of individual-, firm-, and industry-level drivers (see e.g. Parker, 2018 for an overview), the role of national culture has remained elusive. Theorizing on the durability, portability, and intergenerational transmission of cultural dispositions, we relate variations in country-of-ancestry entrepreneurial culture to contemporaneous differences in second-generation immigrants' entrepreneurship propensities. Using this novel approach, we demonstrate that national culture influences entrepreneurship and that entrepreneurial culture persists, under various economic and institutional conditions, even outside of the context in which these cultural imprints were originally formed.

2. THEORY AND HYPOTHESES

2.1. Entrepreneurship and national culture

Entrepreneurship is socially and contextually embedded, and it is a long-standing question how the national cultural context influences entrepreneurship (Weber, 1930). National cultures are shared values systems that reflect the prevailing societal orientations, desirable goals, and aspired endstates, which are rooted in historical conditions, leave a lasting imprint on societies and individuals, and distinguish one society from another (Hofstede, 2001; Kroeber & Kluckhohn, 1963; Schwartz, 1994). As such, national cultures are composed of and reflected in systematic patterned variations in values, norms, preferences, worldviews, judgements, and cognitions, jointly forming attitudinal and behavioral dispositions. These cultural dispositions are not simply automatically internalized, but emerge as a product of individuals' experiences during their formative period early in life –with parents and social learning playing a critical role in the process of transmitting cultural dispositions to the next generation– and remain relatively stable over individuals' life courses (Kiley & Vaisey, 2020; Kroeber & Kluckhohn, 1963). All theories of national culture attribute a critical role to intergenerational transmission (Hofstede, 2001; McClelland, 1961; Schwartz, 1994). Intergenerational transmission generates inertia in the process of cultural change and makes cross-national differences in culture highly persistent (Beugelsdijk & Welzel, 2018).

In line with the individual-level behavioral approach to entrepreneurship (Davidsson, 2016), we define entrepreneurship as individuals' occupational choice to work for their own account and assume the corresponding risks and uncertainty (Evans & Leighton, 1989; Kihlstrom & Laffont, 1979). This is a commonly used approach in comparative entrepreneurship research (Estrin et al., 2016; Levie & Autio, 2011; Stephan & Uhlaner, 2010).[1]

National culture affects the relative occurrence of (potential) entrepreneurs across societies by shaping individuals' values, traits, preferences, and cognition (Busenitz & Lau, 1996; Laskovaia et al., 2017; Mitchell et al., 2000; Uhlaner & Thurik, 2007) as well as by affecting the normative legitimacy of entrepreneurship (Etzioni, 1987) and the ease of mobilizing support for entrepreneurship (Stephan & Uhlaner, 2010). Based on a rich body of research (Hayton et al., 2002; Stephan, 2022), we argue that in

entrepreneurial cultures, individuals' dispositions and societal norms are aligned with and facilitate entrepreneurial behaviors such that more individuals will become entrepreneurs.

2.2. National culture in comparative entrepreneurship research

The dominant approach toward analyzing the relation between culture and entrepreneurship relies on multidimensional cross-cultural models elicited from survey responses (Hofstede, 2001; House et al., 2004; Schwartz, 1994). Specific cultural dimensions, derived from the stated preferences of the respondents used in each of these cultural models, are used to theorize and empirically assess the importance of cross-cultural differences in entrepreneurship (Shane, 1993; Wennekers et al., 2007). This commonly used stated preference approach is not without theoretical challenges. Different cultural components (e.g., values, traits, preferences, and cognition) and dimensions (e.g., individualism and uncertainty avoidance) are not independent of one another but conceptually related and also empirically correlated (Hofstede, 2001; House et al., 2004; Schwartz, 1994). In addition, different cultural components and dimensions interact in intricate ways in shaping (entrepreneurial) behavior (Kroeber & Kluckhohn, 1963). These conceptual challenges of the stated preference approach make it difficult to attribute cultural effects to specific components or dimensions and to come up with generalizable statements if and how national culture influences entrepreneurship.

An alternative avenue to theorizing on culture is to follow a revealed preference approach. The revealed preference approach uses observations on individuals' *actual* choices and behavior to infer their underlying preferences and dispositions (e.g. Necker & Voskort, 2014). Focusing on entrepreneurial culture as revealed preferences is theoretically attractive because it yields a single domain-specific construct that encapsulates all cultural components (e.g., values, traits, preferences, norms and cognition) and dimensions (e.g., individualism and uncertainty avoidance) that are relevant for entrepreneurship, including their interdependencies and interactions. With this in mind, we define entrepreneurial culture as patterned variation of values, preferences, cognitions, and norms across societies that consciously and unconsciously affect entrepreneurial behavior (Beugelsdijk, 2007; Peterson & Barreto, 2018) and we conceptualize entrepreneurial culture as cross-country variation in entrepreneurial behavior. This revealed preference

approach complements the stated preference approach in the literature. Irrespective of whether entrepreneurial culture is conceptualized as a revealed or stated preferences, both approaches give rise to the need to isolate the cultural roots of entrepreneurship from other contextual drivers of entrepreneurship.

2.3. Entrepreneurship, culture, institutions, and economic development

Although a large body of literature has argued that culture influences entrepreneurship (Hayton et al., 2002; Hayton & Cacciotti, 2013; Stephan, 2022; Urbano et al., 2019), it is difficult to isolate the cultural channel because the determinants of entrepreneurship –cultural, formal institutional, and economic conditions– are interlinked in myriad ways and may themselves be influenced by the entrepreneurial activity within society (Acs et al., 2008; Alesina & Giuliano, 2015; Hayton et al., 2002).

Going back to the thesis of Weber (1930) on the 'Protestant work ethic', culture has been argued to influence economic development and individuals' economic behavior (Gorodnichenko & Roland, 2017). In contrast, according to modernization theory, economic development also influences culture (Inglehart & Baker, 2000). Culture shapes formal institutions because formal institutions are rooted in the prevailing system of values and norms (Williamson, 2000), but culture is also influenced by formal institutions (Alesina & Fuchs-Schündeln, 2007). Formal institutions drive economic development (Acemoglu et al., 2001), but their quality and functioning also improve with economic development. In other words, culture, formal institutions, and economic development influence each other reciprocally and vary simultaneously across societies.

The implication thereof is that findings regarding the relation between culture and entrepreneurship could be driven by mediating or recursive effects. It could be that culture has a positive effect on entrepreneurship, but it may be that this effect operates through the influence of culture on formal institutions. For example, bankruptcy laws are important for entrepreneurship and could be rooted in culturally held beliefs about personal responsibility and forgiveness (Estrin et al., 2017, Lee et al., 2011, cf. Williamson, 2000). Conversely, it could also be that culture exerts an effect on entrepreneurship but that this effect stems from the (former) political system. For example, the negative effect on entrepreneurship of having lived under socialism partly operates through culturally held values and beliefs (Wyrwich, 2013). Moreover, social and

institutional entrepreneurship theories highlight entrepreneurs' role in altering economic, institutional, and cultural conditions such that entrepreneurship also influences the context in which it takes place (Bjørnskov & Foss, 2016; Henrekson & Sanandaji, 2011; Li et al., 2006; Pacheco et al., 2010). Consequently, the common approach of relating country-level scores of culture to national rates of entrepreneurship or individuals' self-employment status is unlikely to provide well-identified evidence.

2.4. Isolating the cultural channel in entrepreneurship

We argue that a promising avenue to confront the challenge of isolating the cultural channel is to study the occupational decisions of second-generation immigrants, i.e., the children of immigrants who were born, were educated, and live in one country, but who were socialized in families that stem from different countries of origin. First-generation immigrants arrive in the country of destination with distinct cultural backgrounds, shaped by their own upbringing and the culture of their country of origin, which they partially transmit to their offspring (Bisin & Verdier, 2011; Fernández & Fogli, 2009). The relevance of this intergenerational transmission of culture is reflected in the manifold findings of a positive correlation between parents' and children's values (Cavalli-Sforza et al., 1982; Farré & Vella, 2013) which extends to entrepreneurial values such as tolerance for risk (Dohmen et al., 2012) and preferences for entrepreneurship (Laspita et al., 2012; Sørensen, 2007; Wyrwich, 2015). It is also illustrated by findings documenting that first-generation immigrants' values, preferences, and choices in the country of residence are influenced by the culture of their country of origin (Guiso et al., 2006; Lassmann & Busch, 2015; Luttmer & Singhal, 2011). In sum, second-generation immigrants likely differ in their values and preferences in ways that reflect the culture of their country of ancestry, i.e., the country of birth of their parents.

Because second-generation immigrants with different backgrounds live in the same country, they are operating in a similar institutional and economic context. This enables us to hold the context constant – including, for example, the demand for entrepreneurship– and to focus on the role of entrepreneurial culture in shaping the supply-side of entrepreneurship. Following our argumentation, we expect country-of-ancestry entrepreneurial culture and the self-employment propensity of second-generation immigrants to be positively related. This is our first hypothesis:

Hypothesis 1a. *Second-generation immigrants are more likely to be entrepreneurs if their parents stem from countries characterized by a strong entrepreneurial culture than second-generation immigrants whose parents stem from countries characterized by a weak entrepreneurial culture.*

Our theory on the durability, portability, and intergenerational transmission of entrepreneurial dispositions logically extends to the hypothetical 'cousins' of the second-generation immigrants in our study. Parents who migrated to one country and their 'brothers and sisters' who migrated elsewhere (the 'aunts and uncles' of the second-generation immigrants in our sample) share a common cultural background based on their socialization in their common country of origin, which they transmit to their offspring, i.e., to second-generation immigrants. For example, imagine two Turkish migrants, one who moves to the U.S. and the other who moves to the United Kingdom, and two Canadian migrants, one who moves to the U.S. and one who moves to the United Kingdom. Following our theoretical reasoning, we expect that the difference in the propensity for entrepreneurship between the children of these Turkish and Canadian immigrants is similar in the U.S. and the United Kingdom. Ancestral-group-level differences in revealed preferences for entrepreneurship observed among second-generation immigrants in one country should therefore capture differences in the cultural background transmitted to second-generation immigrants in *another* country. Extending the logic of Hypothesis 1a, to corroborate our cultural argument, we predict that ancestral-group-level differences in revealed preferences for entrepreneurship of second-generation immigrants in Country A (Country B) are positively related to the likelihood that second-generation immigrants in Country B (Country A) are self-employed.

Hypothesis 1b. *Second-generation immigrants are more likely to be entrepreneurs if other second-generation immigrants who share the same ancestry but were born and raised in another country exhibit a strong entrepreneurial culture.*

3. EMPIRICAL STRATEGY

3.1. Setting and empirical approach

Main estimation strategy. Our strategy for isolating the effect of culture on entrepreneurship relies on exploiting variation in entrepreneurial culture observed across the countries of ancestry of second-generation immigrants to explain their occupational choices made within the same country. Because second-generation immigrants were born, were raised, and live outside of their country of ancestry, their occupational choices can only be affected by characteristics of their ancestry countries that are intergenerationally transmitted, of which culture is a key aspect. In our main analysis, we conceptualize entrepreneurial culture as revealed preferences for entrepreneurship proxied for by past country-of-ancestry self-employment rates. To filter out the variation in self-employment rates that is due to economic and institutional differences, we control for the level of GDP per capita and institutional quality in the countries of ancestry. Under the assumption that the remaining variation in self-employment rates –that is unrelated to economic and institutional factors– captures the cultural component of entrepreneurship, the coefficient estimate for self-employment rates will then only reflect the influence of culture on entrepreneurship.[2]

Samples. We test our predictions on two samples. Our main sample consists of second-generation immigrants who were born in the U.S. To corroborate our findings, we use an alternative sample covering second-generation immigrants in Europe. There are substantial differences in immigration and integration policies across countries (Algan et al., 2010; Drouhot & Nee, 2019). Therefore, if we observe similar patterns for second-generation immigrants in the U.S. and in Europe, this would point to the limited influence of factors specific to the destination country, such as post-migration experiences or the composition of the immigrant pool because of selection effects of first-generation migrants into destination countries (Luttmer & Singhal, 2011). Studying an alternative sample also permits us to shed light on the generalizability and external validity of our results from the U.S. context, an approach also referred to as 'self-replication' (Anderson et al., 2019; Davidsson, 2016).

Alternative estimation strategy. The idea of Hypothesis 1b is that if entrepreneurial culture is transmitted intergenerationally in a variety of different contexts, the self-employment propensities of second-

generation immigrants in the U.S. and Europe who share the same ancestry should be positively correlated with one another. Hence, if our cultural argument holds, we can use differences in self-employment propensities across ancestries observed among second-generation immigrants in Europe (the U.S.), estimated via country-of-ancestry fixed effects, as an alternative measure for entrepreneurial culture to explain the self-employment choices of second-generation immigrants in the U.S. (Europe). This cross-sample estimation is conceptually attractive because it allows us to provide additional support for our cultural channel. The approach is also methodologically attractive because it allows us to derive a measure of entrepreneurial culture that is not directly influenced by the economic or institutional conditions in the country of ancestry. We note that we also use this alternative measure as an instrument for our main measure of entrepreneurial culture. These different approaches complement one another.

Selection into emigration. Immigration theory highlights the role of selection into emigration (Borjas, 2014). For example, people who decide to (or are forced to) migrate may be particularly risk-tolerant, perseverant, and entrepreneurial (Fairlie & Lofstrom, 2015; Jaeger et al., 2010; Kerr & Kerr, 2020). Whether selection into emigration influences our main findings regarding the relation between entrepreneurial culture and second-generation immigrant self-employment depends on the specific nature of possible *cross-country* differences in selection into emigration on entrepreneurial dispositions. First, emigrants could be positively (self-)selected on entrepreneurial dispositions, with an on average constant level of selection across countries (Figure 1 Panel A). In this case, our main coefficient of interest would be unbiased. Second, emigrants from origin-countries with low levels of entrepreneurial culture could be positively selected on entrepreneurial dispositions to a larger extent than emigrants from more entrepreneurial cultures (Figure 1 Panel B). In this case, the variation in entrepreneurial dispositions among first-generation immigrants across ancestries would be smaller than the variation in entrepreneurial dispositions between countries and our main coefficient of interest would be biased downward. Third, emigrants could be positively selected on entrepreneurial dispositions to an extent that increases in origin-country entrepreneurial culture (Figure 1 Panel C). In this case, the variation in entrepreneurial dispositions among first-generation immigrants across

ancestries would be larger than the variation in entrepreneurial dispositions between countries, and we would observe an upward bias in our coefficient of interest.

[Insert Figure 1 about here]

In the Appendix, we discuss in more detail possible scenarios of how emigrants could be selected on entrepreneurial dispositions from the origin-country population and analyze empirically how emigrants differ from non-migrating compatriots. The findings of these analyses support the case that the coefficients we observe in our main analyses that follow are biased downward and constitute conservative estimates for the 'true' effect of culture on entrepreneurship.

3.2. Samples and dependent variable

Main sample. Our main sample consists of second-generation immigrants in the U.S.; i.e., individuals who were born in the U.S. but have at least one foreign-born parent. We use data from the Current Population Survey (Flood et al., 2020) which has been frequently used both in entrepreneurship (Evans & Leighton, 1989; Levine & Rubinstein, 2017) and in cross-cultural research (Alesina et al., 2015; Alesina & Giuliano, 2010; Giuliano, 2007). The March supplement of the Current Population Survey reports the country of origin of each respondent's parents starting in 1994. This, together with information about each respondent's birthplace, enables us to identify second-generation immigrants while excluding first- and later-generation immigrants from the sample. We pool information from all waves between 1994 and 2018 to obtain a representative sample of the second-generation immigrant population in the U.S. Hence, our database is of repeated cross-sectional nature.

Individuals' ancestry is defined as their fathers' country of origin. This is standard practice in the literature (Alesina & Giuliano, 2010; Fernández & Fogli, 2009) and expands our sample coverage substantially compared with analyzing second-generation immigrants whose parents both stem from the same country of origin (Giuliano, 2007). We note, though, that our results are quantitatively similar when we identify individuals' ancestry based on their mother's country of origin or when we focus only on individuals whose both parents stem from the same country (see Appendix). We only include second-generation immigrants for whose parents the exact country of origin is reported. Furthermore, we exclude second-

generation immigrants whose parents stem from former planned economies because low or unavailable entrepreneurship rates there are not indicative of the presence or absence of an entrepreneurial culture.[3]

Dependent variable. We operationalize entrepreneurship as individuals' occupational choice to work for their own account (Åstebro et al., 2011; Evans & Leighton, 1989; Kihlstrom & Laffont, 1979). Our dependent variable is a dichotomous indicator capturing whether individuals report being self-employed or family workers (OECD, 2018).[4] In an extension, we also distinguish between incorporated and unincorporated entrepreneurship (Levine & Rubinstein, 2017). To estimate the likelihood of being an entrepreneur, we focus on individuals who actively participate in the labor market and compare individuals in self-employment and wage employment. Individuals who are younger than 18 years or older than 65 years, full-time students, taking care of the home, in the military, unemployed, or retired are not considered. We also exclude all individuals who report a disability because we do not know to what extent this influences their ability to start and run a venture. We focus on non-agricultural work; all individuals who report working in the agricultural sector are excluded. Furthermore, we impose a threshold of at least 25 observations per second-generation ancestry group. After imposing these conditions and matching with the predictor and controls, we are left with 65,323 individuals from 52 different countries of ancestry.

Alternative sample. To corroborate our findings and to test Hypothesis 1b, we use an alternative sample covering second-generation immigrants in Europe, which we draw from the European Social Survey (ESS, 2020a, 2020b). We pool information from the earliest survey wave that contains information on the parents' countries of birth (2004) until the latest available wave (2018). The dependent variable is operationalized just like in the U.S. case as individuals' self-employment status. We also apply the same sample criteria (such as age thresholds, exclusion of retired individuals and agriculture) as in the U.S. case. More details on the European sample are provided in the Appendix.

3.3. Independent variable

We operationalize entrepreneurial culture as long-run averages of past self-employment rates in the parental country of origin to test Hypothesis 1a. We follow the OECD definition of self-employment: "employment of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family

workers" (OECD, 2018). Data on self-employment rates are obtained from ILOSTAT of the International Labor Organization (ILO, 2017) and constructed from international census microdata (Minnesota Population Center, 2018).[5] We want to measure long-run averages of entrepreneurship rates in the period around the time when the parents of our sample of second-generation immigrants left their home country. Due to data limitations, we employ averages over the period 1980–1993, i.e., before the first Current Population Survey wave. As explained in Section 3.1, we adjust this measure for differences in the level of economic development and institutional quality (averaged over the same period, 1980–1993) such that our independent variable captures variation in entrepreneurial culture *net* of the level of self-employment that can be expected for a given level of economic and institutional development in the country of ancestry.

To test Hypothesis 1b, we operationalize entrepreneurial culture as differences in self-employment propensities between second-generation immigrants of different ancestries who were born and live in another country. To implement this, we first measure ancestral-group level differences in revealed preferences for entrepreneurship among second-generation immigrants in the U.S. and in Europe, respectively, by estimating country-of-ancestry fixed effects while controlling for individual-level controls, ancestral human capital and network effects, as well as destination and year fixed effects (see Section 3.5). The average marginal effects of these country-of-ancestry fixed effects capture the actual entrepreneurial behavior of second-generation immigrants in the U.S. and in Europe. We then use these ancestral-group level differences from the European (U.S.) sample as an alternative measure of revealed entrepreneurial culture to predict the likelihood that second-generation immigrant 'cousins' in the U.S. (Europe) are self-employed.[6]

3.4. Control variables

We use control variables at the individual, country-of-ancestry, destination, and country-of-ancestry-by-destination levels, where 'destination' refers to states in the U.S. case and countries in the European case (see Appendix for further details). At the individual level, we use a well-established battery of socio-demographic characteristics that have been commonly related to entrepreneurship (Parker, 2018). Specifically, we include age, age-squared, gender, education, education-squared, marital status, and whether children

live in the household. In robustness checks, we add a number of additional controls, including measures of labor market discrimination, the strength of family ties, and the parental self-employment status.

At the country-of-ancestry-by-destination level, we control for differences in human capital and ethnic network effects. Ancestral-group-level human capital proxies for parental human capital (Alesina & Giuliano, 2010; Card et al., 2000) and captures co-ethnic human capital spillover effects (Borjas, 1992). We measure this as the average years of schooling of first-generation immigrants who in terms of their age could be the potential parents of the second-generation immigrants in our sample, i.e., first-generation immigrants who were aged 20 to 60 years in 1970, based on U.S. Decennial Census and American Community Survey data covering the period 1960–2018. Ethnic network and 'enclave' effects may facilitate entrepreneurship by enhancing access to resources and information or depress entrepreneurship through oversaturated demand and downward competition (Borjas, 1986; Marinoni, 2022; Wilson & Portes, 1980). To capture this, we construct a measure of the contemporaneous share of co-ethnics of the same ancestry who reside in the same state (Yuengert, 1995) using information for more than 54,000,000 individuals covered in the U.S. Decennial Census and American Community Survey files between 1990 and 2018.

At the country-of-ancestry level, we control for GDP per capita to capture differences in economic development (Wennekers et al., 2005; Wennekers & Thurik, 1999). We use (ln) real GDP data from the Maddison Project (Bolt et al., 2018) and take averages over the period 1980–1993 in line with our measure of revealed entrepreneurial culture. We also control for formal institutional quality in the country of ancestry (Djankov et al., 2002; North, 1990; Williamson, 2000). For this, we use data from the Polity IV database (Marshall et al., 2017) and take the average value from 1980 to 1993 of the polity2 indicator which captures the level of democracy in a country. By controlling for GDP per capita and institutional quality, we isolate the effect of entrepreneurial culture solely from variation in self-employment rates between countries with the same level of economic and institutional development.

We control for destination-level differences by including 50 ($N - 1$) state fixed effects for the 50 U.S. states and the District of Columbia (in the European sample, this corresponds to country fixed effects). These destination dummies control for differences in the economic, institutional, and cultural environments

second-generation immigrants are embedded in, such as labor market conditions, industrial structure, and state-level formal institutions including tax policies or entry barriers. In robustness checks, we also specify these destinations dummies at the level of counties in the U.S. and sub-national regions in Europe. We also include year dummies to account for common time trends driven by, for example, correlated business cycles.

3.5. Method

Our hypotheses relate country-of-ancestry entrepreneurial culture to individuals' entrepreneurship status. The appropriate methodology for testing our hypotheses is multilevel analysis, which allow us to conceptualize each construct at its corresponding level of analysis (Robinson, 1950) and to empirically account for the nested structure of the data (Snijders & Bosker, 2012). Specifically, we estimate the following multilevel logit model:

$$ln[P(E_{idcy} = 1)/(1 - P(E_{idcy} = 1))] = \beta + \psi \, \boldsymbol{X'_{idcy}} + \kappa \, \boldsymbol{W'_{dc}} + \varphi \, \boldsymbol{Z'_{c}} + \varsigma \, C_c + \alpha_d + t_y + \gamma_c + \eta_{dc}$$

where *i*, *d*, c, and *y* denote individuals, destinations, countries of ancestry, and time, respectively. Each individual's entrepreneurship status is denoted by E_{idcy}. The vectors $\boldsymbol{X'_{idcy}}$, $\boldsymbol{W'_{dc}}$, and $\boldsymbol{Z'_{c}}$ denote control variables at the individual-, country-of-ancestry-by-destination-, and country-of-ancestry-level, respectively. Our independent variable, country-of-ancestry entrepreneurial culture, is captured by C_c. We furthermore include destination fixed effects α_d, time fixed effects t_y, country-of-ancestry random terms γ_c, and destination-by-ancestry random terms η_{dc}. We estimate these models using mixed-effects generalized multilevel logit models (Rabe-Hesketh & Skrondal, 2012).[7] For ease of interpretation, we standardize the independent variables and present the results in the form of odds ratios (ORs). ORs larger than one express a positive effect on the likelihood of being an entrepreneur, whereas ORs smaller than one indicate a negative relation.

4. RESULTS

Table 1 presents descriptive statistics for the U.S. sample and the European sample. The individual-level and aggregate-level correlations are provided in the Appendix for brevity. To evaluate potential multicollinearity, we calculate variance inflation factors after running the main regression model. Only the linear and squared terms of age and education, respectively, which are highly correlated by construction, are above the conventional threshold of 10. We assess the applicability of multilevel modeling by comparing our multilevel model with a single-level logit model under the null that the inclusion of random effects does not improve the model fit. The likelihood-ratio test is rejected ($p < .000$) and hence multilevel modeling is warranted. Variance-partition coefficients indicate that 8% of the total variance is attributable to country-of-ancestry influences. Given our study design, these variance-partition coefficients are of substantial size (Estrin, Mickiewicz, et al., 2013; Stephan & Pathak, 2016).

[Insert Table 1 about here]

We first present findings from the baseline model testing Hypothesis 1a in Table 2 and the results for Hypothesis 1b in Table 3. We discuss extensions and robustness checks in Section 5.

4.1. The positive effect of entrepreneurial culture

Hypothesis 1a predicts a positive effect of country-of-ancestry entrepreneurial culture on the odds of second-generation immigrants being self-employed. We first test this hypothesis using our main sample of second-generation immigrants in the U.S. Table 2 presents the results. Model 1 includes all control variables. Model 2 adds entrepreneurial culture in the country of ancestry. A likelihood-ratio test shows that the addition of entrepreneurial culture in Model 2 improves the model compared with Model 1 ($p = .003$). We find a positive and significant effect of entrepreneurial culture on the likelihood of being self-employed (OR = 1.395; $p = .001$). This positive relation is economically relevant; all else equal, a one-standard-deviation increase in entrepreneurial culture in the country of ancestry is associated with a 39.5% increase in the likelihood of second-generation immigrants being self-employed. For comparison, this effect is almost three times as large as the effect of a similar change in ancestral-group level human capital (a one-standard-deviation increase would raise the odds by 12%).

[Insert Table 2 about here]

The results for second-generation immigrants in Europe are presented in Model 3 (controls only) and Model 4 (full model) of Table 2. We observe a positive effect of country-of-ancestry entrepreneurial culture on second-generation immigrants' likelihood of being self-employed (OR = 1.561; p = .001). A one standard deviation increase in entrepreneurial culture is associated with a 56% rise in the odds of being self-employed and the inclusion of entrepreneurial culture improves the model fit (p = .001). We find support for Hypothesis 1a in both the U.S. and the European samples.

4.2. The positive effect of entrepreneurial culture observed among second-generation immigrants in a different context

Hypothesis 1b predicts that ancestral-group level differences in revealed preferences for entrepreneurship observed among second-generation immigrants in Europe (the U.S.) are positively related to the likelihood that second-generation immigrants in the U.S. (Europe) are self-employed. The results are presented in Panel A of Table 3. In Model 1, we test whether second-generation immigrants in the U.S. are more likely to be self-employed if their second-generation 'cousins' in Europe exhibit a strong entrepreneurial culture. We find a positive relationship (OR = 1.101; p = .016). In Model 2, we relate the ancestral-group differences in entrepreneurship propensities of second-generation immigrants in Europe to the revealed entrepreneurial culture of their 'cousins' who were born in the U.S. We again observe a positive effect of entrepreneurial culture on individuals' odds of being entrepreneurs (OR = 1.159; p = .014). These findings in both the European and the U.S. sample render support to Hypothesis 1b, and, by extension further corroborate Hypothesis 1a.

[Insert Table 3 about here]

As an alternative to these reduced form results, we also employ two-stage least squares instrumental variable regressions (2SLS) to tie the reasoning underlying H1a and H1b together conceptually and to test them in a unified empirical framework. We instrument entrepreneurial culture –measured in the country of ancestry– by ancestral-group-level differences in revealed preferences for entrepreneurship observed amongst second-generation immigrants who were born and raised in another context. Specifically, we use ancestral-group-level differences observed in Europe (the U.S.) as an instrument for entrepreneurial culture

when regressing entrepreneurial culture on the self-employment status of second-generation immigrants in the U.S. (Europe). The exclusion restriction requires that second-generation immigrants' ancestral-group-level differences in revealed preferences for entrepreneurship in the U.S. (Europe) are not related to the self-employment status of second-generation immigrants in Europe (the U.S.) through channels other than the intergenerational transmission of entrepreneurial culture. The second-stage results presented in Panel B of Table 3 confirm the positive effect of entrepreneurial culture on individuals' odds of being entrepreneurs (U.S: OR = 1.511; p = .016; Europe: OR = 1.869; p = .014).[8]

Jointly, the findings presented in Table 2 and Table 3 highlight the role of culture in entrepreneurship. They also alleviate potential concerns regarding selection effects and the importance of post-migration experience. It is unlikely that these will be the same in the U.S. and Europe given the big differences in the social and institutional environments. Our results underline that entrepreneurial culture is transmitted intergenerationally under a variety of contextual conditions.

5. EXTENSIONS AND ROBUSTNESS CHECKS

We begin by extending the applicability of our cultural argument to different types of entrepreneurship in Table 4. We then go on to test the robustness of our results to considering alternative explanations and using a stated preference approach to operationalizing entrepreneurial culture in Table 5. Post-hoc, we also highlight the underlying intergenerational transmission mechanism in Table 6. Finally, we present additional robustness tests in the Appendix.

5.1. Different forms of entrepreneurship

Entrepreneurs differ in terms of their characteristics, the nature of the activities they perform, and their (economic) impact (Davidsson, 2016; Parker, 2018). To distinguish between different types of entrepreneurship, one well-established approach is to consider the status of incorporation. The incorporated tend to perform more complex non-routine tasks and are generally more successful economically than their unincorporated counterparts (Levine & Rubinstein, 2017). Results presented in Table 4 indicate that country-of-ancestry entrepreneurial culture is positively associated with both incorporated (OR = 1.950; p = .000)

and unincorporated self-employment (OR = 1.271; $p < .000$). Formally assessing the equality of coefficients, we reject the null that the effect of entrepreneurial culture is the same for incorporated and unincorporated self-employment ($p < .000$). Entrepreneurial culture influences both incorporated and unincorporated self-employment, but the effect is larger for incorporated self-employment.

[Insert Table 4 about here]

5.2. Accounting for alternative explanations

In this section, we explore whether our results are robust to the incorporation of alternative explanations, especially those proposed by immigrant entrepreneurship research (see, e.g., Fairlie & Lofstrom, 2015; Kerr & Kerr, 2020; Sinkovics & Reuber, 2021). Specifically, we seek to control for factors that may be correlated with entrepreneurial culture but do not capture cultural factors and as such could challenge our identifying assumption. In each column in Table 5, we re-estimate the main regression model (Model 2 in Table 2) while undertaking one adjustment at a time. For brevity, we only report the coefficient for entrepreneurial culture and the coefficients for the additional control variables and provide further details on the construction of the additional variables in the Appendix.

Entrepreneurship-specific human capital. A first concern is that our results could be driven by differences in (unobserved) entrepreneurship-specific human capital (Yuengert, 1995). It could be that the estimated coefficient on entrepreneurship rates in the countries of ancestry reflects not only the hypothesized cultural effect but also intergenerationally transmitted cross-country differences in entrepreneurial skills. If there are relevant differences in unobserved entrepreneurial human capital that are correlated with entrepreneurship rates in the country of ancestry, entrepreneurs from countries with a strong entrepreneurial culture should also be more successful and earn higher incomes. To assess this alternative explanation, we focus only on the sample of self-employed second-generation immigrants in the U.S. and regress entrepreneurship rates in the country of ancestry on their hourly income from self-employment after accounting for the controls of the main model, working hours, and industry fixed effects. Results presented in Model 1 do not show an association between entrepreneurial culture and hourly income from self-employment (β = -

0.008; p = .799) suggesting that our results are unlikely to be driven by unobserved entrepreneurship-specific human capital.

[Insert Table 5 about here]

Labor market frictions and discrimination. Another possible concern is that the effect observed for country-of-ancestry entrepreneurial culture could capture the fact that for some groups it may be more profitable to be self-employed relative to working in wage-employment than for others (Fairlie & Meyer, 1996), for example, due to discriminatory practices (Pager et al., 2009) or information asymmetries between firms and potential employees (Hegde & Tumlinson, 2021). If some ancestral groups face worse employment prospects than others, second-generation immigrants belonging to these groups should derive relatively higher excess returns from self-employment. To assess whether labor market frictions or discrimination drive our findings, we include a measure of group-specific differences in returns from self-employment relative to returns from wage-employment.[9] Results presented in Model 2 show that controlling for group-level differences in relative returns to self-employment does not alter our main finding of a positive association between country-of-ancestry entrepreneurial culture and second-generation immigrants' self-employment status (OR = 1.330; p = .007).[10]

Wealth. It could be that differences in resource holdings across ancestral groups are driving our main effect by enabling individuals to become self-employed. There are substantial differences in resource holdings across immigrant groups and it may be easier for second-generation immigrants of wealthier ancestries to become self-employed (Fairlie & Lofstrom, 2015), for example through co-ethnic investment ties (Hegde & Tumlinson, 2014). To control for ancestral group-level differences in resource holdings, we average information on first-generation immigrants' incomes from interest, dividends, and net-rentals as a proxy for wealth at the ancestry-by-state-level (Fairlie & Meyer, 1996). Results shown in Model 3 indicate that the inclusion of this additional control does not alter our main finding (OR = 1.386; p = .001).

Family support. The observed effects for entrepreneurial culture may be driven by differences in the structure of families, which has been argued to influence (potential) entrepreneurs' ability to mobilize sup-

port and resources (Aldrich & Cliff, 2003; Ruef, 2010, 2020; Sanders & Nee, 1996). If immigrants originating from countries with a strong entrepreneurial culture also have access to a stronger support network within the family, the estimated effect for entrepreneurial culture may partially reflect the effect of family structure and family support. We proxy for family structure and the ease of mobilizing family support with the cultural strength of family ties present in the country of ancestry. To measure the strength of family ties, we follow Alesina and Giuliano (2014) and construct a measure that reflects country-of-ancestry differences in the extent to which people regard the family as important, emphasize respect and love for parents, and parents' responsibility toward their children.[11] As visible from Model 4, adding the strength of family ties as an additional control does not alter our main results (OR = 1.521; $p < .000$).

Parental self-employment. It could be that the observed effect for entrepreneurial culture does not reflect an effect of culture per se, but is driven by direct linkages between parents and children or non-cultural characteristics of parents. Children of parents who are entrepreneurs are more likely to become entrepreneurs themselves because self-employed parents transmit entrepreneurial dispositions, but also social, financial, and (entrepreneurial) human capital to their offspring (Laspita et al., 2012; Lindquist et al., 2015; Sørensen, 2007; Vladasel et al., 2021; Wyrwich, 2015). Although we have no information on parental occupations for the individuals in our U.S. sample, we can construct a proxy for parental self-employment that reflects the past ancestry-by-state-level self-employment rates of first-generation immigrants based on the 1960–1990 U.S. Decennial Census files. This variable also captures broader socializing and learning mechanisms, such as the role-modeling and mentoring effects of co-ethnics. Alternatively, we leverage the European sample of second-generation immigrants for whom the parental occupation when respondents were 14 years old is reported. This allows us to directly control for parental self-employment during the formative years of second-generation immigrants. In line with the literature, we find that parental self-employment is positively associated with second-generation immigrants' self-employment status, both in the U.S. (Model 5a) and the European sample (Model 5b). The inclusion of this additional variable, though, does not alter our main finding (U.S.: OR = 1.330; $p = .001$; Europe: OR = 1.548; $p = .001$).[12]

Stated preference approach. To corroborate our revealed preference approach, we also follow a stated preference approach. To obtain a domain-specific singular measure of stated preference for entrepreneurship, we use the representative cross-national Flash Eurobarometer Surveys #192, #283, and #354 to calculate the country-level share of individuals who indicate they would prefer to be self-employed rather than wage-employed when being presented with a hypothetical choice.[13] The country-level correlation between our main revealed preference measure of entrepreneurial culture and stated preferences for entrepreneurship is 0.87 ($p < .000$). Result shown in Model 6 corroborate the positive effect of entrepreneurial culture on self-employment (OR = 1.190; $p = .028$).

Further robustness checks. We run an extensive number of further robustness checks that we present in the Appendix. There, we show that our results are robust to using alternative measures of revealed entrepreneurial culture. We also demonstrate that our results hold for a variety of sub-samples, such as for highly educated individuals who have obtained at least a Bachelor's degree. We furthermore include an exhaustive battery of additional controls, for example, fixed effects for ethnicity, industry, occupation, or religious denomination, measures of co-ethnic residential clustering, genetic factors, occurrence of wars in the country of ancestry, and parental human capital. These robustness checks further corroborate our main findings.

5.3. The moderating role of parenting intensity

Having shown that our results are robust to these alternative explanations, we probe the key mechanism underlying our hypotheses: intergenerational cultural transmission. The individual-level socialization literature has shown that parents influence their children's dispositions to a greater extent if they spend more time with their offspring (Zumbühl et al., 2021), and the extent of parenting intensity likely varies across cultures (cf. Doepke & Zilibotti, 2017). Expanding upon our hypotheses, we posit that the positive effect of country-of-ancestry entrepreneurial culture on individuals' self-employment status increases in the extent of parenting intensity because more intense parent-child interactions should strengthen the intergenerational transmission of entrepreneurial culture. We operationalize parenting intensity as ancestral-group level differences in the time parents spent with their children by using fine-grained daily time use diaries

obtained from the American Time Use Survey (ATUS 2003–2018). To quantify ancestral-group-level variation in parenting intensity, we identify first-generation immigrants in the ATUS files and estimate country-of-origin fixed effects after accounting for individual- and family-level controls (see Appendix).

Table 6 presents the results. As before, entrepreneurial culture positively influences the likelihood that second-generation immigrants are self-employed (OR = 1.455; $p < .000$). Importantly, as expected, we can see from the interaction that this effect is strengthened –i.e., moderated positively– by parenting intensity (OR = 1.153; $p = .015$). We plot the predicted probabilities of individual-level self-employment at various levels of entrepreneurial culture and parenting intensity in Figure 2. We clearly see that the effect of entrepreneurial culture on individuals' self-employment status is stronger if immigrants stem from cultures where parents are more involved in rearing their children. This positive moderation effect further supports our key argument that culture is transmitted intergenerationally and consequential for entrepreneurship.

[Insert Table 6 and Figure 2 about here]

6. DISCUSSION

In this paper, we show that culture is an important and deeply rooted determinant of entrepreneurship. We document that second-generation immigrants are more likely to be self-employed if their parents stem from a country with a strong entrepreneurial culture. Our design of studying second-generation immigrants of different ancestries yet residing in the same country allows us to isolate the effect of culture on entrepreneurship from other macro-level determinants. Culture is related to entrepreneurship and entrepreneurial culture is persistent across at least two generations and different contexts.

6.1. Contributions

We contribute to the literature in three ways. First, we complement the entrepreneurship literature that has emphasized the social transmission of individual- and organizational-level attributes for explaining variation in the decision to become an entrepreneur (Kacperczyk, 2013; Nanda & Sørensen, 2010; Qin & Estrin, 2015; Rocha & Van Praag, 2020). We extend this literature by drawing attention to the role of durable and portable national cultural imprints in intergenerational socialization. Socialization influences individuals' values, preferences, cognitive processes, and decisions, including entrepreneurship. This matters because

the effects are long-lasting and leave a permanent imprint. An important part of intergenerational socialization reflects nationally shared and deeply-rooted cultural dispositions. Our paper shows that such intergenerationally transmitted cultural dispositions are systematically related to individuals' choices for self-employment. In addition, the intergenerational transmission of cultural dispositions for entrepreneurship can also take place outside of the context where these imprints were initially formed. This is because individuals' values and preferences are formed in childhood and adolescence and remain largely stable afterward. Thus, individuals carry their cultural background with them when they migrate to another environment where they then partially pass on this background to their children. This way, cultural dispositions for entrepreneurship span across time and space. We show that the intergenerational transmission of country-of-ancestry entrepreneurial culture indeed takes place under various economic and institutional conditions.

Second, we add to comparative entrepreneurship research that has explored the determinants of cross-country variation in entrepreneurial activity (Jones et al., 2011; Terjesen et al., 2016), including the role of culture (Autio et al., 2013; Stenholm et al., 2013; Stephan & Pathak, 2016), formal institutions (Autio & Acs, 2010; Estrin, Korosteleva, et al., 2013; Levie & Autio, 2011), and the level of economic development (Wennekers et al., 2005; Wennekers & Thurik, 1999). These country characteristics are inherently interrelated and co-vary across nations, which poses the conceptual challenge of clearly isolating cultural effects. Existing correlational evidence for the relation between culture and entrepreneurship has been mixed and partly conflicting (Hayton et al., 2002; Hayton & Cacciotti, 2013; Stephan, 2022). Our study of second-generation immigrants advances this longstanding discussion by clearly separating the effect of culture from other contextual factors and by demonstrating that culture is a deeply rooted determinant of entrepreneurship. This matters because it helps explain the persistent cross-national differences in entrepreneurial activity that have been observed even for countries with similar levels of economic and institutional development (Freytag & Thurik, 2007; Global Entrepreneurship Monitor, 2018).

Third, the above discussion logically extends to the broader comparative analysis of cultural effects. The challenge of conceptually and empirically isolating cultural effects from other country-specific characteristics is generally acknowledged in cross-cultural research (Kirkman et al., 2006). Our methodology

of studying second-generation immigrants of different ancestries that grew up and reside in the same country can be leveraged in other domains such as finance –e.g., individuals' investment decisions (Li et al., 2013; Siegel et al., 2013)– and human resource management –e.g., compensation schemes (Schuler & Rogovsky, 1998; Tosi & Greckhamer, 2004)–. This is important because the comparative analysis of cultural effects has been criticized for an over-reliance on broad cultural dimensions, e.g. Hofstede and Schwartz, and for correlating these dimensions with outcomes of interest (Beugelsdijk et al., 2017; Devinney & Hohberger, 2017). Our study contributes to this discussion by suggesting a research design, namely studying second-generation immigrants, that allows for isolating cultural effects.

6.2. Limitations and future research

We acknowledge some limitations of our study that offer opportunities for future research. First, we have followed the occupational choice conceptualization of entrepreneurship (Kihlstrom & Laffont, 1979) which is common in (comparative) entrepreneurship research (Levie & Autio, 2011; Stephan & Uhlaner, 2010) but has some drawbacks (Parker, 2018). We have shown that the cultural effect holds for both incorporated and unincorporated self-employment, with a stronger effect on the incorporated, and we think that our findings on the importance of cultural effects will also extend to other conceptualizations of entrepreneurship. Additional research may want to explore, for example, high-growth entrepreneurship or intrapreneurship. Second, our sample is based on individuals whose parents migrated to the U.S. largely between the 1950s and 1980s. This implies that we are unable to make statements about the consequences of contemporaneous migration patterns. While we believe that our findings will also extend to more recent migration experiences, only future research can shed definitive light on this. Relatedly, there may be cultural attenuation effects from the first to subsequent generations of immigrants. Quantifying attenuation effects is beyond the scope of this paper but it is an interesting question for future research.

We see several promising avenues for further research to expand this study. First, future research may leverage recent advances in big data analytics and the growing availability of social media data (Obradovich et al., 2020) and other online resources (Michel et al., 2011) to construct new measures of (entrepreneurial)

culture and assess their relevance for understanding differences in (entrepreneurial) behavior. Second, future research may unpack the bundle of acquired dispositions that together create an entrepreneurial culture and identify systematically which cultural components (e.g., values, preferences, and norms) and cultural dimensions (e.g., individualism and uncertainty avoidance) are particularly important. Third, future research may also explore the emergence and historical drivers of entrepreneurial cultures. Promising avenues could include past geo-climatic conditions (Kashima & Kashima, 2003; Stuetzer et al., 2016), historical institutional practices –such as inheritance rules (Fritsch & Wyrwich, 2019)–, or historical trade patterns (Godley, 2009).

To conclude, second-generation immigrants who were born, raised, and educated within the same country and face the same economic and institutional circumstances are more likely to be entrepreneurs if their parents stem from countries characterized by a strong entrepreneurial culture rather than a weak entrepreneurial culture. National cultural imprinting effects are portable and persist over at least two generations and across different economic and institutional contexts. Entrepreneurship has deep cultural roots.

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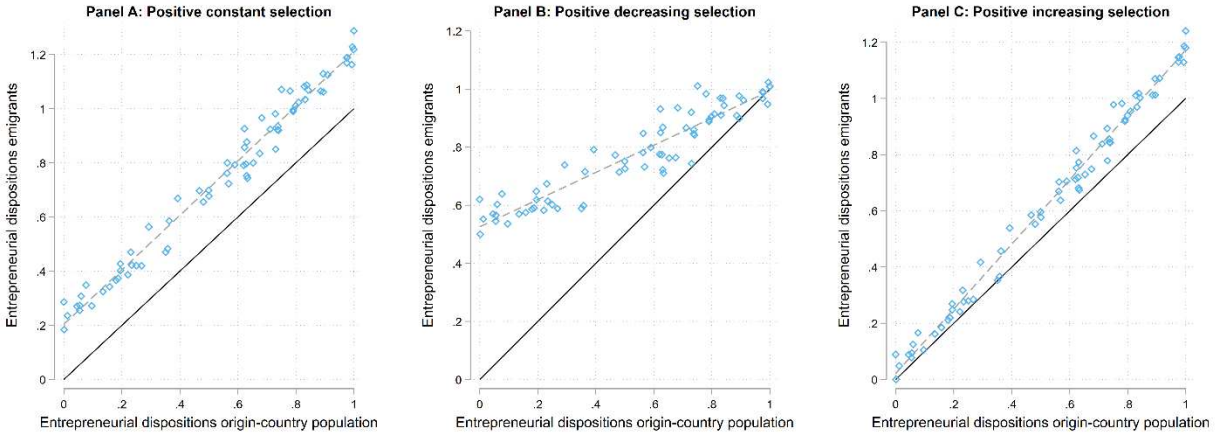
TABLES AND FIGURES

Figure 1. Selection into emigration on entrepreneurial dispositions – cross-country variation



Note: This figure plots three plausible patterns of cross-country differences in selection into emigration on entrepreneurial dispositions. The average entrepreneurial dispositions of non-migrating compatriots are shown on the *x* axis and the average entrepreneurial dispositions of emigrants are shown on the *y* axis. In the Appendix, we conceptually discuss patterns of cross-country differences in selection into emigration on entrepreneurial dispositions in detail. There, we also present empirical evidence consistent with the pattern shown in Panel B –positive decreasing selection–, whereas we do not find any evidence that supports the pattern visualized in Panel C –positive increasing selection–. The implication of this is that we consider it unlikely that selection into emigration on entrepreneurial dispositions is driving our main findings.

Table 1. Descriptive statistics

Variable	U.S. sample					European sample				
	Obs.	Mean	SD	Min	Max	Obs.	Mean	SD	Min	Max
Dependent variable										
Self-employment	65,323	0.09	0.28	0.00	1.00	4,165	0.13	0.34	0.00	1.00
Individual-level control variables										
Age	65,323	37.30	12.53	18.00	65.00	4,165	38.65	11.90	18.00	65.00
Gender (men)	65,323	0.52	0.50	0.00	1.00	4,165	0.53	0.50	0.00	1.00
Education	65,323	11.96	2.83	1.00	18.00	4,165	13.63	3.36	0.00	21.00
Married	65,323	0.53	0.50	0.00	1.00	4,165	0.51	0.50	0.00	1.00
Children in household	65,323	0.49	0.50	0.00	1.00	4,165	0.54	0.50	0.00	1.00
Ancestral-group-level control variables										
GDP per capita country of ancestry	52	14,916	11,903	768	52,511	31	19,714	13,193	768	52,511
Institutional quality country of ancestry	52	5.03	5.79	-7.86	10.00	31	5.75	6.43	-7.86	10.00
Human capital ancestral group	1,860	12.30	1.94	0.00	18.00	225	13.60	2.17	7.84	18.00
Size of ancestral network	1,860	0.01	0.04	0.00	0.37	225	0.53	1.21	0.01	14.45
Ancestral-group-level independent variables										
Entrepreneurial culture	52	0.35	0.21	0.10	0.95	31	0.30	0.21	0.09	0.95

Note: Shown are the descriptive statistics for the U.S. sample and the European sample. A detailed data description is presented in the Appendix. The descriptive statistics are split into individual-level and aggregate-level sections to accurately reflect their means and standard deviations (SDs).

Table 2. Multilevel logistic regressions on second-generation immigrants' individual-level entrepreneurship status (odds ratios and *p*-values)

	(1)	(2)	(3)	(4)
	U.S. sample		European sample	
	Self-employment	Self-employment	Self-employment	Self-employment
Individual-level control variables				
Age	1.142***	1.142***	1.081**	1.080**
	(0.000)	(0.000)	(0.017)	(0.019)
Age-squared	0.999***	0.999***	0.999	0.999
	(0.000)	(0.000)	(0.176)	(0.184)
Gender (Men)	1.842***	1.843***	1.560***	1.561***
	(0.000)	(0.000)	(0.000)	(0.000)
Education	1.191***	1.190***	0.985	0.983
	(0.000)	(0.000)	(0.854)	(0.834)
Education-squared	0.994***	0.994***	1.002	1.002
	(0.000)	(0.000)	(0.500)	(0.494)
Married	1.316***	1.316***	1.020	1.010
	(0.000)	(0.000)	(0.859)	(0.928)
Children in household	1.058*	1.059*	1.240*	1.248*
	(0.096)	(0.096)	(0.078)	(0.071)
Ancestral-group-level control variables				
(ln) GDP per capita country of ancestry	1.175*	1.480***	0.986	1.753**
	(0.060)	(0.000)	(0.942)	(0.034)
Institutional quality country of ancestry	0.995	1.007	1.004	0.976
	(0.713)	(0.570)	(0.838)	(0.303)
Human capital ancestral group	1.043**	1.058***	0.967	1.010
	(0.031)	(0.003)	(0.386)	(0.809)
Size of ancestral network	0.713	0.776	0.889**	0.901*
	(0.525)	(0.623)	(0.039)	(0.072)
Ancestral-group-level independent variable				
Entrepreneurial culture		1.395***		1.561***
		(0.001)		(0.001)
Destination fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	65,323	65,323	4,165	4,165
Countries of ancestry	52	52	31	31
Wald test (χ^2)	1671	1702	171	181
Wald test $p > \chi^2$	0.000	0.000	0.000	0.000
Log likelihood	-17496	-17492	-1509	-1504
Likelihood-ratio test (χ^2)		9.095		11.17
Likelihood-ratio test $p > \chi^2$		0.003		0.001

Note: The results are presented as odds ratios and *p*-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. The constant and random terms are estimated but are not reported. Destination fixed effects refer to state fixed effects for the U.S. sample and country fixed effects for the European sample. The likelihood-ratio-test likelihood-ratio tests (χ^2) compare the main models to controls-only models that include all control variables, but not the independent variable. They indicate whether the inclusion of the predictor improves the model fit. For models 2 and 4, the comparison controls-only models are models 1 and 3, respectively.

Table 3. Alternative measure of entrepreneurial culture (odds ratios and *p*-values)

	(1)	(2)
	U.S. sample	European sample
	Self-employment	Self-employment
Panel A: Reduced form approach		
Entrepreneurial culture: Observed amongst second-generation immigrants in Europe (hypothetical 'cousins')	1.101** (0.016)	
Entrepreneurial culture: Observed amongst second-generation immigrants the U.S. (hypothetical 'cousins')		1.159** (0.014)
Panel B: Two-stage approach (2SLS)		
Entrepreneurial culture	1.511** (0.016)	1.869** (0.014)
F-test first-stage regression	7.282 (0.013)	7.882 (0.01)
Observations	27,568	3,883
Countries of ancestry	28	28

Note: The results are presented as odds ratios, and *p*-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. All control variables, the constant, and random terms were included in the estimation but are not reported for brevity. In Panel A we report the reduced form estimations relating ancestral-group level differences in revealed preferences for entrepreneurship observed among second-generation immigrants in Europe (the U.S.) to the likelihood that second-generation immigrants in the U.S. (in Europe) are self-employed. In Panel B, we employ two-stage least squares instrumental variable regressions and we use ancestral-group level differences in entrepreneurship propensities observed amongst second-generation immigrants in Europe and the U.S. –in columns (1) and (2), respectively– as our instrument for entrepreneurial culture.

Table 4. Alternative types of entrepreneurship (odds ratios and *p*-values)

	(1)	(2)
	Multinomial logit multilevel model	
	Incorporated self-employment	Unincorporated self-employment
Entrepreneurial culture	1.950*** (0.000)	1.271*** (0.000)
Observations	65,276	
Countries of ancestry	52	

Note: The results are presented as odds ratios, and *p*-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. The results are based on a multinomial logit three-level multilevel model estimated on the U.S. sample where the wage-employed constitute the base category. All control variables, the constant, and random terms were included in the estimation but are not reported for brevity. We reject the null that the impact of entrepreneurial culture is the same on the incorporated and the unincorporated ($p < .000$) based on a test for equality of coefficients.

Table 5. Assessing robustness to alternative explanations (odds ratios and *p*-values)

	(1)	(2)	(3)	(4)	(5a)	(5b)	(6)
	Unobserved entrepreneurship specific human capital	Labor market frictions & discrimination	Asset holdings	Family support	Parental self-employment (proxy) & role modeling	Parental self-employment	Alternative predictor: stated-preference measure of entrepreneurial culture
Dependent variable	Hourly income from self-employment	Self-Employment	Self-Employment	Self-Employment	Self-Employment	Self-Employment	Self-Employment
Entrepreneurial culture	-0.008 (0.799)	1.330*** (0.007)	1.386*** (0.001)	1.521*** (0.000)	1.330*** (0.001)	1.548*** (0.001)	1.190** (0.028)
Additional control variable	None	0.991 (0.165)	1.000 (0.360)	0.913 (0.436)	1.084*** (0.000)	2.218*** (0.000)	None
Observations	4,654	65,323	65,323	60,803	65,129	4,165	21,551
Countries of ancestry	52	52	52	37	52	31	21

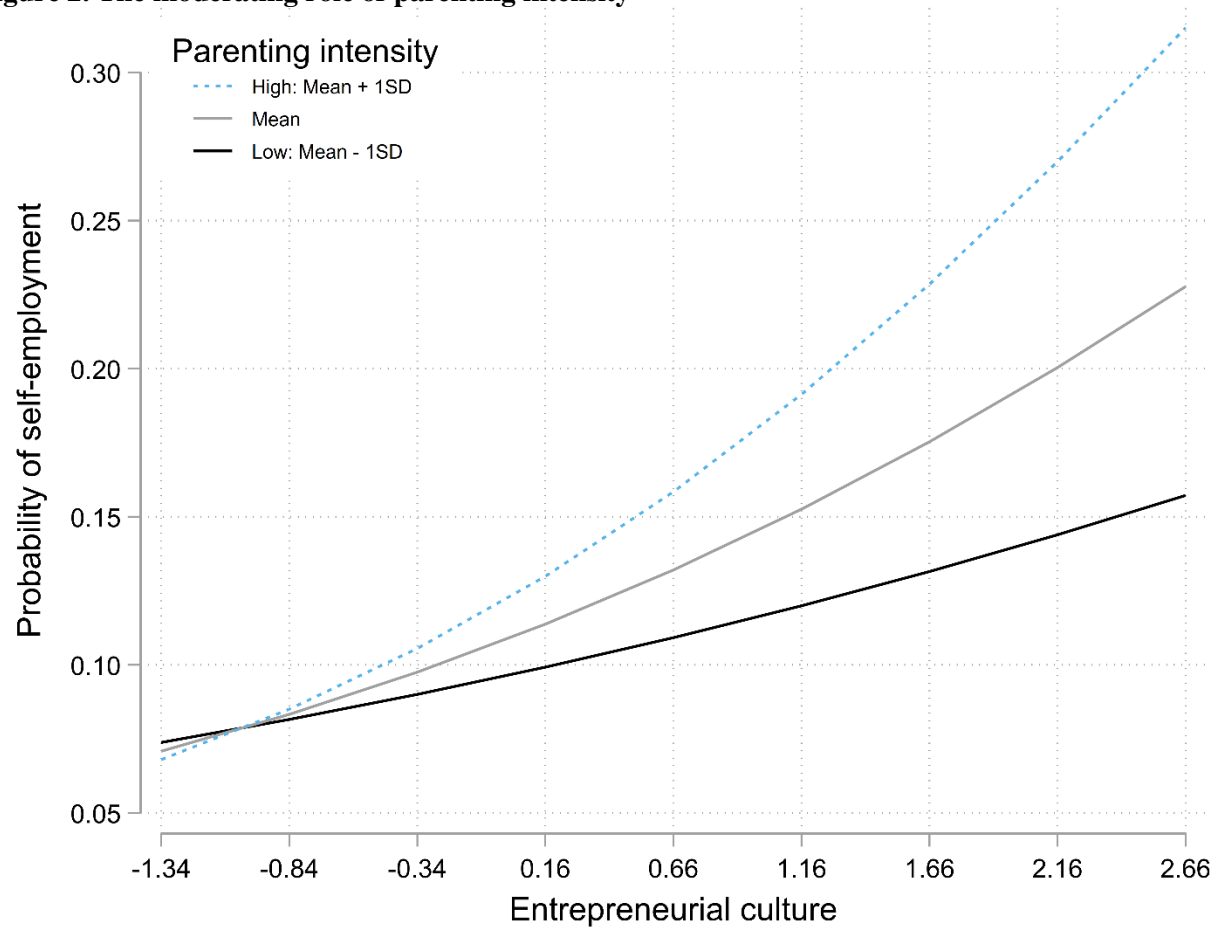
Note: The results are presented as odds ratios (except for Model 1 where we report a standardized beta coefficient), and *p*-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. All controls, the constant, and random terms were included and estimated but are not reported for brevity. Further details regarding the operationalization of the additional variables are presented in the Appendix. All models are estimated on our main sample, the U.S. sample, except for Model 5b which is based on the European Sample.

Table 6. The moderating role of parenting intensity (odds ratios and *p*-values)

	(1)
	Self-employment
Entrepreneurial culture	1.455***
	(0.000)
Parenting intensity	1.155**
	(0.017)
Entrepreneurial culture × parenting intensity	1.153**
	(0.015)
Observations	64,220
Countries of ancestry	47

Note: The results are presented as odds ratios, and *p*-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. All control variables, the constant, and the random terms were included in the estimation but are not reported for brevity. Predictor and moderator are z-standardized to facilitate the interpretation of the results.

Figure 2. The moderating role of parenting intensity



Note: Plotted is the predicted effect of entrepreneurial culture on individual-level self-employment for three different levels of parenting intensity (Mean–1SD; Mean; Mean+1SD) based on the findings shown in Table 6. All other covariates are held constant at their respective means. The predictor and moderator were z-standardized prior to estimating the moderated regression model on which this predicted probabilities plot is based.

ACKNOWLEDGEMENTS

The authors are grateful for the numerous valuable comments and suggestions of the editor and three anonymous reviewers. The authors would like to thank Saul Estrin, Juliette de Wit, Anita McGahan, Tomasz Mickiewicz, Paolo Santini, Christopher Schlägel, Ute Stephan, Božidar Vlačić, Theodor Vladasel, and Michael Wyrwich for valuable feedback on prior versions of this manuscript. The authors also appreciate the comments of participants at the Academy of Management Conference 2020, the Academy of International Business Conference 2022, the Babson College Entrepreneurship Research Conference 2021, the CREA Workshop on Culture and Comparative Development 2018, the European Public Choice Society Annual Meeting 2019, the European International Business Academy Conference 2019, the Oxford Residence Week for Entrepreneurship Scholars 2019, the Strategic Management Society Conference 2020, the Wharton Migration and Organizations Conference 2022, and seminar participants at Aston, Birmingham, Copenhagen, Groningen, Henley, Jönköping, Leuven, Linköping, Liverpool, Manchester, and Utrecht. The first author gratefully acknowledges the support of The University of Manchester where parts of this paper were written.

[1] To assess the applicability of our cultural argument to distinct types of entrepreneurship, we also distinguish between incorporated and unincorporated self-employment (Levine & Rubinstein, 2017) in section 5.1.

[2] In Section 5.2., we discuss various conditions under which this assumption may fail. We demonstrate that our results are robust to accounting for other factors that may be correlated with entrepreneurial culture and transmitted intergenerationally, but unrelated to culture.

[3] As we describe in section 3.5, we use entrepreneurship rates as a measure of country-of-ancestry-level entrepreneurial culture which we average over the period 1980 to 1993 to capture long-run trends. Because entrepreneurship was essentially non-existent during the communist era due to formal restrictions and since formerly planned economies experienced massive economic and institutional changes after the Perestroika (Estrin & Mickiewicz, 2011), there are serious doubts about whether self-employment rates observed over the period 1980 to 1993 would capture any long-run trends for these countries.

[4] In line with the OECD (2018) definition of entrepreneurship, unpaid family workers are classified as self-employed in our main sample. We note, though, that there are very few unpaid family workers –they constitute 0.07% of the total sample and 0.83% of the self-employed–. Excluding them from the analyses does not alter the results.

[5] We pool ILO and international census microdata to obtain data for as many countries of ancestry as possible. In the Appendix, we show that separately using either ILO data or the values obtained from international census microdata data produces similar results.

[6] In a robustness check, we also cross-validate our revealed preference approaches by using a stated preference measure of entrepreneurial culture that captures the country-of-ancestry share of individuals who state that they would rather be self-employed than wage-employed when prompted with the hypothetical choice.

[7] We assessed the robustness of our findings to using (1) probit multilevel models, (2) linear probability multilevel models, and (3) logit models with cluster-robust standard errors clustered at the country-of-ancestry level. We also replicated our results with (4) additive cross-classified multilevel models and (5) multiplicative cross-classified multilevel models using multilevel Markov Chain Monte Carlo models (Rasbash et al., 2012). These corroborate our results and are available upon request.

[8] The point estimates obtained based on these instrumental variable regressions are slightly larger than the point estimates shown in Table 2 and Table 3 Panel A. This pattern is commonly observed in the literature (e.g. Hegde & Tumlinson, 2014). Two-stage residual inclusion regressions (Wooldridge, 2015) corroborate these findings obtained using the two-stage least-squares approach. Furthermore, the first-stage results indicate that our main independent variable –entrepreneurial culture *in the country-of-ancestry*– is positively associated with both ancestral-group level differences in entrepreneurship propensities observed amongst second-generation immigrants *in the U.S.* ($\beta = .214$; $p = .013$; F-test = 7.3) and second-generation immigrants *in Europe* ($\beta = .219$; $p = .010$; F-test = 7.9). The first-stage F-statistics of 7.3 and 7.9 imply that the bias introduced by the instruments is at most 15-20% of the bias that would result in the non-instrumented case (Stock & Yogo, 2005). This is not very different from the bias under the 'rule of thumb' that the first-stage F-statistic should be 10 or higher, in which case the bias is at most 10-15% of that resulting from a non-instrumented regression, depending on whether one is concerned about the general bias of the IV estimator or the size distortion of the Wald-test (Stock & Yogo, 2005). In the Appendix, we present further details as well as a complementary instrumental variable regression that leverages the distinction between incorporated and unincorporated self-employment and produces an F-statistic of 18.98. This corroborates the findings presented here.

[9] We derive this measure by first estimating an earnings equation (OLS) for all second-generation immigrants which relates hourly income earned to our main controls, hours worked, industry fixed effects, self-employment status, country-of-ancestry fixed effects, and the interaction of self-employment status with country-of- ancestry fixed effects. These predicted interaction effects capture unexplained differences in returns between self-employment and wage-employment across ancestral groups which we use as an additional control variable.

[10] Studying the role of labor market frictions and discrimination is a difficult undertaking. We present several further robustness checks in the Appendix that complement the approach presented here (as well as one another). Amongst others, we show that accounting for race, religion, or individual-level self-reported discrimination does not alter our findings.

[11] The underlying data stem from the European Values Study and the World Values Survey, for further details see Appendix and Alesina and Giuliano (2014). In additional analyses presented in the Appendix, we also control for (i) household size, assuming that it is correlated with the structure of the extended family, (ii) the country-level percentage of informal investors who provide funds to close family members, and (iii) country-of-ancestry level differences in propensity for family financial support observed amongst immigrants in the U.S. These tests further support our main findings.

[12] We also tentatively assessed whether the effect of parental self-employment strengthens or weakens the relation between entrepreneurial culture and individuals' self-employment status by estimating the interaction parental self-employment × entrepreneurial culture. We found no evidence for a significant interaction, neither in the U.S. nor in the European sample. We moreover assessed whether entrepreneurial culture influences the self-employment choices of those second-generation immigrants whose parents were not self-employed and found this to be the case.

[13] Specifically, we use the item "Suppose you could choose between different kinds of jobs, which one would you prefer: being an employee or being self-employed".

Online Appendices for "Cultural Roots of Entrepreneurship: Evidence from second-generation immigrants"

Johannes Kleinhempel
Copenhagen Business School

Mariko J. Klasing
University of Groningen

Sjoerd Beugelsdijk
University of Groningen

—Contents—

—Appendix A: Data—

A1. Further information on the European sample

The European Social Survey (ESS) (ESS, 2020a, 2020b) has been used widely in entrepreneurship (Nikolaev et al., 2020; Noseleit, 2014; Tonoyan et al., 2020) and comparative cross-cultural research (Alesina & Giuliano, 2010; Luttmer & Singhal, 2011). The sample inclusion criteria and the control variables used in the ESS estimations are the same as in the Current Population Survey (CPS) and described in the main text. The variable descriptions and sources are Table A1. Ancestral-group-level human capital is calculated as the average years of schooling of immigrants who stem from the same country of origin and live in the same European country as the respective second-generation immigrant. This measure is based on all available ESS survey waves (2002–2018) and calculated using the ISCED classification following Barro and Lee (2013). The size of the ancestral network at the country-of-ancestry-by-country-of-residence level is constructed from United Nations population statistics (UN, 2017). We derive it by dividing the total immigrant stock from the respective country of ancestry residing in the country of residence by the total population of the country of residence. To account for differences in the economic, institutional, and cultural context second-generation immigrants are embedded in we control for country-of-residence fixed effects in all regressions. Just like in the U.S. case, we impose a threshold for the minimum number of observations per second-generation ancestry group. Given the substantially smaller sample size, we choose a threshold value of 10. We furthermore impose a threshold of at least 10 observations per country of residence (i.e. parental migration destinations). Following the rationale explained in the main text, we exclude countries of ancestry and birth countries that used to be planned economies. After imposing these conditions, we are left with 4,165 individuals of 31 countries of ancestry who live in 20 countries.

A2. Sample composition

The U.S. sample covers the following 52 countries of ancestry: Argentina, Australia, Austria, Bangladesh, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Malaysia, Mexico, Morocco, the Netherlands, New Zealand, Nicaragua, Norway, Panama, Peru, Portugal, South Korea, Spain, Sweden, Switzerland, Thailand, Trinidad & Tobago, Turkey, Uganda, United Kingdom, Uruguay, and Venezuela. In robustness checks reported below, we additionally include second-generation immigrants who stem from the former planned economies of the Czech Republic, Hungary, Poland, Romania, and Russia. In a further robustness check, we use supplementary information to include also India, Iran, Pakistan, the Philippines, Taiwan, and Vietnam.

The European sample covers the following 31 countries of ancestry: Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chile, Denmark, Egypt, Ethiopia, Finland, France, Germany, Greece, Indonesia, Ireland, Italy, Jamaica, Morocco, Netherlands, Norway, Portugal, Spain, Sri Lanka, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, and the United States of America.

A3. Description of main variables

Table A1. Main variables

Variable	Definition
Dependent variable	
Self-employment	Respondent is self-employed
Individual-level control variables	
Age	Respondents' age
Gender (men)	Respondents' gender (1 = men, 0 = women)
Education	Respondents' educational attainment, measured as years of schooling
Married	Respondents' marital status (1 = married, 0 = single)
Children in household	Children are living in respondents' household (1 = children are present, 0 = children are not present)
Group-level control variables	
GDP per capita country of ancestry	GDP per capita from Maddison Project, averaged over the period 1980–1993 (real GDP per capita in 2011US$) (Bolt et al., 2018). We use ln GDP in the estimations.
Institutional quality country of ancestry	Institutional quality (POLITY IV polity2 indicator), averaged over the period 1980–1993 (Marshall et al., 2017).
Human capital ancestral group	Average years of schooling of first-generation immigrants who were born in the individuals' country of ancestry and reside in the same U.S. state. We focus on individuals who were aged between 20–60 years in 1970 to proxy the parental cohort and use information for more than 1,500,000 first-generation immigrants covered in the U.S. Decennial Census and American Community Survey files (1960–2018) obtained from IPUMS USA (Ruggles et al., 2019). We convert the information on the educational attainment of 1,500,000 first-generation immigrants into average years of schooling by making appropriate assumptions about the years of schooling attained at different schooling levels similar to Barro and Lee (2013). In the European sample, this is operationalized as the average years of schooling of first-generation immigrants who were born in the individuals' country of ancestry and live in the individuals' country of birth, calculated based on ESS data (ESS, 2020a, 2020b) by making appropriate assumptions about the years of schooling attained at different schooling levels similar to Barro and Lee (2013).
Size of ancestral network	Contemporaneous share of individuals of who share the ancestry of second-generation immigrants and reside in the same state, constructed from U.S. Decennial Census and American Community Survey files (1990–2018) covering more than 54,000,000 observations, obtained from IPUMS USA (Ruggles et al., 2019). In the European sample, this is operationalized as the contemporaneous share of individuals who were born in second-generation immigrants' country of ancestry and reside in the same country, constructed from UN population statistics (UN, 2017), averaged over the period 1990–2017 (in %).
Group-level independent variables	
Entrepreneurial culture	Revealed cultural preferences for entrepreneurship: Self-employment rate in the country of ancestry, operationalized following the OECD (2018) definition of self-employment, based on data obtained from (1) the International Labour Organization (ILO, 2017) and (2) calculated based on international census microdata (IPUMS International, Minnesota Population Center 2018), which we average. To calculate self-employment rates based on international census microdata, we use the 'class of worker' question and focus on the active and working-age population (18–65). We average the ILO and IPUMS international census microdata measures to maximize country coverage over the period 1980–1993. We z-standardize the predictor for ease of interpretation.

A4. Correlation matrices

Table A2. Individual-level correlations American sample

		n	1	2	3	4	5	6
1	Self-employment	65,323	1.00					
2	Age	65,323	0.17*	1.00				
3	Gender (men)	65,323	0.08*	0.01	1.00			
4	Education	65,323	0.06*	0.16*	-0.05*	1.00		
5	Married	65,323	0.11*	0.37*	0.04*	0.11*	1.00	
6	Children in household	65,323	0.04*	0.15*	-0.07*	0.00	0.46*	1.00

Note: Correlations that are statistically significant at the 5% level or lower are indicated by *.

Table A3. Aggregate-level correlations American sample

		n	1	2	3	4	5
1	Entrepreneurial culture	52	1.00				
2	GDP per capita country of ancestry	52	-0.76*	1.00			
3	Institutional quality country of ancestry	52	-0.74*	0.68*	1.00		
4	Human capital ancestral group	1,860	-0.21*	0.20*	0.08*	1.00	
5	Size of ancestral network	1,860	-0.28*	0.28*	0.21*	-0.06*	1.00

Note: The number of observations varies to reflect the multi-level structure of the data. Rows and columns 4 and 5 are calculated based on the observations available at the country-of- ancestry-by-state level. Correlations that are statistically significant at the 5% level or lower are indicated by *.

Table A4. Individual-level correlations European sample

		n	1	2	3	4	5	6
1	Self-employment	4,165	1.00					
2	Age	4,165	0.14*	1.00				
3	Gender (men)	4,165	-0.05*	0.04*	1.00			
4	Education	4,165	0.04*	-0.01	0.03	1.00		
5	Married	4,165	0.07*	0.36*	0.03	0.03	1.00	
6	Children in household	4,165	0.07*	0.24*	0.11*	0.02	0.49*	1.00

Note: Correlations that are statistically significant at the 5% level or lower are indicated by *.

Table A5. Aggregate-level correlations European sample

		n	1	2	3	4	5
1	Entrepreneurial culture	31	1.00				
2	GDP per capita country of ancestry	31	-0.88*	1.00			
3	Institutional quality country of ancestry	31	-0.71*	0.82*	1.00		
4	Human capital ancestral group	225	-0.55*	0.46*	0.35*	1.00	
5	Size of ancestral network	225	0.02	0.01	0.05	-0.30*	1.00

Note: The number of observations varies to reflect the multi-level structure of the data. Rows and columns 4 and 5 are calculated based on the observations available at the country-of-ancestry-by-country-of-birth level. Correlations that are statistically significant at the 5% level or lower are indicated by *.

A5. Construction of additional variables

Table A6. Data appendix for additional variables

Variable	Calculation / Manipulation
Alternative dependent variables	
Incorporated self-employment	We compare incorporated self-employed to wage workers (while retaining unincorporated self-employed in the sample by using a multinomial logit model).
Unincorporated self-employment	We compare unincorporated self-employed to wage workers (while retaining incorporated self-employed in the sample by using a multinomial logit model).
Additional variables used to assess alternative explanations	
Hourly income from self-employment	Hourly income from self-employment is calculated by dividing the annual non-farm business income by the number of hours worked per week and 52 weeks.
Group-level differences in returns to entrepreneurship	Group-level differences in returns to entrepreneurship are captured as excess returns from self-employment. Using our main sample, we regress individuals' hourly income on our main individual-level controls, hours worked per week, state-, year-, industry-, and country-of-ancestry fixed effects, and the interaction of individuals' self-employment status with country-of-ancestry dummies. Group-level differences in returns to entrepreneurship correspond to the estimated coefficients on these interaction terms.
Group-level differences in resource holdings	Group-level differences in resource holdings are measured as the average ancestral-group-by-U.S.-state-level income from interest, dividends, and net rentals of first-generation immigrants. We construct this measure based on U.S. Decennial Census and American Community Survey data, obtained from IPUMS USA, covering the period 1990–2018 (Ruggles et al., 2019). We specifically use information on more than 2,800,000 first-generation immigrants aged between 25 and 65 who have been in the U.S. for at least 10 years. In those cases where the ancestral-group-US-state-level returns on assets are negative, we recode them as being 0.
Cultural strength of family ties	We measure the strength of family ties vas a cultural construct (Alesina et al., 2015; Alesina & Giuliano, 2010, 2014) in the countries of ancestry using the European Values Study and the World Values Survey (EVS, 2019; Haerpfer et al., 2021). We specifically use the three items capturing the importance of the family, emphasis on respect and love for parents, and parents' responsibility towards their children (Alesina & Giuliano, 2014). We focus on the responses of individuals who were aged between 20 and 60 in 1980 (resulting in more than 100,000 observations) to approximate the relevant age cohort and the prevailing values around the time the parents of second-generation immigrants migrated. We aggregate these individual-level responses to the country-level and use the first principal component thereof as a measure for the strength of family ties. The eigenvalue of this first component is 1.14; the Cronbach alpha score is 0.64.
Parental self-employment (proxy) & role modelling	We proxy for parental self-employment and capture broader role-modelling effects of co-ethnics (Hout & Rosen, 2000; Sørensen, 2007) by calculating the average self-employment rates of first-generation immigrants who were born in individuals' country of ancestry and reside in the same U.S. state. We use information for more than 440,000 first-generation immigrants aged 18 to 65 who have been in the U.S. for at least 10 years and are active in the labor force, sampled in the U.S. Decennial Census files 1960–1990 (Ruggles et al., 2019). The average is calculated at the ancestral-group-by-U.S.-state-level.
Parental self-employment	Using the European sample of second-generation immigrants (ESS, 2020a, 2020b), we control for parental self-employment (Lindquist et al., 2015) during respondents' formative years. We combine information from the questions: "When you were 14, did your father work as an employee, was she self-employed, or was she not working then" and "When you were 14, did your mother work as an employee, was he self-employed, or

	was he not working then". We code the (dichotomous) control as 1 for respondents whose father, mother, or both were self-employed, and at 0 otherwise.
Alternative independent variable: Stated preferences for entrepreneurship	We measure stated preferences for entrepreneurship using the representative cross-national Flash Eurobarometer Surveys #192, #283, and #354 (Eurobarometer, 2007, 2010, 2012; Kleinhempel et al., 2022). Specifically, we use the item "If you could choose between different kinds of jobs, would you prefer to be…? 1) An employee 2) Self-employed" (Grilo & Thurik, 2008) and we calculate the country-level share of individuals who would rather be self- than wage-employed.
Additional variable for post-hoc test	
Parenting intensity	We measure parenting intensity as ancestral-group-level differences in the time first-generation immigrant parents spent with their children on a given day by using detailed daily time use diaries obtained from the American Time Use Survey (ATUS 2003–2018) (Hofferth et al., 2020). Our focal measure captures how many minutes per day individuals spent caring for and helping their (household) children (ATUS activity codes 030100, 030200, and 030300). This includes, for example, how many minutes respondents spent on feeding, playing with, teaching, listening to, and reading to/with their children. We impose a lower threshold of at least 10 observations per ancestry and use the full sample of more than 8,500 first-generation immigrants that stem from the countries of origin in our main sample. We capture ancestral-group-level differences in parenting intensity as country-of-origin fixed effects, based on a Poisson regression, after controlling for: state-, year-, month-, and weekday fixed effects as well as a dummy for national holidays; number of children, number of children under 5 years, and dummies for the presence of children aged (a) under 1 year, (b) 1 to 2 years, (c) 3 to 5 years, (d) 6 to 12 years, and (e) 13 to 17 years. We also control for individuals' age, age-squared, gender, education, education-squared, employment status, employment-status-by-weekday, class of worker, family income, family income squared, presence of spouse or partner, spousal employment status, spousal employment-status-by-weekday, number of adults in the household, number siblings in the household, and the number of years since arrival in the U.S. (in 10-year intervals). These country-of-origin fixed effects are our measure of ancestral-group-level differences in parenting intensity.
Alternative independent variables for supplementary analyses	
Self-employment rates, unpaid family workers excluded	We apply a more restrictive definition of self-employment by excluding unpaid family workers when calculating country-of-ancestry self-employment rates. Data stem from the International Labour Organization (ILO, 2017) and international census microdata (Minnesota Population Center, 2018) and are averaged over the period 1980–1993.
Self-employment rates of men	Self-employment rates of men, based on International Labour Organization (ILO, 2017) data and international census microdata (Minnesota Population Center, 2018), averaged over the period 1980–1993.
Self-employment rates (ILO)	Self-employment rates, based on International Labour Organization (ILO, 2017), averaged over the period 1980–1993.
Self-employment rates (IPUMS)	Self-employment rates, based on international census microdata (IPUMS International, Minnesota Population Center 2018), averaged over the period 1980–1993.
Self-employment rates (IPUMS) – longer time frame	Self-employment rates, based on international census microdata (IPUMS International, Minnesota Population Center 2018), averaged over the period 1960–1993.
Alternative dependent variable for alternative sample & placebo check	
Civil servant	Dummy variable equal to 1 for individuals who work as civil servants and zero for all other individuals who are active in the labor force.

Alternative control variables for supplementary analyses (U.S. sample)	
Ethnicity	We use 20 (*N*-1) ethnicity fixed effects, for, amongst others, Asian, Black, Hispanic, and White, as reported in the Current Population Survey (cf. Clark and Drinkwater 1998, Fairlie and Meyer 2000, Robb and Fairlie 2007).
Ethnic clustering in neighborhoods	This measure reflects the probability that a second-generation immigrant of a given ancestry lives near other people of the same ancestry. Following Borjas (1995) and using data from the 1970 Census 1% Neighborhood File (Form 2), it is calculated as the average proportion of adult persons in the neighborhood who reside outside of the household of a given adult second-generation immigrant and who are of the same ethnicity as this immigrant.
Wealth/asset holdings	Wealth is proxied for by income from interest, dividends and net rentals (cf. Fairlie and Krashinsky 2012).
Household size	Size of the household as reported in CPS (cf. Ruef 2020).
Cultural family support I	Country-level percentage of informal investors who provide funds to close family members; data stem from the GEM 2015/2016 Report on Entrepreneurial Financing (Daniels et al., 2016) of the Global Entrepreneurship Monitor (see Reynolds et al. 2005; see also Korosteleva and Mickiewicz 2011, Nofsinger and Wang 2011). Using the percentage of informal investors who provide funds to close family members *or other relatives* instead yields similar results.
Cultural family support II	Country-of-ancestry level share of respondents who reply to the item "Suppose you needed to borrow a large sum of money. Who would you turn to first for help?" with "Mother" or "Father". The measure is generated based on General Social Survey data (Smith et al., 2018) covering the years 1972 to 2018. The sample used in deriving it are second- and higher-generation immigrants who indicated a foreign ancestry (see e.g. Fernández 2007).
Peer human capital 2nd-generation Americans	Average years of schooling of second-generation immigrants from the same country of ancestry who reside in the same U.S. state computed based on Current Population Survey data.
Religious denomination shares	Shares of the population that are of Catholic, Protestant, Orthodox, Jewish, Muslim, Hindu, Buddhist, Eastern, and other Christian denomination (Barro & McCleary, 2003).
War in the country of ancestry	We use the Correlates of War data on Intra-State Wars, Extra-State Wars, and Non-State Wars (Sarkees & Wayman, 2010) to generate a dummy that captures if a war took place between 1950 and 1993 in the country of ancestry.
Share of refugees	We divide the number of refugees from each country of origin in the U.S. by the number of immigrants from that country who live in the U.S. Refugee data (UNHCR, 2020) and immigration stock data (UN, 2017) are averaged over the period 1990–2017.
Share of family-related visas in 1980	We calculate the share of family-related visas in total visas issued in 1980 for each country of origin. Data stem from the United States Department of State (1985), Tables III and VIII.
Share of employment-related visas in 1980	We calculate the share of employment-related visas (Professional, Scientist, Artist of exceptional ability and workers in occupations that are in short supply) in total visas issued in 1980 for each country of origin. Data stem from the United States Department of State (1985), Tables III and VIII.
Cohort FEs	Decade fixed effects capturing the decade individuals were born in.
Continent FEs	Fixed effects for Africa, Asia, Latin America, Northern America, and Oceania (omitted reference category: Europe).
County FEs	384 (*N*-1) FIPS county code fixed effects.

Industry FEs	27 (*N*-1) industry fixed effects.
Occupation FEs	72 (*N*-1) occupation fixed effects.
Occupational prestige	Nakao and Treas (1989, 1994) occupational prestige scores obtained from IPUMS USA (Ruggles et al., 2019).
Genetic differences I: population-level genetic distance	Weighted genetic distance from the U.S. obtained from Spolaore and Wacziarg (2020).
Genetic differences II: frequency of $DRD4^{R2R7}$; 'novelty-seeking traits'	Country-of-ancestry level of novelty-seeking traits –DRD4 Exon III 2- and 7-Repeat Allele Frequency ($DRD4^{R2R7}$)– in the country of ancestry obtained from Gören (2017).
Socially supportive culture	We follow Stephan and Uhlaner (Stephan & Uhlaner, 2010) in calculating socially supportive culture using GLOBE data (House et al., 2004).
Legitimacy of entrepreneurship	We derive the legitimacy of entrepreneurship (Etzioni, 1987) using Global Entrepreneurship Monitor APS data (Reynolds et al. 2005; see also Amorós et al. 2013, Bosma 2013, Levie and Autio 2008) covering the period 2003–2017. We focus on individuals aged 20 to 60 in 1980 to approximate the relevant parental age cohort. We use the three standard items (1) desirability of entrepreneurship as career choice, (2) status of entrepreneurs in society, and (3) media attention to entrepreneurship (Bacq et al., 2016; Díez-Martín et al., 2016; Urbano & Alvarez, 2014). We calculate the country-level mean of these items and perform an ecological factor analysis that yields one latent factor with an eigenvalue larger than one (Cronbach alpha=0.61). The predicted ecological factor is our measure of the legitimacy of entrepreneurship.
Generalized trust	We derive generalized trust (Mickiewicz & Rebmann, 2020) by using WVS and EVS data (1984–2020) (EVS, 2019; Haerpfer et al., 2021) as standard in social capital research. Specifically, we aggregate the item "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people" to the country-level (Kim & Li, 2014; Knack & Keefer, 1997; Kwon et al., 2013; Kwon & Arenius, 2010). In calculating the origin-country averages, we focus on individuals aged 20 to 60 in 1980 to approximate the relevant parental age cohort.

Alternative control variables for supplementary analyses (European sample, based on ESS data)

Parental self-employment	Parental self-employment status (if either mother father or both were self-employed =1, otherwise = 0) (Dunn & Holtz-Eakin, 2000; Fairlie & Robb, 2007; Lindquist et al., 2015; Sørensen, 2007).
Parental human capital	Maximum of the years of schooling of each respondent's mother and father.
Religious denomination	Fixed effects for Roman Catholic, Protestant, Orthodox, Jewish, Islamic, Eastern religions, other non-Christian and other Christian denominations (omitted reference category: individuals without a religious denomination).
Social capital	Two measures are entered into the model: First, the response to the item "Using this card, how often do you meet socially with friends, relatives or work colleagues" which can be the following: 1) Never; 2) Less than once a month; 3) Once a month; 4) Several times a month; 5) Once a week 6) Several times a week 7) Every day. Second, we use the item "Compared to other people of your age, how often would you say you take part in social activities" to which respondents reply 1) Much less than most; 2) Less than most; 3) About the same; 4) More than most; 5) Much more than most. These two items capture related but distinct aspects of social capital, are positively but weakly correlated, do not load on one latent factor, and there are no multi-collinearity concerns after entering both jointly into the model. Hence, we include both simultaneously.

Risk-taking	Response to the question on whether a respondent looks for adventures, likes to take risks, and wants to have an exciting life (1 = Not like me at all, 6 = Very much like me) (Davis & Williamson, 2016; Mata et al., 2016).
Discrimination	1 if respondent describes herself as being a member of a group that is discriminated against in their country on grounds of 1) color or race, 2) nationality, 3) religion, 4) language, or 5) ethnic group; 0 otherwise.
Citizenship	1 if respondent is a citizen, 0 otherwise.
Region fixed effects	We follow Eurostat's Nomenclature of territorial units for statistics (Eurostat, 2015) and include sub-national region fixed effects at the NUTS1 level. For the Czech Republic, Denmark, Ireland, and Norway, we use NUTS2 fixed effects, and for Iceland NUTS3 fixed effects, because the NUTS1 breakdown is uninformative. No regional fixed effects are entered for Cyprus, Luxembourg, and Israel as no sub-national NUTS division is reported for these countries in the European Social Survey.
Locus of control	Response to the question of whether a respondent feels free to decide for him/herself how to live their life (1 = Disagree strongly, 5 = Agree strongly).
Achievement motivation	Response to the question of whether being very successful & recognized for achievements by people is important to the respondent (1 = Not like me at all, 6 = Very much like me).

—Appendix B: Further Robustness Tests—

B1. Alternative indicators of country-of-ancestry entrepreneurial culture

To corroborate our main findings, we use alternative independent variables. The results are shown in Table B1 in Panel A. First, we undertake two adjustments to our main predictor –self-employment rates in the country of ancestry– which is based on pooled data from ILOSTAT (ILO, 2017) and international census microdata (Minnesota Population Center, 2018). (1a) We use a more restrictive indicator of entrepreneurship rates in the country of ancestry that excludes unpaid family workers from the definition of entrepreneurship (correlation with main indicator = .98, $p < .000$). (1b) Because gender differences in entrepreneurship vary across countries, we construct an alternative measure that captures only the self-employment rates of men in the country of ancestry (correlation with main indicator = .99, $p < .000$). Second, because we use pooled ILOSTAT and international census microdata in our main estimations (correlated with each other = .91, $p < .000$) we reassess our results using predictors based solely on (2a) ILOSTAT data (ILO, 2017) or (2b) international census microdata (Minnesota Population Center, 2018). Third, we use the international census data (Minnesota Population Center, 2018) to construct longer-run average self-employment rates covering the period 1960 to 1993 (more than 56,000,000 observations; correlation with main indicator = .98, $p < .000$).[1] Using these alternative independent variables corroborates our main findings.

B2. Alternative samples

We re-estimate our main model using alternative samples (sub-samples and expanded samples). The results are presented in Table B1 in Panel B. (1) The financial crisis might have influenced our findings. Therefore,

[1] In this regression, the country-of-ancestry-level controls (ln) GDP per capita and institutional quality are adjusted to cover the same period for consistency, i.e., 1960-1993. This choice has no influence on our findings.

we exclude all individuals sampled after March 2007.[2] (2) Not all individuals may be able to decide freely which occupation to pursue. Hence, we focus only on individuals who hold at least a Bachelor's degree as arguably they have the most agency in making occupational choices.[3] (3) Given the large share of Mexicans in the U.S. –and hence in our sample– we exclude all individuals whose parents stem from Mexico.[4] (4) We focus only on those individuals whose mother and father stem from the same country of ancestry. (5) We focus on the ancestry of individual's mother. (6) We expand the sample coverage by retaining former planned economies (which we excluded in the main estimations) while controlling for a planned economy dummy. (7) India, Iran, Pakistan, the Philippines, and Taiwan constitute important origin-countries in U.S. immigration, but no information on self-employment rates between 1980 and 1993 is available from the ILO or international census microdata. Therefore, we use the earliest available values of India (1994), Iran (1996), Pakistan (1995), the Philippines (1995), Taiwan (1994), and Vietnam (1996) to expand the sample coverage. (8) Using our baseline sample, we have shown that our results are robust to using a stated preference measure of entrepreneurial culture. We re-estimate this model on the largest possible sample for which we have this stated preference measure (expanding coverage from 21 to 32 countries, including China, another important origin-country in U.S. immigration).[5] These changes support our main findings.

Alternatively, we also assess whether our measure of entrepreneurial culture can predict another kind of occupational choice, namely being in the civil service. Being a civil servant or an entrepreneur are both occupational decisions that are associated with patience, hard work, and conscientiousness. However, they are likely associated with different motivational drivers. With this in mind, we replace our dependent variable with an indicator for whether the respondents are civil servants as an alternative dependent variable. If the estimated effect of entrepreneurial culture in our baseline model simply reflects the effect of cultural dispositions associated with things like patience and hard work as opposed to a true preference for entrepreneurship, we would expect our independent variable, entrepreneurial culture in the country of ancestry, to also predict the likelihood of being employed in the civil service. The results shown in Model 9 indicate no evidence for an association between entrepreneurial culture and the likelihood of second-generation immigrants being civil servants. This suggests that the effect of culture we observe in the main regressions is driven, at least partially, by entrepreneurial dispositions.

[2] For completeness, we also re-estimated the model on the post-crisis 2010–2018 sample which also supports our findings.

[3] By focusing on this sub-sample, we also further reduce the potential concern that we are only picking up necessity-driven entrepreneurship.

[4] To check for influential observations, we furthermore excluded each country-of-ancestry one by one and re-estimated our main model 52 times. These regressions corroborate our main findings: Entrepreneurial culture is positively and significantly associated with individuals' self-employment status in all subsamples. We repeated this exercise using our European sample, again excluding countries of ancestry one by one, which also supports our findings. Moreover, having imposed a threshold of at least 25 observations per ancestry group in the main sample (note that the median number of observations per ancestry group is 309), we also checked for the sensitivity of shifting the ancestral-group level threshold up to 50, 100, 250, and 500 individuals per ancestry group. Our results are unaffected by these changes.

[5] The expanded sample includes Austria, Belgium, Brazil, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, South Korea, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

B3. Additional control variables

To further probe the robustness of our findings, we include additional control variables.[6] The results are presented in Table B1 in Panels C and D. In Panel C, (1) we account for the fact that it may be more difficult for some individuals to become self-employed by controlling for individuals' ethnicity using the information on race reported in the CPS and including 20 dummy variables for, amongst others, Asian, Black, Hispanic, and White. This way, our analysis only exploits variation within ethnic groups. (2) We control for ancestral-group residential patterns since residential patterns and co-location may have important consequences for (ethnic) demand, resource mobilization, and the chances of scaling up the venture as well as the chances of serving 'mainstream' markets. (3) Given the importance of personal wealth for starting a venture, we control for wealth, proxied for by income from interest, dividends, and net rentals. (4) To capture financial support provided to potential entrepreneurs by close family members, we (a) control for household size, assuming that it is correlated with the structure of the extended family, and we additionally include two measures of family support: (b) the propensity of informal investors in each country of ancestry to provide funds to close family members and (c) the share of immigrants of a given ancestry who would turn first to close family members when in need of borrowing money. (5) Because there may be human capital externalities from peers, we include peer human capital, measured as the average years of schooling of second-generation Americans of the same ancestry living in the same state, as a control variable. (6) To capture religious influences, we control for the population shares in the countries of ancestry that are of Catholic, Protestant, Orthodox, Jewish, Muslim, Hindu, Buddhist, Eastern, and other Christian denomination, respectively. (7) To capture heterogeneity in the prevailing conditions in the country of ancestry that may influence who migrates and when, we control for a dummy variable for whether a war took place in the country of ancestry between 1950 and 1993. We complement this by accounting for (8a) the share of refugees in the immigrant stock in the U.S., (8b) the share of family-related visas issued to applicants from a given country, and (8c) the share of employment-related visas issued to applicants from a given country.

In Panel D, we include various kinds of fixed effects along with controls for other ancestry and cultural variables that are potentially relevant for entrepreneurship but do not capture entrepreneurial dispositions per se. (1) We include cohort fixed effects (decade dummies) to account for changes in the composition of immigrants over time. (2) To capture time-varying state-specific characteristics, we add state-by-year fixed effects. (3) We control for continent fixed effects to account for variation in the pool of immigrants between regions of ancestry. (4) To capture variation in local conditions (e.g. resources, demand, supply, industrial structure), we control for county fixed effects. (5a) To capture the systematic variation in entrepreneurship rates across industries and occupations we control for industry and occupation fixed effects. As an alternative, in column (5b) we account for occupational heterogeneity by controlling for occupational prestige scores. Moreover, our findings could potentially pick up genetic effects rather than cultural effects.[7] To address this, (6a) we include the genetic distance between the country of ancestry and the U.S. as an additional control and (6b) we control for the country-of ancestry-level frequency of genetic novelty-seeking

[6] These additional checks are motivated by extant research in immigrant entrepreneurship research (for reviews, see Aldrich and Waldinger 1990, Dabić et al. 2020, Dheer 2018, Fairlie and Lofstrom 2015, Kerr and Kerr 2017, Parker 2018, Sinkovics and Reuber 2021, Zhou 2004).

[7] Individual-level variation in genetic makeup has been associated with individual-level variation in preferences and behaviors (Cesarini et al., 2009), including entrepreneurial characteristics and actions (Lindquist et al., 2015; Nicolaou et al., 2008; Vladasel et al., 2021). We consider it highly unlikely that genetic variation is driving our results because –to the best of our knowledge–, there are no findings that link the genetic makeup of *populations* to entrepreneurship: all existing studies advance *individual*-level evidence. While we reject the population-level genetic explanation on conceptual grounds, we nevertheless also seek to rule it out empirically.

traits DRD4 Exon III 2- and 7-Repeat Allele ($DRD4^{R2R7}$) which have been associated with innovation and entrepreneurship (Galor & Michalopoulos, 2012). Finally, in columns (6) to (8), we control for other country-of-ancestry cultural characteristics that may influence entrepreneurial activity but do not capture in a strict sense entrepreneurial dispositions. Specifically, we control for socially supportive culture, the legitimacy of entrepreneurship, as well as the level of generalized trust. These tests further support our main findings.

B4. Additional control variables not available in the American sample

Some potentially relevant additional control variables are not available in the American sample. This motivates our choice to conduct additional robustness checks using the European sample. The results are shown in Panel E. (1) We control for parental human capital to capture parent-child linkages driven by transmission of human capital rather than values and preferences. We include this variable in addition to the indicator variables for parental self-employment that we already presented in the main manuscript. (2) We control for individuals' religious denomination by including fixed effects for Roman Catholic, Protestant, Eastern Orthodox, Jewish, Islamic, Eastern religions, other non-Christian and other Christian denominations (reference group: individuals without a religious denomination). (3) We include two proxies for weak-tie social capital. The first proxy captures how often the respondents meet socially with friends, relatives, or colleagues; the second one reflects how often they take part in social activities compared to others in their age group. (4) We use a proxy for individuals' level of risk-taking. The measure is based on how important it is for individuals to seek adventures and have an exciting life. Though endogenous to culture, this allows us to test for the presence of cultural effects even after accounting for a partially culturally-shaped individual trait that has been emphasized in entrepreneurship research. (5) We control for whether the respondent is discriminated by taking the sum of whether respondents are discriminated because of their (i) group memberships, (ii) ethnic group, (iii) language, (iv) religion, (v) nationality, and (vi) color or race.[8] (6) Since in many European countries second-generation immigrants do not automatically obtain the citizenship of their birth country, which in turn may influence the odds of becoming self-employed, we include a dummy for being a citizen. (7) We control for the potential role of sub-national heterogeneity by including region fixed effects. None of these additional control variables alters our main results.

To corroborate our argument that the estimated effect for country-of-ancestry entrepreneurial culture captures the effect of intergenerationally transmitted cultural dispositions for entrepreneurship, we tentatively probe whether our predictor is correlated with second-generation immigrants' preferences for risk-taking, locus of control, and achievement motivation, i.e. characteristics that have been highlighted as influential in the entrepreneurship literature (Kerr et al., 2019; Kihlstrom & Laffont, 1979; McClelland, 1961; Rauch & Frese, 2007b). We find that country-of-ancestry entrepreneurial culture is positively associated with risk-taking and achievement motivation, but not with locus of control. This shows that country-of-ancestry entrepreneurial culture is indeed related to individuals' values and preferences.

[8] We also constructed a measure at the ancestral-group-level by taking the average discrimination scores by country of ancestry and using this alternative measure. We moreover included all dummies jointly. Results remained unaffected.

Table B1. Robustness checks

Panel A: Alternative indicators	Alternative independent variables based on both ILO and IMPUS		Alternative ivariables from ILO and IPUMS separately		Alternative independent variable: Longer time frame IMPUS
	(1a)	(1b)	(2a)	(2b)	(3)
	Self-employment rates, unpaid family workers excluded	Self-employment rates of men	Self-employment rates ILO	Self-employment rates IPUMS	Past self-employment rates (IPUMS, 1960-1993)
	SE	SE	SE	SE	SE
Alternative measures of entrepreneurial culture	1.387***	1.266**	1.365***	1.364***	1.386***
	(0.008)	(0.028)	(0.000)	(0.007)	(0.004)
Observations	65,323	65,323	63,884	55,967	57,002
Countries of ancestry	52	52	42	40	42

Panel B: Alternative samples	Sub-sample estimations					Expanded samples			Placebo test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pre-crisis sample (1994-2007)	Individuals with at least a Bachelor's degree	Excluding Mexican ancestry	Two parents of the same ancestry	Mothers' country of ancestry	Including former planned economies	Including former planned economies, India, Iran, Pakistan, the Philippines, Taiwan, and Vietnam	Including former planned economies, using stated preference measure of entrepreneurial culture	Predicting a different occupational choice
	SE	SE	SE	SE	SE	SE	SE	SE	Civil servant
Entrepreneurial culture	1.306**	1.500***	1.426***	1.735***	1.498***	1.364***	1.377***	1.142**	0.939
	(0.042)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.036)	(0.323)
Observations	32,082	19,716	37,185	36,496	67,398	69,346	76,833	29,935	65,323
Countries of ancestry	51	52	51	52	52	57	63	32	52

Panel C: Additional control variables	(1)	(2)	(3)	(4a)	(4b)	(4c)	(5)	(6)	(7)	(8a)	(8b)	(8c)
	Ethnicity	Ethnic clustering in neighborhoods	Wealth / Asset holdings	Household size	Informal investors' family investment propensity	Immigrants' propensity to borrow from family	Peer human capital	Religious denomination	War in country of ancestry	Share of refugees	Share of family-related visa	Share of employment-related visa
	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Entrepreneurial culture	1.377***	1.557***	1.382***	1.380***	1.402***	1.466**	1.390***	1.214**	1.399***	1.401***	1.534***	1.487***
	(0.002)	(0.000)	(0.001)	(0.001)	(0.006)	(0.026)	(0.001)	(0.042)	(0.001)	(0.001)	(0.000)	(0.000)
Observations	65,283	64,685	64,909	65,323	57,194	51,186	65,323	65,323	65,323	64,899	32,155	32,155
Countries of ancestry	52	44	52	52	32	14	52	52	52	51	43	43

Panel D: Additional control variables	(1)	(2)	(3)	(4)	(5a)	(5b)	(6a)	(6b)	(7)	(8)	(9)
	Cohort fixed effects (decades)	State-by-year fixed effects	Continent fixed effects	County fixed effects	Industry and occupation fixed effects	Occupational prestige	Population-level genetic distance	Frequency of $DRD4^{R2R7}$ ('novelty-seeking traits')	Socially supportive culture	Legitimacy of entrepreneurship	Generalized trust
	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Entrepreneurial culture	1.388***	1.415***	1.202*	1.394**	1.324***	1.383***	1.401***	1.378***	1.276***	1.368***	1.345***
	(0.001)	(0.001)	(0.053)	(0.030)	(0.002)	(0.001)	(0.000)	(0.001)	(0.005)	(0.003)	(0.006)
Observations	65,287	63,078	65,323	33,591	61,039	65,323	61,204	65,323	59,884	64,096	63,277
Countries of ancestry	52	52	52	52	52	52	49	52	36	49	47

Panel E: Additional variables available only for European sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Parental SE & HC	Religious denomination	Social capital	Risk-taking	Discrimination	Citizenship	Region fixed effects	Alternative dependent variables *(beta coefficients)*		
	SE	SE	SE	SE	SE	SE	SE	Risk-taking	Locus of control	Achievement motivation
Entrepreneurial culture	1.566***	1.538***	1.567***	1.567***	1.559***	1.548***	1.587***	0.066*	0.077	0.097**
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.066)	(0.276)	(0.031)
Observations	3,919	4,113	4,068	4,057	4,165	4,165	4,066	4,057	1,052	4,060
Countries of ancestry	31	31	31	31	31	31	31	31	31	31

Note: The results are presented as odds ratios, and p-values are presented in parentheses; *** p < .01, ** p < .05, * p < .1; two-tailed test. All controls, random terms, and the constant were estimated but are not reported for brevity. Further details regarding the operationalization of the additional variables are presented in Table A6.

—Appendix C: Further instrumental variable estimations—

C1. First-stage regression results of main instrumental variable estimations

In the main manuscript, we use instrumental variable (2SLS) regressions to tie the reasoning leading to H1a and H1b conceptually and empirically together. The first-stage regressions results, corresponding to the second-stage IV estimates shown in Table 3 in the manuscript, are reported below in Table C1.

Table C1. First-stage regression results of main instrumental variable estimation

	(1)	(2)
	First-stage IV regression U.S. sample (IV generated using the European sample)	First-stage IV regression European sample (IV generated using the U.S. sample)
	Self-employment rate in country-of-ancestry	Self-employment rate in country-of-ancestry
Entrepreneurial culture: Observed amongst second-generation immigrants in Europe ('hypothetical cousins')	0.214**	
	(0.013)	
Entrepreneurial culture: Observed amongst second-generation immigrants the U.S. ('hypothetical cousins')		0.219***
		(0.010)
Observations	28	28
R-squared	0.851	0.855
F-test	7.282 (0.013)	7.882 (0.01)

Note: The results are presented as β-coefficients and p-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. We adjust for the country-level controls used in the main estimations, (ln) GDP per capita and institutional quality.

C2. Alternative instrumental variable estimation

As the table above reveals, the first-stage F-statistics of the instrumental variable regressions are slightly below the conventionally accepted cut-off of 10 suggested by Staiger and Stock (Staiger & Stock, 1997). While a closer inspection of the Stock and Yogo (2005) critical values reveals that the bias resulting under these F-statistics is at most 15-20% of the bias of the non-instrumented coefficient –not much higher than the at most 10-15% bias (relative to OLS) that would result under the conventionally used threshold, i.e. F-statistic of 10– we address potential concerns related to the strength of the instruments by creating an alternative variant of our original instrument.

Specifically, we leverage the distinction between incorporated and unincorporated self-employment (see also Section 5.1 in the manuscript). People in incorporated self-employment are on average better educated and have better outside options in the labor market than the unincorporated, while unincorporated self-employment may partially be driven by necessity (Levine & Rubinstein, 2017). Incorporated self-employment is commonly associated with being driven by individuals' active choices while unincorporated self-employment may be partially driven by necessity, in which case individuals' culturally-rooted dispositions are less relevant (Parker, 2018). Hence, individuals' choices regarding incorporated self-employment are more likely to reflect a 'true preference' for entrepreneurship than a choice for unincorporated self-employment. Given this, ancestral-group-level variation in incorporated self-employment may serve as an alternative measure of revealed preferences for entrepreneurship observed amongst second-generation immigrants.

With this in mind, instead of estimating country-of-ancestry fixed effects on second-generation immigrant self-employment and using these estimated country fixed effects as an instrument, we use the U.S. sample to predict country-of-ancestry fixed effects on second-generation immigrant *incorporated* self-employment. Since the distinction between incorporated and unincorporated self-employment is only available

in the U.S. sample, we use the estimated fixed effects as an alternative measure in the reduced form and as an alternative instrument when estimating the relation between entrepreneurial culture self-employment using our European sample.

The first-stage (OLS) results shown in Table C2 below indicate that we obtain a much higher F-statistic of 18.98 that greatly exceeds the commonly accepted threshold value of 10. We also see in Table C3 that both the reduced-form results as well as the 2SLS second-stage results confirm the previous results of a positive association between country-of-ancestry entrepreneurial culture and the likelihood that second-generation immigrants are self-employed which we documented in the main manuscript. These findings make us confident that the main instrumental variable regressions presented in the manuscript are not driven merely by a relatively weak first-stage F-statistic.

Table C2. First-stage regression results of alternative instrumental variable estimation

	(1)
	First-stage IV regression European sample (IV generated using the U.S. sample)
	Self-employment rate in country-of-ancestry
Entrepreneurial culture: Observed amongst second-generation immigrants the U.S. ('hypothetical cousins') - alternative instrument based on *incorporated self-employment*	0.312*** (0.000)
Observations	27
R-squared	0.895
F-test	18.98 (0.000)

Note: The results are presented as β-coefficients and p-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. We adjust for the country-level controls used in the main estimations, (ln) GDP per capita and institutional quality. The country-coverage is smaller here than in the main approach presented in Table 3 of the manuscript –27 rather than previously 28 countries of ancestry– because one country, Bangladesh, yielded perfect predictions in the logit model used to derive the alterative measure of entrepreneurial culture and hence was dropped from the estimations when predicting the country fixed effects. We checked whether it is this reduction in sample size that drives the higher F-statistics and found this not to be the case: when using the main instrument on the 27-country sample, we obtained an F-statistic of 6.47. This leads us to conclude that the higher F-statistic presented here is driven by the alternative measure rather than the smaller sample size.

Table C3. Second-stage regression results of alternative instrumental variable estimations

	(1)
	European sample
	Self-employment
Panel A: Reduced form approach	
Entrepreneurial culture: Observed amongst second-generation immigrants the U.S. ('hypothetical cousins') - alternative measure based on *incorporated* self-employment	1.174** (0.020)
Panel B: Two-staged approach (2SLS)	
Entrepreneurial culture (instrumented)	1.626** (0.020)
F-test of first-stage regression	18.98 (0.000)
Observations	3,871
Countries of ancestry	27

Note: The results are presented as odds ratios, and p-values are presented in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; two-tailed tests. All control variables, the constant, and random terms were included in the estimation but are not reported for brevity. In Panel A we report the reduced form estimations relating ancestral-group-level differences in *incorporated* entrepreneurship observed among second-generation immigrants in the U.S. to the likelihood that second-generation immigrants in Europe are self-employed. In Panel B, we employ two-stage least squares instrumental variable regressions and we use ancestral-group-level differences in *incorporated* entrepreneurship observed amongst second-generation immigrants in the U.S. as our instrument for entrepreneurial culture.

—Appendix D: Emigrant Selection—

D1. Introduction

In our analysis of the impact of culture on entrepreneurship, we study the relationship between entrepreneurial culture observed in a set of countries and the self-employment status of second-generation immigrants born in the U.S. (or Europe) whose parents stem from these countries. The underlying idea is that the parents of our sample of second-generation immigrants took the entrepreneurial dispositions of their origin-countries with them when they emigrated to the U.S. (or Europe) and later passed them on to their children. Thus, the idea motivating our analysis is that entrepreneurial culture is potentially portable, durable, and intergenerationally transmittable, such that the observed entrepreneurial culture in a given country will be related positively to the entrepreneurial dispositions of second-generation immigrants from this country. If this is the case, the estimated coefficient between country-of-ancestry entrepreneurial culture and the self-employment status of second-generations immigrants from these countries reflects the impact of culture on entrepreneurship. However, it is possible that the parents of our sample of second-generation immigrants do not have cultural dispositions that are fully representative of the culture of their origin-country. That is, emigrants may be a selected group of people, not a random draw from the country's population (Borjas, 2014). Specifically, if emigrants are selected on entrepreneurial dispositions (Fairlie & Lofstrom, 2015; Jaeger et al., 2010; Kerr & Kerr, 2020), the estimated coefficient between entrepreneurial culture in the country of ancestry and the self-employment status of second-generations immigrants from these countries may be biased and may not reflect the 'true' impact of culture on entrepreneurship.

Prior research has not addressed whether emigrants are selected on entrepreneurial dispositions, and, critically, whether the extent of this selection differs across countries. This makes it difficult to gauge whether (cross-country differences in) selection on entrepreneurial dispositions pose a plausible concern for our estimates. It has been established that *immigrants* are more entrepreneurial than the native population in the *country of migration destination* (Dabić et al., 2020; Dheer, 2018; Fairlie & Lofstrom, 2015; Kerr & Kerr, 2017, 2020; Sinkovics & Reuber, 2021). It has also been established that *emigrants* differ from non-migrant compatriots in the *country of origin,* for example in risk attitudes (Jaeger et al., 2010) that are also relevant for entrepreneurship (Kihlstrom & Laffont, 1979). However, little is known about whether and how selection into emigration on entrepreneurial characteristics differs across origin-countries. This question is not a focal area neither in migration research (e.g. Borjas, 1987, 2014; Chiswick, 1978, 1999) nor in cultural economics (Alesina & Giuliano, 2010; Fernández, 2011) which has typically argued on conceptual grounds that selection into emigration will tend to bias the results toward not finding an effect. We are not aware of any studies that have empirically assessed if and to what extent movers are different from stayers in terms of their cultural disposition for a large number of countries, neither in general nor specifically in the context of selection into emigration on entrepreneurial dispositions, and *how these differ across countries.* Research that examines *cross-country variation* in selection into emigration on entrepreneurial dispositions is scant.

In this appendix, we will therefore address two questions: (1) whether and how emigrants ("movers") differ from the non-migrating native population in the country of origin ("stayers") in terms of entrepreneurial dispositions, and (2) if, and to what extent, these differences in entrepreneurial dispositions would affect the estimated relationship between country-of-ancestry entrepreneurial culture and second-generation immigrants' self-employment choices. To address these questions, we undertake the following complementary steps:

A. *Conceptual considerations – five scenarios*: First, we present an overview of the conceptually conceivable cases under which emigrants could differ from their non-migrating compatriots. We briefly introduced three scenarios in the main manuscript, which we expand upon here, and we complement these with two additional scenarios. For illustration, and to motivate the subsequent analyses, we use conceptual scatterplots to relate the average values of emigrants to the average values of stayers.
B. *Aggregate-level analyses*: Based on the preceding conceptual discussion of the different scenarios for cross-country-differences in selection into emigration on entrepreneurial dispositions, we conduct a stylized aggregate-level analysis which relates the average dispositions of emigrants and stayers to one another by using aggregated European Social Survey data.
C. *Individual-level analyses*: We perform multilevel analyses that allow us to formally test for patterns of selection into emigration on entrepreneurial dispositions and cross-country differences in selection into emigration.

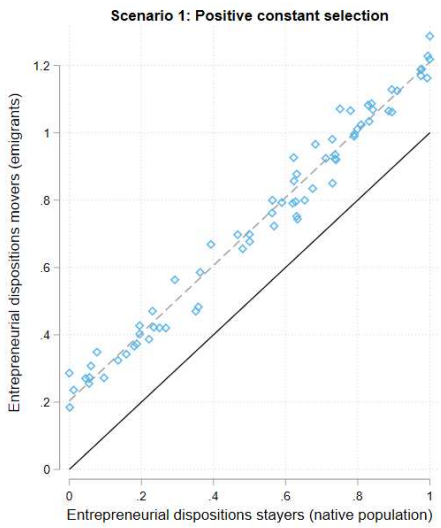
D2. Conceptual considerations – five scenarios

In this section, we discuss five possible scenarios of cross-country differences in emigrant selection:

(1) *Positive constant selection*: Emigrants' ("movers") are, on average, more entrepreneurial than non-migrating compatriots ("stayers"), but the extent of deviation is the same for all countries.
(2) *Positive decreasing selection*: Movers from highly entrepreneurial countries are similar to stayers on average, movers from non-entrepreneurial countries are more entrepreneurial than stayers.
(3) *Positive increasing selection*: Movers from highly entrepreneurial countries are more entrepreneurial than stayers on average, movers from non-entrepreneurial countries are similar to stayers.
(4) *No selection*: Movers and stayers hold, on average, the same dispositions.
(5) *Random*: There is no relation between movers' and stayers' average entrepreneurial dispositions across countries.

We visualize these scenarios by plotting the (country-level) average entrepreneurial dispositions of stayers against the (origin-level) average entrepreneurial dispositions of movers. Beyond describing for each case the relation between movers' and stayers' entrepreneurial dispositions, we also discuss how these patterns would affect our hypotheses tests, that is, the estimated relationship between country-of-ancestry entrepreneurial culture and the likelihood of second-generation immigrants being self-employed. We particularly focus our discussion on whether there are systematic cross-country differences in emigrant selection patterns and if these are of the kind that would lead to a deviation of the estimated effect of country-of-ancestry entrepreneurial culture on the likelihood of second-generation immigrants' self-employment from the effect of entrepreneurial culture that would result if immigrants were perfectly representative of their country-of-ancestry in terms of their entrepreneurial dispositions. In this case of no selection, the entrepreneurial culture of immigrants would be identical to the entrepreneurial culture observed in their countries-of-ancestry and hence the estimated relation between country-of-ancestry entrepreneurial culture and the likelihood of second-generation immigrants being self-employed would indicate the 'true' unbiased effect of entrepreneurial culture. In line with extant research documenting positive selection effects (e.g. Jaeger et al., 2010), our first three scenarios describe different patterns of positive emigrant selection. However, the ramifications of these scenarios for our main estimates would be identical under negative selection, as we further explain below. In what follows, to keep the text more compact, we drop the term 'entrepreneurial' and refer simply to dispositions and culture. We also refer to second-generation immigrants' self-employment status simply as 'outcomes'.

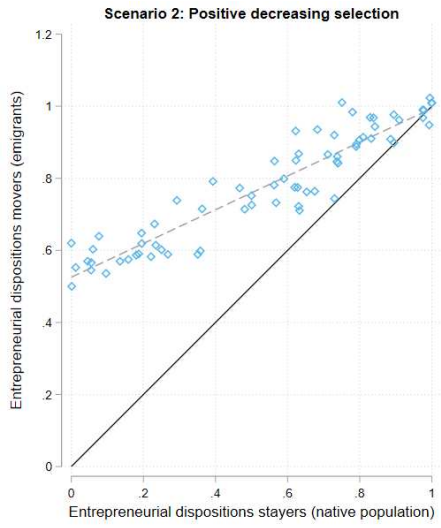
Scenario 1: Positive constant selection – movers are more entrepreneurial than stayers and the extent of deviation is the same for all countries



Pattern of selection: In the case of positive constant selection, movers are, on average, more entrepreneurial than stayers from the same country, but the difference between movers' and stayers' dispositions is the same across origin-countries. Therefore, the estimated relationship between average movers' ($\tilde{C}_c$) and stayers' (C_c) dispositions has a positive intercept and a slope of 1.

Implication for hypotheses tests in manuscript: Since selection is constant, the variation in emigrants' dispositions will be equal to the variation in stayers' dispositions. Hence, the regression coefficient linking country-of-ancestry culture to second-generation immigrants' outcomes will be unbiased; i.e. there is an "intercept effect" or "shifter", but not a "slope effect". Formally: The 'true' coefficient β reflects the relationship between second-generation immigrants' culture and their outcomes. It comes from a regression $Y_{ic} = \alpha + \beta\tilde{C}_c + \epsilon_{ic}$. $\tilde{C}_c$ are the cultural dispositions of emigrants. C_c is the observed culture in the country of origin. Here we have $\tilde{C}_c = C_c + \mu + \nu_c$ where μ is the average deviation of movers' dispositions from those of stayers and ν_c is an error term. Thus, what we estimate is $Y_{ic} = \alpha + \beta C_c + \beta\mu + \beta\nu_c + \epsilon_{ic}$. The estimated coefficient for C_c is the same as the 'true' coefficient, and hence it is unbiased. Note that the same conclusion would hold true if movers were on average less entrepreneurial than stayers, i.e. in the case of negative constant selection.

Scenario 2: Positive decreasing selection – the extent of positive selection on entrepreneurial characteristics decreases in the level of country-of-origin entrepreneurial culture

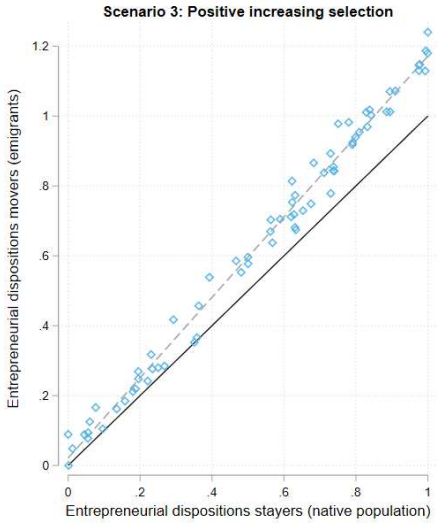


Pattern of selection: In the case of positive decreasing selection, movers are, on average, more entrepreneurial than stayers from the same country, yet the difference between movers' and stayers' dispositions differs across origin-countries. Specifically, the higher the level of entrepreneurial culture in the origin-country, the smaller the extent of positive selection of emigrants on entrepreneurial dispositions. This implies that the estimated relationship between average stayers' (C_c) and emigrants' ($\tilde{C}_c$) dispositions has a slope smaller than 1.

Implication for hypotheses tests in manuscript: Because movers from highly entrepreneurial countries are as entrepreneurial as stayers, and movers from the least entrepreneurial countries more entrepreneurial than stayers, the between-country variation in the average dispositions of emigrants will be smaller than the between-country variation in the average dispositions observed among stayers. The regression coefficient linking second-generation immigrants' outcomes to country-of-ancestry culture will therefore be smaller than the

'true' coefficient that would result if we used movers' average dispositions instead. That is, the coefficient of interest is underestimated. Formally: The 'true' coefficient β comes from a regression $Y_{ic} = \alpha + \beta\tilde{C}_c + \varepsilon_{ic}$. $\tilde{C}_c$ is the culture of emigrants. C_c is the observed culture in the country of origin. Here we have $\tilde{C}_c = \mu + \rho C_c + \nu_c$, with $\rho < 1$. Thus, what we estimate is $Y_{ic} = \alpha + \beta\mu + (\beta\rho)C_c + \beta\nu_c + \varepsilon_{ic}$. The estimated coefficient $\beta\rho$ is smaller than the 'true' coefficient β, hence we underestimate the relationship between culture and entrepreneurship.

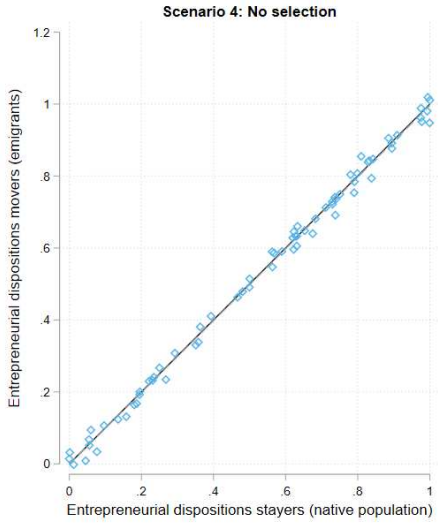
Scenario 3: Positive increasing selection – the extent of positive selection on entrepreneurial characteristics increases in the level of country-of-origin entrepreneurial culture



Pattern of selection: In the case of positive increasing selection, movers are, on average, more entrepreneurial than stayers from the same country, and the difference between movers' and stayers' dispositions differs across origin-countries. Specifically, the higher the level of entrepreneurial culture in the origin-country, the larger the extent of positive selection of emigrants on entrepreneurial dispositions. This implies that the estimated relationship between average stayers' (C_c) and emigrants' ($\tilde{C}_c$) dispositions has a slope greater than 1.

Implication for hypotheses tests in manuscript: Because movers from highly entrepreneurial countries are more entrepreneurial than stayers, while movers from the least entrepreneurial countries are similar to stayers, the between-country variation in the average dispositions of movers will be greater than the between-country variation in the average dispositions observed among stayers. The regression coefficient linking immigrants' outcomes to the culture in the origin country will therefore be greater than the 'true' coefficient that would result if we used movers' average dispositions instead. That is, the coefficient of interest is overestimated. Formally: The 'true' coefficient β comes from a regression $Y_{ic} = \alpha + \beta\tilde{C}_c + \epsilon_{ic}$. $\tilde{C}_c$ is the true culture of emigrants. C_c is the observed culture in the country of origin. Here we have $\tilde{C}_c = \mu + \omega C_c + \nu_c$, with $\omega > 1$. Thus, what we estimate is $Y_{ic} = \alpha + \beta\mu + (\beta\omega)C_c + \beta\nu_c + \epsilon_{ic}$. The estimated coefficient $\beta\omega$ is greater than the true coefficient β, hence we overestimate the relationship between culture and entrepreneurship.

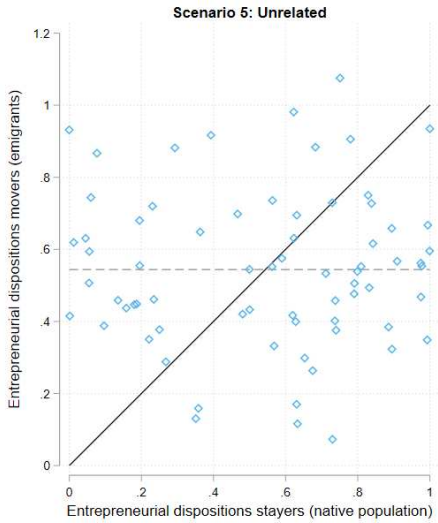
Scenario 4: No selection – movers and stayers hold, on average, the same values



Pattern of selection: In the case of no-selection, movers and stayers hold, on average, the same dispositions. This implies that the average dispositions of movers and stayer are perfectly correlated; the dots in a scatter plot mapping the average dispositions among movers from different countries, $\tilde{C}_c$, against the average dispositions of stayers in these countries, C_c, should fall on the 45-degree line. The estimated relationship between movers' and stayers' average dispositions has an intercept of 0 and a slope of 1.

Implication for hypotheses tests in manuscript: Since in this scenario the dispositions of movers and stayers from a given country are, on average, the same, the regression coefficient for the relationship between country-of-ancestry culture and second-generation immigrants' outcomes will be unbiased.

Scenario 5: Random – there is no relation between movers' and stayers' average entrepreneurial dispositions across countries



Pattern of selection: In the case of random selection, the dispositions of movers and stayers are, on average, uncorrelated. This implies that the dots in a scatter plot mapping the average dispositions among movers from different countries, $\tilde{C}_c$, against the average dispositions of stayers in these countries, C_c, should scatter around a horizontal line. The estimated relationship between movers' and stayers' average dispositions has a positive intercept and a slope of 0.

Implication for hypotheses tests in manuscript: Since in this scenario the dispositions of movers and stayers from a given country are unrelated to each other, we should not observe any relationship between country-of-ancestry culture and second-generation immigrants' outcomes. In other words, our coefficient of interest will be biased toward zero.

Summary of conceptual considerations

Summarizing the points above, selection into emigration only poses a concern to our estimates in Scenario 3 –positive increasing selection– where the slope of the relationship between emigrants' dispositions and the dispositions of stayers is greater than 1. In all other scenarios, the coefficient estimate of the relationship between country-of-ancestry culture and second-generation immigrants' outcomes would be unbiased or downward biased.[9]

[9] Assuming a negative intercept instead of a positive one, as we do in our scenarios, would have the same implications for the estimates of our main coefficient of interest.

In what follows, we will use data on movers' and stayers' entrepreneurial dispositions from multiple countries to assess what the relation between the two looks like and which of the above five scenarios the patterns in the data correspond to.

D3. Empirical approach

Data requirements. Rigorously assessing whether and how emigrants are selected on entrepreneurial dispositions from the origin-country population and whether there are *systematic cross-country differences* in selection into emigration on entrepreneurial dispositions is a non-trivial task. To the best of our knowledge, there is no prior research that has assessed these questions.
Doing so requires survey data that contain:

(1) Information on entrepreneurial dispositions for a sizable sample of emigrants who stem from a substantial number of countries of origin.
(2) Information on the same dispositions for a sizable sample of the non-migrating compatriots in emigrants' country of origin, again covering a substantial number of countries.
(3) Measures of entrepreneurial dispositions that are well-grounded in entrepreneurship scholarship.

After carefully evaluating various alternatives, such as the World Values Survey (Haerpfer et al., 2021), the European Values Study (EVS, 2019), and the General Social Survey (Smith et al., 2018), we concluded that the best –and only– large-scale survey meeting these criteria was the European Social Study (ESS, 2020a, 2020b). The ESS is the only database that provides information on entrepreneurial dispositions for a sizable number of emigrants and non-migrating compatriots who stem from a substantial number of countries.

Empirical Strategy. To probe the applicability of the five scenarios described before, we begin by comparing emigrants with non-migrating compatriots in the origin-country. First, we assess whether movers differ from stayers in terms of their entrepreneurial dispositions (Y_{icy}):

$$Y_{icy} = \beta + \varphi M_{icy} + \psi' \boldsymbol{X} + t_y + \gamma_c + \varepsilon_{icy} \quad (1)$$

where i, c, and y denote individuals, countries, and time, respectively. M_{icy} is an indicator variable for movers. $\boldsymbol{X}$ is the vector of individual- and country-level controls (as in the main manuscript), t_y are time fixed effects, γ_c country-level random terms to account for nesting, and ε_{icy} the error term. The coefficient of interest is φ which tells us whether emigrants differ in entrepreneurial disposition from their non-migrating compatriots. In other words, estimating φ enables us to test for intercept 'shifters', i.e. to compare whether the data better fit Scenario 1 –positive constant selection– or Scenario 4 –no selection–.

Second, we test whether the differences between emigrants and their non-migrating counterparts vary systematically with the cultural entrepreneurial dispositions in the (origin-)country:

$$Y_{icy} = \beta + \varphi M_{icy} + \varsigma C_c + \eta(M_{icy} \times C_c) + \psi' \boldsymbol{X} + t_y + \gamma_c + \varepsilon_{icy} \quad (2)$$

C_c captures the cultural dispositions of the population in country c, which we operationalize as the average entrepreneurial dispositions in each country, $\overline{Y_c}$, or the revealed preferences for entrepreneurship, EC_c, as in the main manuscript. The coefficient of interest is η which shows whether the difference between movers' and stayers' entrepreneurial dispositions increase in (origin-)country cultural entrepreneurial dispositions. That is, η enables us to test for slope effects and to compare whether the data better fit Scenarios 1 or 4 as compared to Scenarios 2, 3, or 5. Prior research is largely silent on whether η is positive, nil, or negative. We are particularly interested in η because selection into emigration on entrepreneurial dispositions will

only be associated with an upward bias of our main estimate of interest –the relation between entrepreneurial culture and second-generation immigrants' odds of self-employment– if η is positive, i.e. under positive increasing selection (Scenario 3). In all other instances, our main estimate will not be biased or be biased downwards.

Sample. We use European Social Study (ESS, 2020a, 2020b) data on emigrants and their non-migrating counterparts. We study two entrepreneurial dispositions that are well-grounded in the extant entrepreneurship literature: Need for achievement (McClelland, 1961) and risk-taking propensity (Kihlstrom & Laffont, 1979).[10] This allows us to scrutinize whether and to which extent stayers and movers differ in entrepreneurial dispositions that are well-established in the literature.

Given that we seek to compare emigrants to their non-migrating counterparts, we can only study countries for which we observe both movers and stayers. The ESS only contains data on stayers for European countries, but it contains mover data also for non-European countries. To increase the sample coverage in terms of countries (of origin), we complement the ESS information on movers and stayers with WVS information on stayers. This is possible because ESS and WVS contain overlapping items; both sample versions of the Schwartz Portrait Values Questionnaire (2003a, 2003b). We use ESS data for the period 2004–2018 and WVS information for the period 2009–2014 (ESS, 2020a, 2020b; Haerpfer et al., 2021). The benefit of leveraging both ESS and WVS data is that our analysis will cover not just Europe but also countries in Africa, Asia, Latin America, North America, and Oceania.

Our outcomes of interest are individual-level need for achievement and risk-taking propensity which are operationalized as the responses to the items on whether being very successful and recognized for achievements by people is important to the respondent and on whether a respondent looks for adventures, likes to take risks, and wants to have an exciting life, respectively. The predictor is individuals' emigration status; emigrants are coded as one and non-migrating compatriots are coded as zero. To probe cross-country differences in selection into emigration, we use two mutually complementary sets of moderators. First, we measure average entrepreneurial dispositions as country-level average need for achievement or risk-taking propensity in individuals' country of origin and use these as moderators when assessing the role of emigration in individual-level need for achievement and risk-taking propensity, respectively. We calculate these averages at the country level based on the Schwartz Portrait Values Questionnaire (2003a, 2003b) in the ESS (2004–2018) and the WVS (2009–2014). Second, we use the level of entrepreneurial culture in the individuals' country of origin as a moderator. We operationalize this exactly as in the main manuscript, namely, as the average self-employment rate (1980–1993) using ILOSTAT (ILO, 2017) and international census microdata (Minnesota Population Center, 2018).

We include the same individual-level and country-level control variables as in the main manuscript. Specifically, we control for age, age-squared, gender, education, education-squared, marital status, and whether children live in the household. We also control for ln GDP per capita and institutional quality (Polity IV polity2), as well as year fixed effects.[11] To align the analyses presented below with our main analyses presented in the manuscript, we focus on working-age individuals who stem from the countries

[10] There is a large body of research on need for achievement and entrepreneurship (Brandstätter, 2011; Collins et al., 2004; Stewart & Roth, 2007) and on risk-taking propensity and entrepreneurship (Ahn, 2010; Caliendo et al., 2009; Skriabikova et al., 2014; Stewart & Roth, 2001). For further integrative approaches, see also Frese and Gielnik (2014), Kerr et al. (2018, 2019), Rauch and Frese (2007a, b), Stewart et al. (1999), as well as Zhao and Seibert (2006).

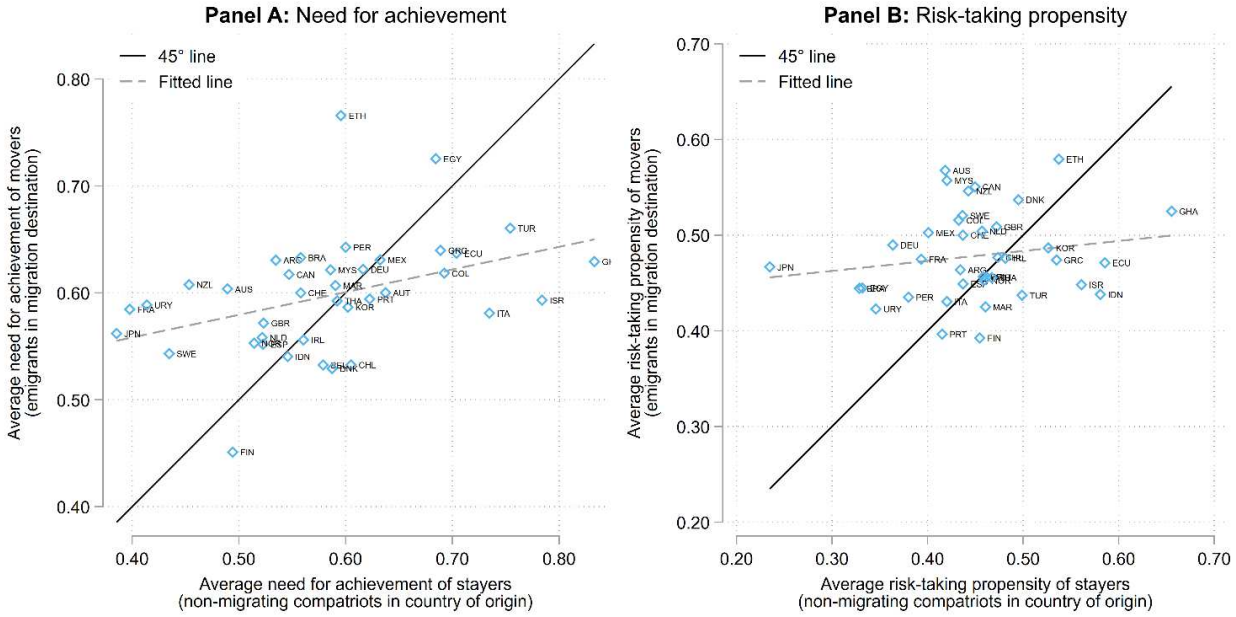
[11] We recode the 2009 wave as being 2008 since otherwise, given that there is no 2009 ESS data, the 2009 year FE would effectively become a WVS fixed effect. This does not affect our findings.

(of origin) that are covered in our main U.S. sample and exclude planned economies.[12] We impose a lower threshold of 10 observations per country and (non-)emigrant group. The estimation method is a multilevel regression with random country terms to account for nesting effects (Rabe-Hesketh & Skrondal, 2012; Snijders & Bosker, 2012).

D4. Findings

We begin by presenting tentative descriptive evidence that speaks to the scenarios discussed in Section D1. In Figure D1, we plot the average entrepreneurial dispositions of movers against the average entrepreneurial dispositions of stayers; plotted are need for achievement (Panel A) and risk-taking propensity (Panel B). We find a positive relation between the average values of movers and stayers. We also observe a positive intercept. The slope of the fitted line is smaller than 1, both for need for achievement and risk-taking propensity. These patterns are consistent with Scenario 2 –positive decreasing selection–.

Figure D1. Culturally rooted values of emigrants and non-migrating compatriots



To unpack these patterns and to formally test for emigrant selection, we next employ multilevel analyses.

First, in Table D1, we analyze whether emigrants differ from their non-migrating compatriots by estimating equation (1). We observe that emigrants exhibit higher levels of need for achievement (column 1) and risk-taking propensity (column 2) than their non-migrating compatriots do. The implication is that emigrants are on average positively selected on these two entrepreneurial traits, which renders support to the intercept effect described in Scenarios 1 and 4. We assess the slope effect next.

[12] Retaining countries that are not covered by the CPS in the sample here, or focusing on the European sample used in the main manuscript instead, does not affect the findings presented below. We prefer to define our sample in close alignment with the main sample.

Table D1. Emigrants differ from non-emigrants

	(1) Need for achievement	(2) Risk-taking propensity
Control variables		
Age	-0.037***	-0.053***
	(0.000)	(0.000)
Age-squared	0.008***	0.008***
	(0.000)	(0.000)
Gender (Men)	0.039***	0.074***
	(0.000)	(0.000)
Education	0.022***	0.015***
	(0.000)	(0.000)
Education-squared	0.005***	0.001**
	(0.000)	(0.012)
Married	0.003**	-0.040***
	(0.029)	(0.000)
Children in household	-0.010***	-0.033***
	(0.000)	(0.000)
(ln) GDP per capita	-0.047**	-0.020
	(0.022)	(0.216)
Institutional quality	0.018	0.005
	(0.394)	(0.742)
Variable of interest		
Emigrant	0.012***	0.036***
	(0.000)	(0.000)
Random origin-country term	Yes	Yes
Observations	193,844	193,844
Countries	38	38

Note: The results are based on a multilevel model with random country effects. Year fixed effects were estimated but are not reported for brevity. *** p<0.01, ** p<0.05, * p<0.1. In unreported regressions, we also sequentially introduced (i) destination-country fixed effects and (ii) both destination-country and origin-country fixed effects. These models corroborate the findings presented in columns (1) and (2).

Second, in Table D2, we assess whether the differences between emigrants and their non-migrating compatriots vary systematically with the average level of entrepreneurial dispositions in the origin-countries. In columns (1) and (3), we continue to find that emigrants exhibit higher levels of need for achievement and risk-taking propensity than non-migrating compatriots, even after accounting for cultural need for achievement and cultural risk-taking propensity, respectively. In columns (2) and (4), we probe whether cultural need for achievement and cultural risk-taking propensity moderate the effect of emigrant status on entrepreneurial dispositions. We find negative and significant interaction terms in both instances. To better understand these interactions, we visualize them in

Figure *D2* by plotting the predicted effects (all controls held at their means). We clearly see a positive intercept effect and a positive slope effect that is smaller than 1 (as in Scenario 2, positive decreasing selection). Albeit based on a different method, and applied at a different level of analysis, the patterns visible in

Figure *D2* resemble those in Figure D1: Both point to Scenario 2, positive decreasing selection, as being the most applicable and both provide evidence against Scenario 3.

Third, in Table D3, we analyze whether origin-country entrepreneurial culture moderates the differences between emigrants and their non-migrating compatriots (equation 2). We operationalize entrepreneurial culture just like in the main manuscript as revealed preferences for entrepreneurship. The results are visualized in Figure D3. We reject Scenario 3 –positive increasing selection– for both need for achievement

and risk-taking propensity. This would require that the estimate of the interaction term emigrant × entrepreneurial culture is of positive sign, while we find a negative interaction effect. Hence, the evidence presented here is, once again, consistent with Scenario 2, positive decreasing selection.

Table D2. Cross-country differences between emigrants and non-emigrants follow a pattern consistent with positive decreasing selection

	(1) Need for achievement	(2) Need for achievement	(3) Risk-taking propensity	(4) Risk-taking propensity
Variables of interest				
Emigrant	0.012***	0.010***	0.036***	0.024***
	(0.000)	(0.000)	(0.000)	(0.000)
Cultural need for achievement	0.096***	0.100***		
	(0.000)	(0.000)		
Emigrant × cultural need for achievement		-0.077***		
		(0.000)		
Cultural risk-taking propensity			0.070***	0.073***
			(0.000)	(0.000)
Emigrant × cultural risk-taking propensity				-0.067***
				(0.000)
Individual-level controls	Yes	Yes	Yes	Yes
Country-level controls	Yes	Yes	Yes	Yes
Destination-country fixed effect				
Random origin-country term	Yes	Yes	Yes	Yes
Observations	193,844	193,844	193,844	193,844
Countries	38	38	38	38

Note: The results are based on a multilevel model with random country effects. All control variables as shown in Appendix Table 7 and year fixed effects were estimated but are not reported for brevity. *** p<0.01, ** p<0.05, * p<0.1. In unreported regressions, we also sequentially introduced (i) destination-country fixed effects and (ii) both destination-country and origin-country fixed effects. In both instances, we estimate the interaction of interest and continue to corroborate the previous findings reported in columns (2) and (4). We do not report these regressions here for brevity.

Figure D2. Cultural values and individuals' values

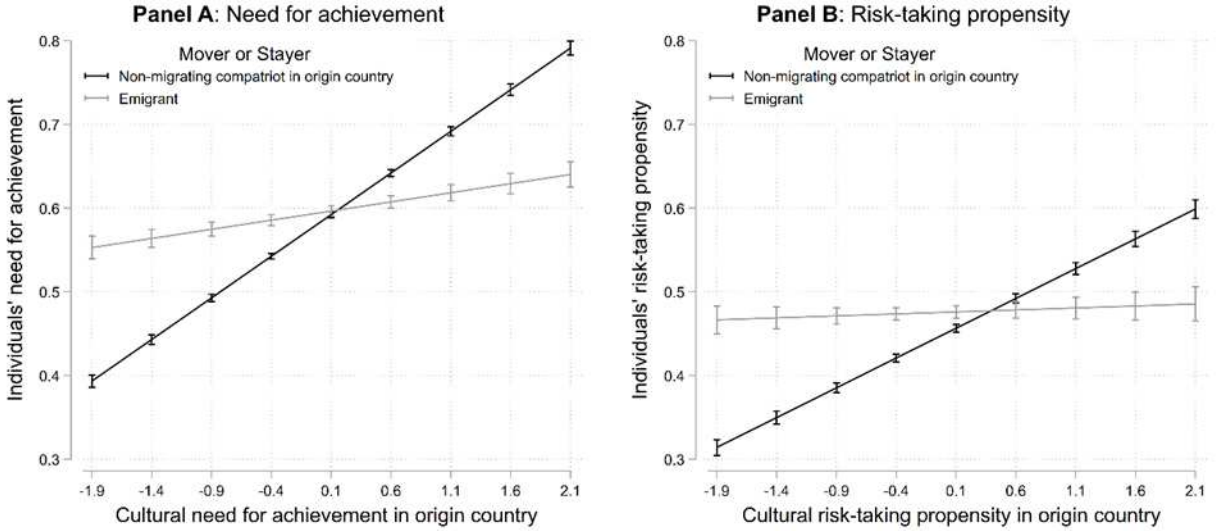
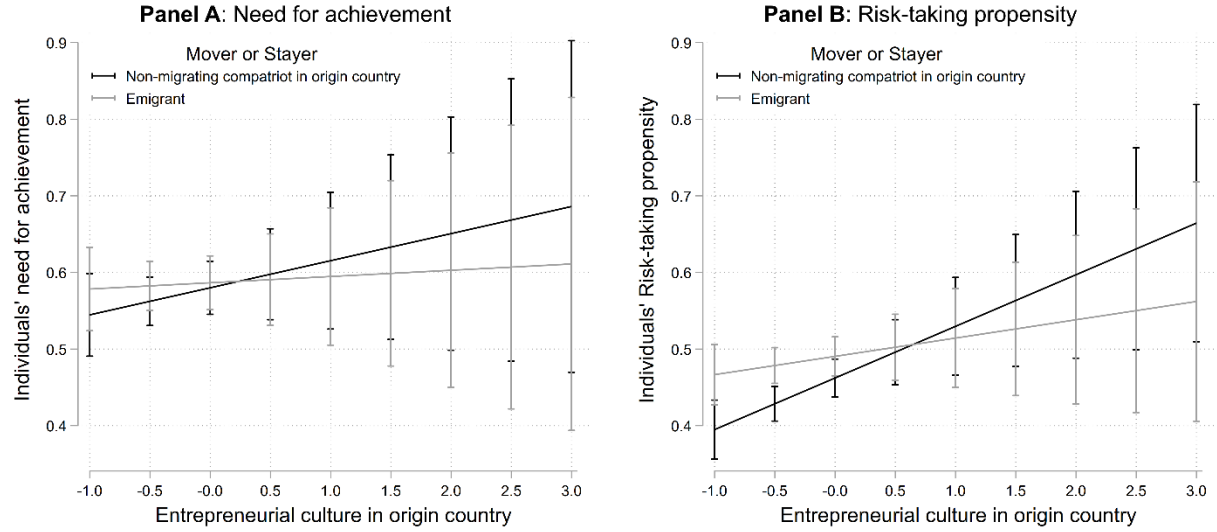


Table D3. Cross-country differences between emigrants and non-emigrants follow a pattern of consistent with positive decreasing selection

	(1) Need for achievement	(2) Need for achievement	(3) Risk-taking propensity	(4) Risk-taking propensity
Variables of interest				
Emigrant	0.012***	0.005*	0.036***	0.026***
	(0.000)	(0.074)	(0.000)	(0.000)
Entrepreneurial culture	0.034	0.035	0.066***	0.067***
	(0.302)	(0.287)	(0.006)	(0.005)
Emigrant × entrepreneurial culture		-0.027***		-0.044***
		(0.000)		(0.000)
Individual-level controls	Yes	Yes	Yes	Yes
Country-level controls	Yes	Yes	Yes	Yes
Destination-country fixed effect				
Random origin-country term	Yes	Yes	Yes	Yes
Observations	193,844	193,844	193,844	193,844
Countries	38	38	38	38

Note: The results are based on a multilevel model with random country effects. All control variables and year fixed effects were estimated but are not reported for brevity. *** p<0.01, ** p<0.05, * p<0.1. In unreported regressions, we also sequentially introduced (i) destination-country fixed effects and (ii) both destination-country and origin-country fixed effects. In both instances, we estimate the interaction of interest and continue to corroborate the previous findings reported in columns (2) and (4). We do not report these regressions here for brevity.

Figure D3. Entrepreneurial culture and individuals' values



D5. Conclusion

In this appendix, we have answered the questions (1) whether emigrants are selected on entrepreneurial dispositions from the origin-country population, (2) whether there are systematic cross-country differences in selection into emigration on entrepreneurial dispositions, and (3) whether these patterns of selection into emigration render it likely that our main estimate of interest –the effect of entrepreneurial culture on second-generation immigrant self-employment– is biased upwards.

To this end, we described the conceptually conceivable scenarios of how selection into emigration may differ across countries and what the ramifications of these selection patterns are for our main estimates. This led us to conclude that our estimate of the relation between country-of-ancestry entrepreneurial culture

and second-generation immigrants' self-employment status would be biased upwards only under positive increasing selection (Scenario 3), i.e. when selection into emigration on entrepreneurial dispositions increases in origin-country entrepreneurial culture.

Analyzing data on more than 190,000 movers and stayers from/in 38 countries, we found that emigrants differ from their non-migrating compatriots in entrepreneurial dispositions: Emigrants exhibit higher levels of need for achievement and risk-taking propensity than their non-migrating compatriots. This finding is in line with the extant literature (e.g. Jaeger et al., 2010). We interpret this as consistent with emigrants –on average– being positively selected on entrepreneurial dispositions from the native population in the origin country.

We further found that cross-country differences in selection into emigration on entrepreneurial dispositions are consistent with positive decreasing selection and do *not* follow a pattern of positive increasing section. The positive selection of emigrants on entrepreneurial dispositions –specifically, need for achievement or risk-taking– increases neither in culturally-rooted aggregate entrepreneurial dispositions –i.e. country-averages of need for achievement and risk-taking– nor in entrepreneurial culture. Using different outcomes and predictors, we consistently observe patterns of selection consistent with positive decreasing selection (Scenario 2). Emigrants from the least entrepreneurial countries tend to be selected more positively on entrepreneurial dispositions than emigrants from the most entrepreneurial countries. Consequently, we consider it highly unlikely that our main findings regarding the role of entrepreneurial culture in second-generation immigrants' self-employment are driven by cross-country differences in selection into emigration on entrepreneurial dispositions; the evidence we have presented would instead be associated with a downward bias in our coefficient of interest.

The presented analyses are not free of limitations. In an ideal scenario, we would have leveraged longitudinal data on entrepreneurial disposition of movers and stayers sampled both before and after the emigrants move abroad. To the best of our knowledge, such data does not exist. This renders it impossible to fully disentangle selection from adaptation/integration effects, and we cannot be sure to what extent our estimates capture post-migration effects. Therefore, we have explored the first-best alternative by building and analyzing a large cross-sectional cross-country dataset on the entrepreneurial dispositions of movers and stayers. To the best of our knowledge, this constitutes the first of such an analysis. While specific cross-country differences in selection into emigration warrant further research, we are confident that the evidence presented here enables us to conclude that cross-country differences in selection on entrepreneurial dispositions do not pose a concern for our key estimates regarding the relation between country-of-ancestry entrepreneurial culture and second-generation immigrant self-employment.

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