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The effect of culture on self-employment

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Abstract:

This work examines the effect of cultural differences on self-employment. All the individuals considered in the analysis are second-generation immigrants who were born and live under the same laws and institutions in the US. Following an epidemiological approach, the variation in self-employment rates by ancestors' national origin can be considered as supporting evidence of the effect of culture on self-employment. Our results show that culture has quantitatively significant effects on self-employment. This finding is robust to alternative specifications and to the introduction of several controls. Additional analysis shows that there are differences in the impact of culture on self-employment by gender, in that men are more sensitive than women to culture; and by economic activity, in that those individuals involved in professional, scientific, and technical activities, and those in accommodation and food service activities, are more affected by the impact of cultural differences. We also examine the transmission of culture, observing an important role of the inter-generational transfer of culture, although the impact of culture on self-employment diminishes from generation to generation.

JEL: J23; Z10, J61, J10

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1   Introduction

During the last three decades of the 20th century, self-employment tended to increase its share of non-agricultural civilian employment, which entailed an important source of job growth in many OECD countries (OECD, 2000). However, there are still considerable differences in self-employment rates across countries. In 2009, the rate of self-employment measured as the number of self-employed per hundred civilian employed individuals varied from around 6 per cent in Luxembourg to almost 40 percent in Turkey, clearly reflecting considerable diversity among countries (OECD, 2012). Researchers have analyzed several determinants of self-employment in an attempt to explain differences in self-employment decisions, including economic factors such as lack of capital (Evans and Leighton 1989, Evans and Jokanovic 1989), or the existence of an inheritance or gift (Blanchflower and Oswald 1998; Holtz-Eakin et al. 1994a,b; Laferrère and McEntee 1995; Hout and Rosen 2000).[1] Less work has been done on the study of the influence of institutional factors on self-employment. For example, Blau (1987) studied the role of minimum wage legislation; Quinn (1980) analyzed retirement policies; Long (1982), Blau (1987) and Schuetze (1998) focused on the effect of tax systems, and Borjas and Bronars (1989) studied the impact of immigration policy. In this paper, we present evidence that cultural differences also have an important influence on self-employment decisions.

The literature on the impact of racial and ethnic differences on self-employment mainly focuses on examining dissimilarities between African-Americans and whites, Mexican-Americans and Non-Hispanic whites (Fairlie et al. 1996, 2003; Fairlie and Robb 2007), and on the differences in self-employment rates and earnings between immigrants and native-born individual (see Borjas, 1985, 1986, 1987, 1994, 1995; and Lofstrom, 2002). However, as Fairlie and Meyer (1996) explain, it is evident that broad categories such as European or white have significant differences across groups. Thus, it is not simply race that is driving these differences, other factors such as social norms, values, and traditions that define the culture of a social group can underlie these dissimilarities in self-employment decisions.

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[1] See Blanchflower (2000) and Parker (2004) for an excellent review of this literature.

Nearly all researchers agree on the relevance of culture in economic decisions, but they also agree that culture is quite difficult to define and to measure. With respect to the definition of culture, we consider that suggested by UNESCO and Fernández (2007). In 2001, UNESCO defined culture *as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions and beliefs*. Similarly, Fernández (2007) described culture as a set of identifiable beliefs, traditions, and preferences that vary across time, space, or social groups. To measure cultural differences, we follow the epidemiological approach (Fernández, 2007). We focus on a specific country, in our case the US, and analyze the behaviour of second-generation immigrants - those individuals who were born and live under the same laws, economic conditions, and institutions in the US. Assuming that culture can be transmitted from parents to their children, differences in self-employment rates by parent's country of origin can be considered as evidence of the existence of a cultural effect on self-employment decisions.

In our analysis, we use U.S. Census microdata from the Integrated Public-Use Microdata Sample, IPUMS, (Ruggles et al. 2010), to estimate the probability that a second-generation immigrant residing in the US is self-employed based on a cultural proxy, the self-employment rate defined as the number of individuals who are self-employed with or without employees, divided by the total number of individuals who are part of the labour force (obtained from OECD Labour Statistics). Our results point to the relevance of culture in explaining dissimilarities in self-employment at the country level. We find that, when the self-employment rate increases by 0.01, the probability of being self-employed increases by 0.15, indicating that those second-generation immigrants whose parents originated from Turkey (the country with the highest self-employment rate, 0.69) are about 9 percentage points more likely to be self-employed than a second-generation immigrant from the UK, the country with the lowest self-employment rate, 0.08. This result holds even when controlling for a list of socio-economic indicators typically associated with self-employment.

Our findings add to the research on the effect of culture on demographic and economic outcomes.[2] Utilizing empirical strategies very similar to those presented here, recent studies have explored the effect of cultural differences on savings rates (Carroll et al. 1994), fertility and female labour force participation (Antecol 2000; Fernández 2007; Fernández and Fogli 2006, 2009; Bellido and Marcén 2013), living arrangements (Giuliano 2007), unemployment rates (Brügger et al. 2009), preferences for a child's gender (Almond et al. 2009), and divorce (Furtado et al. 2013). We not only contribute to this literature by presenting supporting evidence of the relevance of cultural differences on self-employment decisions, but we present evidence of the differences in the impact of culture on self-employment by gender and by economic activity.

Results are consistent and robust. Our findings are maintained after re-defining the cultural proxy by changing the denominator of the rate to, for example, exclude unemployed individuals, to tackle the non-clear relationship between self-employment and unemployment (Meager, 1992), and after measuring the self-employment rate over several years, suggesting that cultural differences spread over time. We have also checked the consistency of the cultural effect, considering that self-employment refers only to the self-employed with employees, or to the self-employed without employees. Results do not vary with either sub-sample, lending further credibility to our research design.

The origins of gender differences on self-employment have been extensively explored to explain why men become self-employed in greater proportion than women (Verheul et al. 2012). In our case, we separate the analysis by gender to test whether men are more influenced than women by the concept of self-employment culture. If cultural differences are driving our results, and men develop their identities under the role of being the worker and breadwinner, while women constitute their character based on wife and mother gender roles (Akerlof and Kranton 2000), we may expect a greater impact of self-employment culture on men than on women, due to the characteristics needed to set up a business. This is exactly what we obtain.

We also divide the analysis by economic activity, in order to examine the hypothesis that those involved in tertiary sector activities are more exposed to self-

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[2] See Fernandez (2006) for a review of this literature.

employment. If self-employment matters, and second-generation immigrants behave as their immigrant parents, becoming self-employed in activities such as those in the tertiary sector, where they feel less discriminated against, then we might expect a stronger impact of culture in those activities. Precisely, this is what we observe with those involved in accommodation and food service activities, and professional, scientific and technical activities being more heavily influenced.

In the final two sections, we examine the transmission of the self-employment culture. First, we focus on transmission within communities, developing a similar analysis to that developed in Furtado et al. (2013). Our results are not conclusive, due to problems with the availability of data on the ancestry of all individuals. Second, we consider the transmission throughout generations. We find a significant role of inter-generational transfer of self-employment culture, at least from first to second-generation immigrants. Our empirical findings show that an increase in the concentration of self-employed first-generation immigrants twenty years before our sample is considered, leads to a stronger impact of culture on the probability of being self-employed for second-generation immigrants whose parents originate from countries with high self-employment rates. Finally, we examine whether the effect of culture is maintained from generation to generation, using more recent data. Our results suggest that the impact of self-employment cultural differences of ancestors diminishes as time goes by.

The paper is organized as follows. Section 2 describes the empirical strategy. Section 3 describes the data. Section 4 presents the main evidence of the effect of culture on individual self-employment probability. Section 5 shows robustness checks. Section 6 provides empirical evidence of the differences in the impact of culture by gender, and Section 7 examines the different impact by economic activity. Section 8 explores the transmission of culture, and also shows the impact of culture from generation to generation, and Section 9 concludes.

2   Empirical Strategy

In order to capture the effect of culture, our empirical strategy focuses on the analysis of the self-employment decisions of second generation immigrants in the US who are all living under the same laws, economic conditions and institutions. If cultural norms do not matter, then we may expect that self-employment in the parents' country of origin should have no effect on the self-employment of second-generation immigrants in the

US. In contrast, cross-country differences in self-employment rates among second-generation immigrants can be seen as resulting from cultural differences. Thus, as in the literature on the epidemiological approach (Fernández 2007; Fernández and Fogli 2006, 2009; Furtado et al. 2013; Bellido and Marcén 2013), the analysis exploits variations in self-employment rates by country of origin to identify the effect of culture on self-employment decisions. Formally, we estimate the following equation:

$$S_{ijk} = \beta_1 SR_j + \boldsymbol{X_{ijk}}\boldsymbol{\beta_2} + \delta_k + \varepsilon_{ijk}$$

where S_{ijk} is an indicator variable for whether individual i of cultural origin j who lives in State k is self-employed. Our variable of interest, SR_j is the self-employment rate in country j in the year of interest, that is, the ratio of self-employment to the labour force in the year of interest. The vector of controls, $\boldsymbol{X_{ijk}}$, contains age, education, sex and marital status. Because many programs to promote self-employment vary by State, we also include a full set of State fixed effects, denoted by δ_k. All standard errors are corrected for clustering at the country of origin level.

An alternative strategy - often used in the literature - would be to include dummy variables for the various national origins rather than controlling directly for the self-employment rates in these countries. The benefit of this approach would be that it does not require a linear relationship between the cultural proxy and self-employment. However, this technique does not allow for a clear specification of how culture matters. Evidence suggests that the two approaches lead to similar conclusions.

3   Data

In our main analysis, we utilize the 1970 U.S. Census Form 2 from the Integrated Public-Use Microdata Sample, IPUMS (Ruggles et al. 2010). The year 1970 was the last time Census responders were asked for their parents' countries of birth. Of course, this is not a recent dataset, but we prefer the use of a sample of second-generation immigrants since they are less likely to have language problems and do not suffer from the "shock" of immigration (Fernández 2007; Fernández and Fogli 2006, 2009; Giuliano 2007). To provide additional evidence, we also use a recent dataset (see below). We define a person's country of origin to be the country of birth of whichever

parent is foreign-born, or the country of birth of the father if both parents are foreign-born (as in Fernández 2007; Fernández and Fogli 2006, 2009; Giuliano 2007). We restrict our sample to second-generation immigrants who are part of the labour force. Our final sample consists of 48,701 individuals and 22 countries of ancestry.

Our measures of culture are obtained from the OECD Labour Force Statistics, which provides annual data on total self-employment and on the labour force for various countries used in the analysis. Self-employment jobs are defined there as the ones where remuneration is directly dependent upon profits, and incumbents make operational decisions or are responsible for the welfare of the enterprise. Thus, "self-employed" refers to the sum of "own-account workers", or self-employed without employees, and "employers", or self-employed with employees. Note that the OECD statistics do not contain information for all countries; so we also have to restrict the sample to those countries of origin with data on the cultural proxies in the years of interest.

We expect that the differences among the self-employment rates of second-generation immigrants mimic the differences among the self-employment rates of their respective counterparts in the country of origin of their parents. Thus, we use as our first measure of culture the self-employment rate in 1970 in the parent's country of origin, defined as the proportion of individuals in the labour force who are self-employed. Theoretically, it is not clear whether this is the best cultural proxy to study this issue, though, as Fernández (2007) claims, since cultural change moves slowly, we expect no significant differences if we use data on the self-employment rate in 1970, or later. In this paper, we do not aim to solve this, but, as a robustness check, we introduce other cultural proxies. Figure 1 plots the relationship between self-employment rates in ancestors' home countries in 1970, and the proportion of second-generation immigrants who report being currently self-employed in the US in 1970. The figure shows a positive correlation between the two elements, pointing to a potential cultural effect in determining self-employment decisions.

There may be other differences between second-generation immigrants of different ancestries, unrelated to cultural attitudes towards self-employment, which may explain differences in self-employment rates such as age dissimilarities, differences in the number of men, marital status, and educational attainment. Table 1 presents descriptive statistics of these variables. We order the ancestries (country of origin) from

higher to lower self-employment rate, defined as the number of individuals who are self-employed divided by the total of individuals who are part of the labour force in the year 1970, shown in column 2. The self-employment rate in 1970 shows large variations across countries, ranging from 69% in Turkey to 8.34% in the UK. Averaged across country of ancestry, 10 % are self-employed, with those individuals originating from the countries of origin with the highest self-employment rate being self-employed in greater proportions. Our sample of second-generation immigrants is, on average, 45.78 years old. Second-generation immigrants from Australia and New Zealand tend to be younger than other groups. About 25% of the second-generation immigrants have at least a college degree, ranging from a low of 11% for Portugal and 18% for Italy, to a high of 61% for New Zealand. Second-generation immigrants also tend to be married, ranging from a high of 78.4% for Japan and the Netherlands to a low of 46.8% for Australia.

4   Results

Table 2 reports the estimates for the main specification in the model. In the first column, we do not include any controls. As can be seen, the estimated coefficient capturing the effect of the self-employment rate, defined as the proportion of individuals in the labour force who are self-employed in the country of origin in 1970, is positive and significant, suggesting that culture plays a role in self-employment decisions. This analysis does not include person-specific characteristics that have been found to be associated with self-employment. If second-generation immigrants from countries with high self-employment rates are more likely to possess those characteristics, then a correlation between self-employment rates at the origin and being self-employed in the US would result from reasons unrelated to culture. For example, with respect to educational attainment, it seems more likely that education and self-employment rates would be positively related, since the extent of education increases the types of skill necessary for an individual to assess the extent of the market. It would also not be surprising if the self-employment propensity was positively correlated with age (see Borjas, 1986). We also expect that self- employment propensities are greater for married individuals than for singles, since the married self-employed have identical incentives (Borjas, 1986). Column 2 adds to the specification controls for gender, education, age, and marital status. Observations are clustered at the country level. Consistent with the literature, older and higher-educated second-generation immigrants are more likely to be self-employed. Married males are also more likely to be self-employed than females. For

our purposes, what is most important is that the inclusion of these variables has almost no effect on our parameter of interest - the estimated effect of the self-employment rate in the ancestors' home countries.

Another potential source of concern arises if immigrants from countries with high self-employment rates tend to settle in States with high self-employment rates or in States promoting self-employment programs. It thus becomes especially important to include State fixed effects in the empirical specification. The results presented in column 3 show that culture does play a role in explaining self-employment decisions, since the greater the self-employment rate in the country of origin of second-generation immigrants, the greater the probability of their being self-employed. Similarly, differences in self-employment programs among the Metropolitan Statistical Areas (MSAs) where second-generation immigrants live can bias our results. Column 4 of Table 2 reports our estimates after adding MSA fixed effects. Results do not vary. Note that the number of observations decreases, since we are not including those individuals who do not report living in an MSA. As a simple robustness check, we have repeated all the analysis considering only those living in MSAs and our results are maintained.

All in all, our estimates indicate that when the self-employment rate increases by 0.01, the probability of being self-employed increases by 0.15 (column 3 of Table 2). Put another way, second-generation immigrants from Turkey - the country of origin with the highest self-employment rate, at 0.69 - are about 9 percentage points more likely to be self-employed than second-generation immigrants from the UK, the country with the lowest self-employment rate, 0.08.

5.   Robustness Checks

It is possible to argue that our results are driven by the cultural proxy chosen, because of the way in which this variable is defined, and even the years in which it is measured. We tackle these issues here. As argued by Fernandez (2007), culture adjusts very slowly, and so self-employment rates in other years should provide similar results. Table 3 shows the results for the different years of the self-employment rates defined as the proportion of individuals in the labour force who are self-employed, in the country of origin, in years 1970, 1980, 1990 and 2000 (columns 1 to 4). Our findings do not vary and we still observe a positive and significant effect of the self-employment rate,

regardless of the year considered, pointing to almost no change in cultural differences across time among the countries considered in this analysis.

To provide additional evidence that our results are consistent, we also run our analysis without those second-generation immigrants whose parents originate from Italy (the country with the most observations), without individuals from Turkey (the country with the highest self-employment rate in 1970), without those from the UK (the country with the lowest self-employment rate in 1970), and without second-generation immigrants from Turkey and the UK. Results are presented in columns 5 to 8 in Table 3. This simple robustness check is quite common in the epidemiological literature (see Fernández 2007; Furtado et al. 2013; Bellido and Marcén 2013) Our findings are maintained. We observe a positive and statistically significant impact of the self-employment rate on the probability of being currently self-employed, again suggesting a potential cultural effect on self-employment decisions.

As mentioned above, the cultural proxy used in Table 2, self-employment rate in 1970, may not perfectly capture true attitudes toward self-employment, since there is considerable disagreement on how the self-employment rate should be measured (Blanchflower, 2000). Differences in results across studies are explained by differences in the denominator of the self-employment rate. In order to tackle this problem, we introduce different denominators in our self-employment rate to observe whether the suggested cultural effect is maintained. Table 4 reports our results after considering several measures of the self-employment rate; the cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force, in column 1. In column 2, the cultural proxy is defined as the proportion of total employed individuals who are self-employed. Column 3 accounts for the proportion of individuals employed in the private sector who are self-employed. (In this case, there is no available data for Luxembourg, Greece, Korea and New Zealand.) The cultural proxy also changes in column 4, here calculated as the number of self-employed individuals divided by the total number of individuals who are part of civilian employment and are not involved in agricultural activities. In all these specifications, we still observe a cultural effect. Our estimates show that, irrespective of the self-employment rate used, this variable has a positive and statistically significant impact on the probability of being self-employed.

The inclusion of the number of individuals unemployed as the denominator in the self-employment rate is a little more problematic, since the empirical evidence is not conclusive. There is some disagreement on whether high unemployment acts to encourage or discourage self-employment (Meager, 1992). Some studies find a positive correlation between self-employment and unemployment, (Evans and Leighton 1989; Bogenhold and Staber 1991), but others find a negative relationship between these two variables (Blanchflower and Oswald 1990; Taylor 1996; Blanchflower and Oswald 1998). Even with these concerns, we have repeated the analysis by including as the cultural proxy the self-employment rate measured as the number of self-employed divided by the total number of unemployed in each parent's home country. Columns 5 to 8 show the estimated coefficients. As expected, results are not conclusive. Although the self-employment rate measured in 1970, with the denominator being the total number of unemployed individuals, is not significant, this changes when we consider that rate measured in 1980 and 1990. We have also repeated the analysis with data every five years and we obtain positive and statistically significant effects of cultural proxies since 1975. These findings can be due to the non-clear relationship between self-employment and unemployment, or it could be due to differences in cyclical aspects or GDP differences of the countries considered in the analysis. Then, it is possible to argue that our results are a consequence of GDP differences at the country level, rather than a cultural effect. To consider this issue, we have repeated the analysis by including per capita GDP as a control (see the results in table 5). Column 1 of Table 5 presents our main results; Column 2 reports the results after adding per capita GDP to the specification, and our results improve. We obtain a stronger and statistically significant impact of the self-employment rate on the probability of being self-employed. We also run the analysis with the other cultural proxies (although not shown in the paper), and results do not vary.

Finally, we provide additional evidence of the consistency of our results by re-defining the dependent variable and considering different sub-samples. Results are in Table 6. Once again, column 1 reports the estimates of our main specification. Columns 2 and 3 present results re-defining the dependent variable, taking the value 1 if second-generation immigrants report being non-incorporated self-employed, and 0 otherwise, in column 2, and taking the value 1 if individuals report being incorporated self-employed, in column 3. In these two specifications, the coefficient on our variable of interest is

positive and statistically significant, although it has decreased in magnitude. This is not surprising, since the cultural proxy incorporates both incorporated and non-incorporated self-employment but the new dependent variable considered as non-self-employed individuals those incorporated self-employed individuals in the first case, and those non-incorporated self-employed second-generation immigrants in the second case. What is relevant for this analysis is that, even re-defining the dependent variable, we still observe a positive impact of the cultural proxy on self-employment probability.

Columns 4 to 9 of Table 6 present the results after considering different sub-samples. In column 4, the sample consists of those who are working. The sample considered for analysis in column 5 incorporates those second-generation immigrants who are working in the private sector. In column 6, we run the analysis on a sample of non-agricultural second-generation immigrants who are working. The sample in columns 7 to 9 only considers those who are unemployed and self-employed. In all these specifications, the cultural proxies are defined as in Table 4, to be consistent with the sub-sample considered in each case (see Table 6 for details). With respect to the cultural effect, as can be seen, results do not vary substantially from those presented in table 4, even the magnitude of the effect of the self-employment rate, regardless of its definition, is quite similar to that obtained when considering the whole sample of second-generation immigrants in the labour force. Our findings suggest that the existence of cultural differences plays a role in determining self-employment decisions.

6. The effect of culture on self-employment by gender

Gender differences in self-employment have been extensively studied in the literature. Research has focused on the determinants of the gender gap in the propensity to become self-employed, on the process of self-employment (Andersson and Wandesjö 2008; Boden 2001; Cowling and Taylor 2004; Du Rietz and Henrekson 2000; Verhuel et al. 2011; Wagner 2005), and on the factors driving the decision to become either self-employed or wage-earners when men and women are unemployed (Andersson and Wandesjö 2008). Generally, this literature finds that men tend to be self-employed because they are less risk-averse (Verheul et al. 2012), can work more hours in self-employed activities that require a greater work-load, and are expected to earn more (Hughes 2006). On the other hand, women tend to enter into self-employment from necessity: the flexibility of self-employment allows them to balance their work and

housework (Hughes 2006). All these differences, in addition to the lower preferences and/or skills of women (Verhuel et al. 2011) may explain the divergence in the self-employment ratio between men and women, as can also being explained, at least in part, by differences in the self-employment culture.

In this work, we analyze whether there are differences in the impact of culture on self-employment by gender. If men develop their identities within the role of breadwinner, while women constitute their characters based on wife-and-mother gender roles (Akerlof and Kranton 2000), what we may expect is that the influence of culture is stronger in men than in women when choosing to become self-employed, due to the characteristics needed to set up an own business.

Table 7 reports results for the whole sample (columns 1 to 3) and then separately for men (columns 4 to 6) and women (columns 7 to 9). A comparison between the fourth and seventh columns suggests that, as expected, men are more sensitive to self-employment culture than women. Men are about 80% more sensitive to parents' country of origin self-employment rate than women. This is not striking, since men are found to have higher preferences and abilities than women in self-employment activities (Verhuel et al. 2011). Then, men will be more heavily influenced by any tradition that encourages men to become self-employed.

7   The effect of culture on self-employment by economic activity

In this section, we separate the analysis of the effect of cultural differences on self-employment by economic activity. In the US, self-employment is more prevalent in the service sectors, with 4.74% of the working population being self-employed in these sectors, while only 1.8% and 1.4% are self-employed in agriculture and industry, respectively (using 1970 Census data). This is even more remarkable among immigrants, who often experience discrimination as wage-earners and labour market obstacles, both of which provide incentives to become self-employed (Borjas 1986; Yuengert 1995; Fairlie and Meyer 1996). About 6.7% of the working immigrant population reports being self-employed in the service sector, while only 0.95% and 1.77% are involved in agriculture and industry, respectively. If culture plays a role in self-employment decisions, and it is transmitted from immigrant parents to their children, they - the second-generation immigrants - will become self-employed more

easily in settings such as the tertiary sector, where they feel (and encounter) less discrimination, then, we might expect a stronger impact of culture on those activities.

The analysis of the impact of self-employment by economic activity was developed by separating the sample among the three sectors - primary, secondary and tertiary. Results are reported in Table 8. As expected, the self-employment rate in 1970, our cultural proxy, has a positive and statistically significant effect on the likelihood of being self-employed in the tertiary sector, column 4. We do not observe a statistically significant impact of that rate on the secondary sector, and the impact is negative in the primary sector, columns 2 and 3. This is not surprising, since the financial capital requirements in many activities of these two sectors are greater than in several activities of the tertiary sector and, as explained above, immigrants, and their children, encounter obstacles to acquire capital. The effect of culture on the primary sector should be taken with caution, due to the scarcity of data in several of the countries of origin considered. After excluding the agriculture sector from the cultural proxy, columns 5 to 8, we also get a positive and significant effect in the case of the secondary sector but, as predicted, the strong impact of culture appears to be on the likelihood of being self-employed in the tertiary sector.

To provide more evidence of the impact of culture on self-employment decisions, we also test the issue by subdividing the three sectors considered into 16 economic activities, using the Standard Industrial Classification of all Economic Activities (ISIC). As before, if culture matters, and it is transmitted from parents to their children, we may expect that culture heavily impacts those economic activities in which their parents established their businesses. Then, since self-employment among immigrants is not concentrated in mining and quarrying; transportation and storage; electricity, gas steam, and other utility supplies; financial and insurance activities, real estate activities; other service activities; information, communication, arts, entertainment and recreation; and education (using 1970 Census data, less than 3% of self-employed are involved in these activities), then a lower impact of culture on these activities would be predicted. Our estimates are presented in Table 9. Once again, we take with caution the results on the impact of culture on agriculture, forestry and fishing, and on mining and quarrying, due to the scarcity of data from many of the countries considered. With respect to other economic activities, results are as expected. Our findings indicate that the self-employment rate has a positive impact on manufacturing and household activities, albeit

at the 10% level, on wholesale and retail trade, professional, scientific and technical activities, accommodation and food service activities, and human health and social work activities. In these latter cases, coefficients are statistically significant at the 1% level. In addition to this positive impact in activities with a greater concentration of self-employed immigrants, we detect a positive and significant impact of the self-employment rate, measured in 1970, on the probability of being self-employed in mining and quarrying, transportation and storage, and financial and insurance activities. In the remaining activities, excluding agriculture, we find no significant impact of culture on self-employment decisions. All in all, culture appears to play a relevant role in the self-employment decisions of second-generation immigrants in those economic activities with a greater concentration of immigrants, pointing to a potential inter-generational transmission of culture. It can also be argued that culture is transmitted in the community if our second-generation immigrants live in ethnic enclaves. This issue is explored in the next section.

8   The transmission of culture

We have examined whether the existence of cultural differences is a factor in explaining, at least in part, the self-employment decisions of second-generation immigrants. We now look at how culture is transmitted within the community, i.e. horizontal transmission, analysing the potential peer effects, as in Furtado et al. (2013). We also focus on the inter-generational transmission of culture, i.e. vertical transmission.

8.1 Peer effects

We explore whether second-generation immigrants responsiveness to parents' country of origin self-employment rates vary, depending on whether they live in ethnic enclaves or communities with a majority of people of the same ancestry. Here, we are not considering vertical transmission of culture, but only focusing on the transmission of culture from person to person within the community.

In order to capture the peer effects, we utilize an empirical strategy proposed by Bertrand et al. (2000), also used by Furtado et al. (2013) to analyse how divorce culture is transmitted within MSAs. If culture is transmitted within an enclave, we might expect that second-generation immigrants living in areas with a lower concentration of

individuals of the same ancestry will be less likely to be self-employed than second-generation immigrants living in predominantly same-ancestry areas. In addition, as in Furtado et al. (2013), we would expect that culture has a greater impact in ethnic areas with individuals originating from countries with high self-employment rates. Formally, we estimate the following equation:

$$S_{ijk} = \delta_1 SR_j + \delta_2 P_{jk} + + \delta_3 P_{jk} * SR_j + \mathbf{X_{ijk}\delta_4} + \gamma_k + e_{ijk}$$

where the proportion of first- and second-generation immigrants, with the same ancestor country, in a metropolitan area is represented by P_{jk}. The other variables are defined as before, with γ_k now being the MSA fixed effects. If culture is transmitted within the community, we might expect that an increase in the proportion of first- and second-generation immigrants from one country of ancestry leads to an increase in self-employment probability, then δ_2 should be positive. With respect to the interaction between the concentration variable, P_{jk}, and the country of origin self-employment rate, we would expect that an increase in the concentration of individuals of the same ancestry results in a greater increase in the probability of being self-employed in those second-generation immigrants originating from high self-employment rate countries, and thus, δ_3 should be positive.

Table 10 presents results on the horizontal transmission of culture. Results on our main specification are in column 1, including the entire sample and in column 2 for only those individuals living in MSAs. As can be seen in columns 3 and 4, the estimated coefficients of the impact of the concentration of same-ancestry individuals are not significant, although they do have the predicted sign. With respect to the estimated coefficient of the impact of the interaction, column 5, results are similar. We do not obtain a statistically significant effect, although the sign is as expected. This suggests that culture is not transmitted within the community. However, we acknowledge that this finding should be taken with caution, since we are only able to identify the ancestry of first- and second-generation immigrants, but not the ancestry of third-and-higher generation immigrants. Then, we are not correctly measuring the concentration of individuals of the same ancestry, which can bias our results. It is worth noting that the effect of the self-employment rate - our cultural proxy - remains positive and significant, pointing to a significant role of culture in self-employment decisions.

8.2 Inter-generational transmission of culture

In a previous subsection, we left out the vertical transmission of the self-employment culture. The study of the inter-generational transmission of culture using Census data is complicated, since the micro-data of the Census does not provide information on the work status of parents of second-generation immigrants. [3] To pick up the impact of the vertical transmission of culture, we use a similar strategy to that presented above. If there is inter-generational transmission of culture, we would expect that second-generation immigrants whose parents were self-employed will be more likely to be, themselves, self-employed. For the behaviour of the first-generation immigrants, we take data from the 1950 US Census; since our second-generation immigrants are 45.78 years old on average, then twenty years before, in 1950, their parents were still working. To formalize this idea, we run the following equation:

$$S_{ijk} = \alpha_1 SR_j + \alpha_2 PI_{jk} + \alpha_3 PI_{jk} * SR_j + X_{ijk}\alpha_4 + \gamma_k + e_{ijk}$$

with PI_{jk} being the proportion of self-employed first generation immigrants with the same ancestor country, in the same metropolitan area in 1950. The other variables are defined as before. If there is a vertical transmission of culture, we may expect that an increase in the proportion of self-employed first-generation immigrants from one country of ancestry results in an increase in the probability of self-employment, then α_2 is expected to be positive. The coefficient, α_3, capturing the effect of the interaction between the concentration variable, PI_{jk}, and the self-employment rate should also be positive, if an increase in the concentration of self-employed first-generation immigrants of the same ancestry leads to a greater increase in the probability of being self-employed of those originating from high self-employment rate countries.

Results are reported in Table 11. The sample decreases due to the differences in the MSAs between 1950 and 1970, but even with this small sample, results on the effect of culture do not vary (columns 1 and 2). The coefficient of the concentration of self-employed first-generation immigrants is only significant when we introduce the interaction between this variable and the cultural proxy, the self-employment rate in

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[3] Note that we are neither able to analyze the relationship between self-employment and inter-generational transfer of physical capital or the existence of a inheritance or a gift which is also a factor in determining the self-employment decision, see Blanchflower and Oswald 1998; Holtz-Eakin et al. 1994a,b; Laferrère and McEntee 1995; Hout and Rosen 2000.

1970 (columns 4 and 5), although it has the predicted sign in column 4. In column 5, the coefficient turns negative, but the estimated point capturing the effect of the interaction is positive and highly significant. Then, a 1% increase in the proportion of self-employed first-generation immigrants from Turkey in 1950, the country with the highest self-employment rate, results in about a 39% increase in the probability of self-employment of the second-generation immigrants originating from that country. However, a 1% increase in the proportion of self-employed first-generation immigrants from countries with a self-employment rate equal to or lower than 0.18 leads to a decrease in the probability of self-employment for the second-generation immigrants. For example, when the proportion of self-employed, first-generation immigrants from the UK - the country with the lowest self-employment rate - increases by 1%, the likelihood of self-employment of the second-generation decreases by 7.7%. As in Furtado et al. (2013), this change in the sign can be explained by the fact that those second-generation immigrants, surely a non-random sample, from countries with self-employment rates equal to or lower than 18%, are living among other Americans with much lower self-employment rates, which also reduces the self-employment rates of these individuals. In all cases, the self-employment rate, our cultural proxy, has a positive and highly significant effect on the probability of being self-employed. These results point to the existence of inter-generational transmission of self-employment in the cases of individuals originating from high self-employment rate countries.

Whether this inter-generational transmission persists over time cannot be analyzed using the micro-data from the 1970 US Census, so we use a more recent dataset, the micro-data from the 1% 2000 US Census sample. The analysis is the same as presented before, but separating the sample between first-generation immigrants and second-and-higher generation immigrants. Note that, although this sample provides more recent data, we cannot exclusively identify second-generation immigrants. Table 12 shows the results. We find no significant effect of culture on the likelihood of being self-employed of second-and-higher generation immigrants, although the sign of the impact is as expected (columns 1 to 3). In contrast, the impact of the self-employment rate on the probability of being self-employed of first-generation immigrants is highly significant and positive. Then, our findings suggest that culture plays a significant role in the self-employment decisions of first and second-generation immigrants, but that this effect dissipates over generations.

9 Conclusions

Policy makers encourage self-employment, providing subsidies to become self-employed and paying special attention to certain groups, including the young, minorities, and women. In Australia, France, the UK and the US, for example, government programs provide easier access to finance, training, and networks of contacts, such as transfer payments to the unemployed while they attempt to start a business, and they also provide loans to small businesses and exempt them from certain regulations and taxes. However, the impact of these policies is not the same in all countries, which can be due to cultural differences in self-employment, among other factors. The study of culture as a factor in determining self-employment decisions is an important issue, but it is problematic since cross-country analysis of the cultural effect is not useful in that it does not allows us to separate the impact of markets and institutions from that of culture. Hence, we consider the epidemiological effect by analyzing the behaviour of second-generation immigrants who were born and live under the same laws and economic conditions in the US. Since second-generation immigrant patterns of behaviour are likely to reflect the attitudes of the immigrant parents and ethnic communities, dissimilarities in self-employment rates by parents' country of origin can be interpreted as supporting evidence of the effect of culture.

Evidence suggests that culture plays a role in self-employment decisions, even when controlling for person-specific characteristics such as education, age, gender, marital status, and State of residence: self-employment rates in the countries of origin of second-generation immigrants have economically and statistically significant effects on the probabilities of being self-employed. Although we view these results as certainly indicative of the role of culture in self-employment decisions, we have taken several steps to provide even more convincing evidence. For example, we use different measures of self-employment rates, and several samples. We find a positive and significant effect of the different measures of self-employment rates on the probability of being self-employed. We also use different years of self-employment rates in the countries considered, observing similar results. In addition, we study the impact of self-employment by gender, finding that men are more heavily influenced than women by culture, and by economic activity showing that those individuals becoming self-employed in professional, scientific and technical activities, and those in

accommodation and food service activities, are more sensitive to the impact of cultural differences. All our results are consistent and robust.

Finally, we explore how culture is transmitted, analyzing both vertical and horizontal transmission. Although we cannot conclude, due to data limitations, that horizontal transmission of culture exists, our findings suggest that the inter-generational transfer of culture is significant in determining self-employment decisions - especially for those whose parents originate from high self-employment rate countries. However, we also show that the effect of self-employment culture dissipates over generations.

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Table 1: Descriptive Statistics by Country of Origin in 1970

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Countries	Self-employed in 1970	Self-Employment Rate 1970	Age	Male	High School	Some College	More College	Married	Obs.
Turkey	0.15	0.69	40.00	0.67	0.39	0.15	0.27	0.67	320
Korea	0.13	0.58	42.57	0.50	0.35	0.22	0.15	0.74	46
Greece	0.14	0.52	41.49	0.64	0.37	0.17	0.22	0.71	1233
Japan	0.12	0.35	44.33	0.62	0.44	0.15	0.16	0.78	1360
Austria	0.12	0.30	49.39	0.63	0.34	0.12	0.16	0.75	4085
Italy	0.11	0.29	45.88	0.65	0.36	0.09	0.09	0.77	18038
Ireland	0.06	0.25	48.23	0.62	0.39	0.14	0.16	0.67	5285
Finland	0.09	0.24	48.59	0.57	0.41	0.12	0.17	0.73	590
Iceland	0.10	0.24	46.95	0.62	0.29	0.10	0.38	0.76	21
Spain	0.11	0.22	42.47	0.63	0.38	0.14	0.10	0.75	463
Luxembourg	0.16	0.21	48.29	0.55	0.38	0.11	0.13	0.70	56
Belgium	0.10	0.20	44.08	0.64	0.38	0.13	0.10	0.75	330
France	0.11	0.20	45.12	0.60	0.34	0.16	0.15	0.69	746
Norway	0.12	0.19	48.90	0.64	0.36	0.14	0.14	0.77	1628
Portugal	0.09	0.19	43.99	0.67	0.32	0.06	0.05	0.78	705
Australia	0.05	0.18	35.66	0.50	0.31	0.24	0.20	0.47	111
The Netherlands	0.12	0.17	46.05	0.67	0.32	0.13	0.13	0.78	1114
New Zealand	0.02	0.17	33.54	0.51	0.22	0.39	0.22	0.66	41
Denmark	0.11	0.15	48.82	0.63	0.38	0.15	0.16	0.75	1003
Canada	0.07	0.11	41.35	0.63	0.35	0.15	0.15	0.69	8512
Sweden	0.12	0.09	50.63	0.63	0.40	0.16	0.16	0.77	2593
United Kingdom	0.10	0.08	45.82	0.62	0.36	0.12	0.12	0.70	421
Average	0.10	0.24	45.78	0.64	0.36	0.12	0.13	0.74	
Std. Dev.	0.30	0.10	12.90	0.48	0.48	0.33	0.34	0.44	

Note: Sample consists of second-generation immigrants who are part of the Labour Force (1% 1970 Form 2 Metro Sample). Ancestries ordered from higher to lower self-employment rate in 1970, column 2, (Ireland (1971), Norway (1972) and Spain (1977)). Column 1 includes the proportion of self-employed individuals who are part of the Labour Force in 1970.

Table 2: Estimations of the Cultural Effect on Self-Employment

	(1)	(2)	(3)	(4)
Self-employment rate 1970	0.114**	0.113***	0.150***	0.169***
	(0.046)	(0.025)	(0.021)	(0.024)
Age		0.0002	0.001	0.0004
		(0.001)	(0.001)	(0.001)
Age Square/100		0.003*	0.002*	0.002
		(0.001)	(0.001)	(0.001)
Male		0.083***	0.083***	0.078***
		(0.009)	(0.010)	(0.011)
High School		0.009***	0.007**	0.010**
		(0.003)	(0.003)	(0.004)
Some College		0.027***	0.023***	0.024**
		(0.008)	(0.008)	(0.009)
College +		0.038***	0.035***	0.042***
		(0.011)	(0.011)	(0.012)
Married		0.035***	0.035***	0.033***
		(0.002)	(0.002)	(0.003)
State Fixed Effects	No	No	Yes	No
MSA Fixed Effects	No	No	No	Yes
R sq.	0.001	0.037	0.043	0.043
N	48701	48701	48701	41013

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in 1970 (Ireland (1971), Norway (1972) and Spain (1977)). Specification (1) is a basis linear regression with no controls. Specification (2) adds to the specification controls for gender (male), education (high school, some college, college +), a quadratic term for age and marital status (married). Specification (3) also includes as controls dummies for the US state of residence, without Wisconsin. Specification (4) incorporates MSA fixed effects. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 3: Simple Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-employment rate 1970	0.150***				0.126***	0.157***	0.154***	0.162***
	(0.021)				(0.032)	(0.025)	(0.021)	(0.024)
Self-employment rate 1980		0.178***						
		(0.026)						
Self-employment rate 1990			0.178***					
			(0.033)					
Self-employment rate 2000				0.176***				
				(0.039)				
Age	0.001	0.001	0.001	0.001	-0.0003	0.0004	0.0005	0.0004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age Square/100	0.002*	0.002*	0.002*	0.002	0.003**	0.002*	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.083***	0.082***	0.082***	0.082***	0.073***	0.082***	0.083***	0.082***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)
High School	0.007**	0.008**	0.009***	0.009***	0.008*	0.008**	0.007**	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Some College	0.023***	0.024***	0.024***	0.025***	0.024**	0.022**	0.023***	0.023**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.011)	(0.008)	(0.008)	(0.008)
College +	0.035***	0.037***	0.038***	0.038***	0.036**	0.035***	0.036***	0.036***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.015)	(0.011)	(0.011)	(0.011)
Married	0.035***	0.035***	0.035***	0.034***	0.034***	0.035***	0.035***	0.035***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R sq.	0.043	0.044	0.043	0.043	0.049	0.043	0.043	0.043
N	48701	48701	48701	48701	30663	48381	48280	47960

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force. All specifications are basis linear regressions that includes controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in years 1970, 1980, 1990 and 2000 in specifications (1) to (4), respectively. Specification (5) does not include data for the country with the highest number of observations, Italy. The self-employment rate is measured in 1970 in specifications (5) to (8). Specification (6) does not include data for the country with the highest self-employment rate in 1970, Turkey. Specification (7) does not include data for the country with the lowest self-employment rate in 1970, the UK. Both Turkey and the UK are excluded in specification (8). ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 4: The effect of culture on Self-employment using different definitions of the cultural proxy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-employment rate 1970 (share of labour force)	0.150*** (0.021)							
Self-employment rate 1970 (share of Total Employment)		0.136*** (0.023)						
Self-employment rate 1970 (share of Employment in Private Sector)			0.106** (0.041)					
Self-employment rate 1970 (share of non-agricultural civilian employment)				0.210*** (0.046)				
Self-employment rate 1970 (Share of Unemployment)					0.021 (0.014)			
Self-employment rate 1975 (Share of Unemployment)						0.183*** (0.049)		
Self-employment rate 1980 (Share of Unemployment)							0.289*** (0.074)	
Self-employment rate 1985 (Share of Unemployment)								1.008*** (0.219)
Age	0.001 (0.001)	0.001 (0.001)	0.0004 (0.001)	0.0001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.0004 (0.001)
Age Square/100	0.002* (0.001)	0.002* (0.001)	0.002* (0.001)	0.003* (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
Male	0.083*** (0.010)	0.082*** (0.010)	0.082*** (0.010)	0.081*** (0.010)	0.083*** (0.010)	0.083*** (0.010)	0.083*** (0.010)	0.083*** (0.010)
High School	0.007** (0.003)	0.007** (0.003)	0.006* (0.003)	0.009*** (0.002)	0.007** (0.003)	0.007** (0.003)	0.007** (0.003)	0.008*** (0.003)
Some College	0.023*** (0.008)	0.023*** (0.008)	0.020** (0.008)	0.024*** (0.008)	0.022** (0.008)	0.021** (0.008)	0.021** (0.008)	0.023*** (0.007)
College +	0.035*** (0.011)	0.035*** (0.011)	0.034** (0.012)	0.041*** (0.011)	0.035*** (0.011)	0.034*** (0.011)	0.033*** (0.011)	0.035*** (0.011)
Married	0.035*** (0.002)	0.035*** (0.002)	0.034*** (0.002)	0.033*** (0.002)	0.034*** (0.002)	0.035*** (0.002)	0.035*** (0.002)	0.034*** (0.002)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R sq.	0.043	0.043	0.043	0.044	0.042	0.043	0.043	0.044
N	48701	48701	47325	45988	48701	48701	48701	48701

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force. All specifications are basis linear regressions that includes controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in specification (1). In specification (2) the cultural proxy is defined as the proportion of total employed individuals who are self-employed. Specification (3) includes as the self-employment rate, the proportion of individuals employed in the Private Sector who are self-employed. It does not include data for Luxembourg, Greece, Korea and New Zealand. The cultural proxy also changes in specification (4), here, it is calculated as the number of self-employed individuals divided by the total number of individuals who are part of the civilian employment and are not involved in agricultural activities. In this case, there is no information for second-generation immigrants from The Netherlands, Greece, Korea and Turkey. Specifications (5) to (8) incorporate the self-employment rate measured as the number of self-employed people divided by the total number of unemployed people every 5 years from 1970 to 1985, respectively. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 5: The effect of culture on self-employment after controlling for per capita GDP

	(1)	(2)
Self-employment rate 1970	0.150***	0.272***
	(0.021)	(0.091)
GDP pc 1970		0.016
		(0.011)
Age	0.001	0.001
	(0.001)	(0.001)
Age Square/100	0.002*	0.002
	(0.001)	(0.001)
Male	0.083***	0.083***
	(0.010)	(0.010)
High School	0.007**	0.007**
	(0.003)	(0.003)
Some College	0.023***	0.022***
	(0.008)	(0.008)
College +	0.035***	0.034***
	(0.011)	(0.011)
Married	0.035***	0.035***
	(0.002)	(0.002)
State Fixed Effects	Yes	Yes
R sq.	0.043	0.044
N	48701	48701

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in 1970. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. Specification (1) is a basis linear regression. Specification (2) adds to the specification controls for per capita GDP. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 6: The effect of culture on Self-employment using different sub-samples

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Self-employment rate 1970	0.150***	0.082***	0.068***						
(share of labour force)	(0.021)	(0.017)	(0.009)						
Self-employment rate 1970				0.140***					
(share of Total Employment)				(0.024)					
Self-employment rate 1970					0.135***				
(share of Employment in Private Sector)					(0.046)				
Self-employment rate 1970						0.232***			
(share of non-agricultural civilian employment)						(0.044)			
Self-employment rate 1970							0.024		
(Share of Unemployment)							(0.019)		
Self-employment rate 1975								0.204**	
(Share of Unemployment)								(0.097)	
Self-employment rate 1980									0.382**
(Share of Unemployment)									(0.170)
Age	0.001	-0.001	0.001***	0.000	0.001	-0.000	0.024***	0.024***	0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.001)
Age Square/100	0.002*	0.003***	-0.001*	0.002*	0.002	0.003*	-0.020***	-0.019***	0.002*
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.001)
Male	0.083***	0.062***	0.020***	0.083***	0.096***	0.072***	0.245***	0.245***	0.083***
	(0.010)	(0.006)	(0.004)	(0.009)	(0.012)	(0.012)	(0.035)	(0.036)	(0.010)
High School	0.007**	-0.002	0.009***	0.007*	0.013***	0.010***	0.109***	0.108***	0.007**
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)
Some College	0.023***	0.002	0.021***	0.023**	0.031***	0.030***	0.121***	0.119***	0.023***
	(0.008)	(0.005)	(0.004)	(0.008)	(0.009)	(0.008)	(0.009)	(0.009)	(0.008)
College +	0.035***	0.024**	0.011***	0.035***	0.078***	0.049***	0.190***	0.187***	0.035***
	(0.011)	(0.009)	(0.003)	(0.011)	(0.016)	(0.012)	(0.024)	(0.024)	(0.011)
Married	0.035***	0.023***	0.012***	0.035***	0.039***	0.031***	0.150***	0.150***	0.035***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.015)	(0.015)	(0.002)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R sq.	0.043	0.036	0.013	0.043	0.055	0.037	0.205	0.206	0.206
N	48701	48701	48701	47066	37699	43286	6529	6529	6529

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in specification (1). In specification (2), the dependent variable takes the value of one if second-generation immigrants report being non-incorporated self-employed. In specification (3), the dependent variable takes the value of 1 if second-generation immigrants report being incorporated self-employed. In specification (4) the cultural proxy is defined as the proportion of total employed individuals who are self-employed and the sample only includes those second-generation immigrants who are working. Specification (5) includes as the self-employment rate, the proportion of individuals working in the Private Sector who are self-employed and the sample only includes those second-generation immigrants who are working in the Private Sector. It does not include data for Luxembourg, Greece, Korea and New Zealand. The cultural proxy also changes in specification (6), here, it is calculated as the number of self-employed individuals divided by the total number of individuals who are part of civilian employment and are not involved in agricultural activities, and the sample only includes those second-generation immigrants who are working but not involved in agricultural activities. In this case, there is no information for second-generation immigrants from The Netherlands, Greece, Korea and Turkey. Specifications (7) to (9) incorporate the self-employment rate measured as the number of self-employed people divided by the total number of unemployed people every 5 years from 1970 to 1980, respectively, and the sample only includes those second-generation immigrants who are self-employed or unemployed. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 7: The effect of culture on Self-employment by gender

Sample	All sample			Men Sample			Women Sample		
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Self-employment rate 1970	0.150***			0.207***			0.041***		
(share of labour force)	(0.021)			(0.030)			(0.008)		
Self-employment rate 1970		0.210***							
(share of non-agricultural civilian employment)		(0.046)							
Self-employment rate 1990			0.184***						
(share of non-agricultural civilian employment)			(0.058)						
Male Self-employment rate 1970					0.268***				
(share of non-agricultural civilian employment)					(0.048)				
Male Self-employment rate 1990						0.198***			
(share of non-agricultural civilian employment)						(0.066)			
Female Self-employment rate 1970								0.035***	
(share of non-agricultural civilian employment)								(0.007)	
Female Self-employment rate 1990									0.124***
(share of non-agricultural civilian employment)									(0.035)
Age	0.001	0.0001	0.001	0.001	0.001	0.002	-0.0001	-0.0001	-0.0002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age Square/100	0.002*	0.003*	0.002	0.002	0.002	0.002	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.083***	0.081***	0.082***						
	(0.010)	(0.010)	(0.010)						
High School	0.007**	0.009***	0.009***	0.009**	0.012***	0.010**	0.004	0.004	0.004
	(0.003)	(0.002)	(0.003)	(0.004)	(0.002)	(0.004)	(0.003)	(0.005)	(0.003)
Some College	0.023***	0.024***	0.025***	0.026***	0.020***	0.029***	0.017**	0.008	0.013**
	(0.008)	(0.008)	(0.008)	(0.009)	(0.004)	(0.009)	(0.006)	(0.007)	(0.005)
College +	0.035***	0.041***	0.039***	0.047***	0.042***	0.052***	0.002	-0.003	-0.001
	(0.011)	(0.011)	(0.011)	(0.013)	(0.010)	(0.013)	(0.007)	(0.007)	(0.006)
Married	0.035***	0.033***	0.034***	0.049***	0.049***	0.048***	0.013***	0.011*	0.010**
	(0.002)	(0.002)	(0.002)	(0.008)	(0.012)	(0.008)	(0.004)	(0.005)	(0.004)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R sq.	0.043	0.044	0.043	0.030	0.031	0.029	0.014	0.013	0.013
N	48701	45988	48701	30962	21754	30931	17739	12333	15450

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force in columns 1 to 3. Sample only includes men in columns 4 to 6 and only women in columns 7 to 9. All specifications are basis linear regressions that include controls for gender in columns 1 to 3 (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in specifications (1), (4) and (7). In specification (2) the cultural proxy is defined as the number of self-employed individuals divided by the total number of individuals who are part of civilian employment and are not involved in agricultural activities in 1970 and in 1990 in specification (3). Specifications (5) and (6) add as the cultural proxy the number of self-employed men divided by the total number of men who are part of civilian employment and are not involved in agricultural activities in years 1970 and 1990, respectively. Specifications (8) and (9) add as the cultural proxy the number of self-employed women divided by the total number of women who are part of civilian employment and are not involved in agricultural activities in years 1970 and 1990, respectively. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 8: The effect of culture of Self-employment by sector (Primary, Secondary and Tertiary)

Sample	All Sample	Primary	Secondary	Tertiary	Secondary	Tertiary	Secondary	Tertiary
Varriables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-employment rate 1970	0.150***	-0.462***	0.043	0.197***				
(share of labour force)	(0.021)	(0.148)	(0.034)	(0.022)				
Self-employment rate 1970					0.093**	0.289***		
(share of non-agricultural civilian employment)					(0.035)	(0.067)		
Self-employment rate 1990							0.074*	0.263***
(share of non-agricultural civilian employment)							(0.037)	(0.090)
Age	0.001	0.028***	-0.001	0.002	-0.002	0.002	-0.002	0.003*
	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Age Square/100	0.002*	-0.025***	0.003**	0.000	0.003**	0.001	0.003**	0.000
	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Male	0.083***	0.344***	0.054***	0.093***	0.055***	0.091***	0.054***	0.092***
	(0.010)	(0.036)	(0.010)	(0.013)	(0.010)	(0.014)	(0.010)	(0.013)
High School	0.007**	0.086*	0.009***	-0.001	0.010***	-0.001	0.010***	0.000
	(0.003)	(0.043)	(0.003)	(0.005)	(0.002)	(0.004)	(0.002)	(0.005)
Some College	0.023***	0.116***	0.028**	0.015	0.027**	0.017*	0.030***	0.018*
	(0.008)	(0.040)	(0.010)	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)
College +	0.035***	0.046	-0.004	0.035**	-0.001	0.041***	-0.002	0.040***
	(0.011)	(0.079)	(0.009)	(0.013)	(0.009)	(0.014)	(0.009)	(0.012)
Married	0.035***	0.165**	0.022***	0.040***	0.020***	0.038***	0.022***	0.039***
	(0.002)	(0.066)	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R sq.	0.043	0.292	0.023	0.052	0.023	0.053	0.023	0.052
N	48701	815	16808	30987	15995	29158	16808	30987

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force in columns 1. Sample only includes those individual who report participating in agricultural activities in column (2), those in industrial activities are in columns 3, 5 and 7, and those involved in services are in columns 4, 6 and 8. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force in specifications (1) to (4). In specifications (5) and (6) the cultural proxy is defined as the number of self-employed individuals divided by the total number of individuals who are part of civilian employment and are not involved in agricultural activities in 1970. In specifications 7 and 8, we use the same cultural proxy as in 5 but measured in 1990. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 9: The effect of culture on Self-employment by economic activity

	(1)	(2)	(3)	(4)
	Agriculture, forestry and fishing	Mining and quarrying	Construction	Manufacturing
Self-employment rate 1970	-0.444**	0.450***	0.113	0.029*
	(0.156)	(0.136)	(0.102)	(0.016)
N	844	145	2886	13236
R-sq	0.278	0.394	0.032	0.019

	(5)	(6)	(7)	(8)
	Transportation and storage	Electricity, gas, steam, air conditioning supply, water supply; sewerage, waste management and remediation activities	Wholesale and retail trade; repair of motor vehicles and motorcycles	Financial and insurance activities
Self-employment rate 1970	0.123***	-0.020	0.119***	0.129***
	(0.039)	(0.033)	(0.034)	(0.040)
N	2085	1283	8276	2242
R-sq	0.033	0.030	0.071	0.081

	(9)	(10)	(11)	(12)
	Real estate activities	Professional, scientific and technical activities	Other service activities	Activities of households as employers
Self-employment rate 1970	-0.063	0.407***	0.216	0.159*
	(0.110)	(0.090)	(0.222)	(0.081)
N	618	1878	611	1360
R-sq	0.147	0.187	0.178	0.158

	(13)	(14)	(15)	(16)
	Accomodation and food service activities	Information, communication, arts, entertainment and recreation	Human health and social work activities	Education
Self-employment rate 1970	0.343***	-0.215	0.157***	0.001
	(0.104)	(0.155)	(0.051)	(0.022)
N	1843	505	3225	3811
R-sq	0.158	0.107	0.275	0.023

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who take part in a specific economic activity classified following the International Standard Industrial Classification of all Economic Activities (ISIC), see each specification. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 10: Estimations of the Transmission Culture on Self-Employment: Peer Effects

	(1)	(2)	(3)	(4)	(5)
Self-employment rate 1970	0.150***	0.169***		0.170***	0.155***
	(0.021)	(0.024)		(0.023)	(0.027)
Proportion of FGI and SGI per MSA			0.171	0.190	-0.025
			(0.186)	(0.155)	(0.252)
Proportion of FGI and SGI per MSAx					0.840
Self-employment rate 1970					(0.755)
Age	0.001	0.0004	0.001	0.0003	0.0003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age Square/100	0.002*	0.002	0.001	0.002	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.083***	0.078***	0.078***	0.078***	0.078***
	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
High School	0.007**	0.010**	0.010***	0.011***	0.011***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
Some College	0.023***	0.024**	0.024***	0.026***	0.026***
	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)
College +	0.035***	0.042***	0.043***	0.044***	0.044***
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Married	0.035***	0.033***	0.032***	0.032***	0.032***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
State Fixed Effects	Yes	No	No	No	No
MSA Fixed Effects	No	Yes	Yes	Yes	Yes
R sq.	0.043	0.043	0.040	0.043	0.043
N	48701	41013	41013	41013	41013

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force in columns 1. Sample only includes those individual who report living in an MSA in columns 2 to 5. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects in 1 and MSA fixed effects in 2 to 5. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals who are in the labour force. Specifications 3 to 5 add controls for the proportion of first and second-generation immigrants per MSA. Specification 5 includes an interaction between the proportion of first and second-generation immigrants per MSA and the cultural proxy. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 11: Estimations of Transmission Culture on Self-Employment: Inter-generational Transfer

|	(1)	(2)	(3)	(4)
Self-employment rate 1970	0.150***	0.159***	0.159***	0.094**
	(0.021)	(0.034)	(0.034)	(0.043)
Proportion of FGI self-employed per MSA in 1950			0.275	-13.750***
			(0.729)	(3.737)
Proportion of FGI self-employed per MSA 1950 x Self-employment rate 1970				76.092***
				(21.297)
Age	0.001	-0.0002	-0.0002	-0.0004
	(0.001)	(0.001)	(0.001)	(0.001)
Age Square/100	0.002*	0.003**	0.003**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.083***	0.073***	0.073***	0.073***
	(0.010)	(0.010)	(0.010)	(0.010)
High School	0.007**	0.007	0.007	0.008
	(0.003)	(0.005)	(0.005)	(0.005)
Some College	0.023***	0.018**	0.018**	0.020**
	(0.008)	(0.008)	(0.008)	(0.008)
College +	0.035***	0.036***	0.036***	0.038***
	(0.011)	(0.009)	(0.009)	(0.009)
Married	0.035***	0.030***	0.030***	0.030***
	(0.002)	(0.003)	(0.003)	(0.003)
State Fixed Effects	Yes	Yes	Yes	Yes
R-sq.	0.043	0.039	0.039	0.040
N	48701	23057	23057	23057

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 1970 Form 2 Metro Sample. Sample consists of second-generation immigrants who are part of the Labour Force in column 1. In columns 2 to 4, sample only includes those who report living in a MSA that was classified as an MSA in 1950. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects. The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals in the labour force. Specifications 3 and 4 add controls for the proportion of first generation immigrants who were self-employed per MSA. Specification 4 includes an interaction between the proportion of first generation immigrants per MSA and the cultural proxy. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Table 12: Estimations of the Effect of Culture on Self-Employment: Census 2000

Sample	All who report an ancestry			First-generation immigrants		
	(1)	(2)	(3)	(4)	(5)	(6)
Self-employment rate 1970	0.007	0.046		0.335**	0.336***	
	(0.045)	(0.040)		(0.122)	(0.101)	
Self-employment rate2000			0.040			0.220***
			(0.043)			(0.032)
Age	0.002**	0.002**	0.002**	0.011***	0.011***	0.011***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Age Square/100	0.002*	0.002*	0.002*	-0.007***	-0.007***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Male	0.060***	0.060***	0.060***	0.069***	0.070***	0.072***
	(0.001)	(0.001)	(0.001)	(0.011)	(0.011)	(0.011)
High School	-0.015***	-0.015***	-0.015***	0.040	0.031	0.023
	(0.002)	(0.002)	(0.002)	(0.024)	(0.020)	(0.017)
Some College	-0.014***	-0.016***	-0.016***	0.030	0.014	0.006
	(0.003)	(0.003)	(0.003)	(0.029)	(0.024)	(0.020)
College +	-0.009	-0.011*	-0.011*	0.006	-0.008	-0.021
	(0.006)	(0.006)	(0.006)	(0.029)	(0.024)	(0.019)
Married	0.031***	0.032***	0.032***	0.032**	0.035**	0.035**
	(0.001)	(0.001)	(0.001)	(0.013)	(0.013)	(0.013)
State Fixed Effects	No	Yes	Yes	No	Yes	Yes
R sq.	0.040	0.043	0.043	0.052	0.059	0.063
N	565193	565193	565193	16669	16669	16669

Note: Robust standard errors clustered by country of origin in parentheses. All regressions based on IPUMS data census, 1% 2000 Census. Sample consists of individuals who report an ancestry and who are part of the Labour Force in columns 1 to 3. Sample only includes those individual who report being first-generation immigrants in columns 4 to 6. All specifications are basis linear regressions that include controls for gender (male), education (high school, some college, college +), a quadratic term for age, marital status (married), and State fixed effects (in columns 2, 3, 5, and 6). The cultural proxy is represented by the self-employment rate measured as the number of self-employed divided by the total number of individuals in the labour force in 2000 in specifications 1, 2, 4 and 5, and in 1970 in columns 3 and 6. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Figure 1
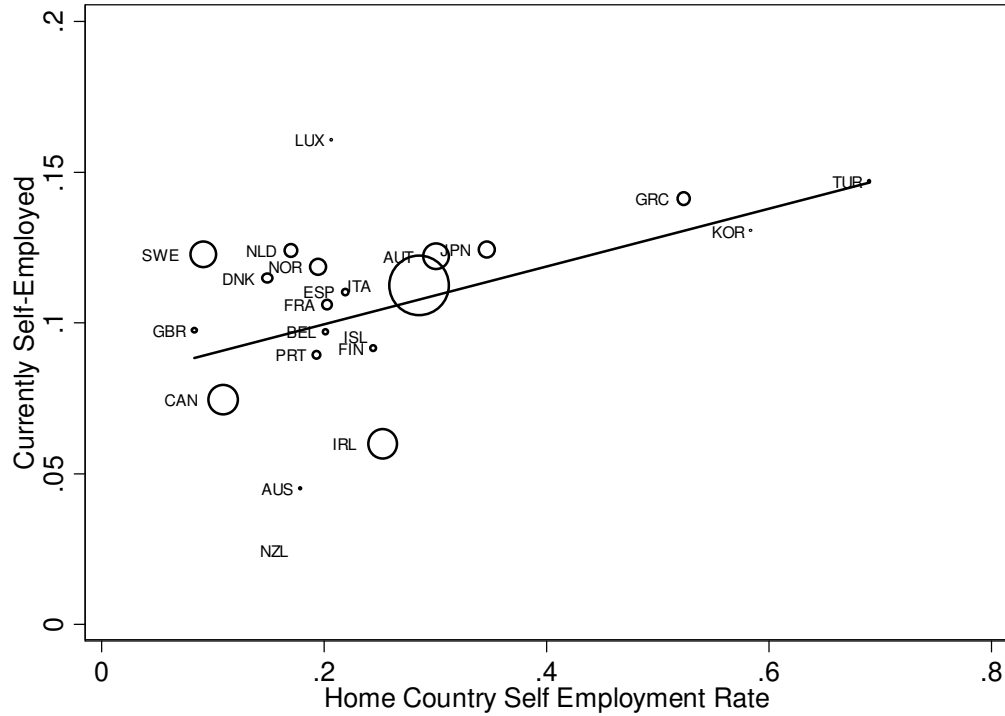
Notes: The share of second-generation immigrants in the US who are currently self-employed is plotted on the y-axis while ancestors' home country self-employment rates, measured as the number of self-employed individuals divided by the total number of individuals who are part of the labour force, are plotted on the x-axis. Circle sizes represent the number of second-generation immigrants from each parents' country of origin in our U.S. Census sample.

36