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Evidence from Italy**

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Marianna Brunetti

University of Rome Tor Vergata, CEIS and CEFIN

Anzelika Zaiceva

University of Modena and Reggio Emilia, POP UNU-MERIT and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Is Self-Employment for Migrants? Evidence from Italy*

Using a unique Italian dataset covering the period 2004-2020, we assess the immigrant-native gap in entrepreneurship and investigate channels behind it. The data allows us to account for many observable characteristics as well as for risk aversion, which is usually not observed, yet crucial for the self-employment decision. Unlike most of the existing empirical literature, we find that immigrants in Italy are less likely to be self-employed. The negative gap is confirmed when propensity score matching methodology is used. Heterogeneity analysis suggests that the negative gap is larger for men, for economic migrants and those coming from Sub-Saharan Africa, while it is not significant for mixed immigrant-native couples, for highly skilled, and for migrants from Asia and Oceania. The largest gap is found for those working in the agricultural sector. Regarding additional channels, we explore the role of access to credit, including the informal one, and whether migrants are credit constrained, as well as the importance of migrant networks, easiness of doing business, and expenditures on services for migrants. Despite finding significant correlations between self-employment and some of these factors, none of them seem to decrease the magnitude of the negative gap.

JEL Classification: F22, J21, O15, J15

Keywords: immigrants, self-employment, gender, intermarriage, propensity score matching

Corresponding author:

Anzelika Zaiceva-Razzolini
University of Modena and Reggio Emilia
Via Università, 4
41121 Modena MO
Italy

E-mail: anzelika.zaiceva@unimore.it

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1. Introduction

Immigrants' performance in the receiving country's labour market and their integration are issues of great importance and are highly relevant for policy. Recent epidemiological and political developments, along with the war in Ukraine and refugees' inflows, have spurred further attention and interest in these questions. Labour market performance of immigrants and ethnic minorities and their assimilation in terms of employment and earnings have been analysed in many studies (starting from seminal contributions by Chiswick, 1978 and Borjas, 1987; see, for example, Kahanec et al., 2011 for an overview of immigrants' and ethnic minorities' labour market outcomes in the EU countries). A separate strand of this literature analyses immigrant entrepreneurship, although the evidence is scarcer (see, among others, Borjas, 1986, and Fairlie and Lofstrom, 2015 for a survey). In this paper, we contribute to this literature by studying the immigrant-native gap in self-employment in Italy and investigating the potential drivers behind it.

In general, migrants are often seen as being more entrepreneurial and willing to take risks. Self-employed immigrants make a significant contribution to a host country's economy by creating jobs, bringing know-how and innovation, transferring knowledge and fostering economic and social networks between the countries of origin and the destination. Individuals may be "pulled" into self-employment by possibility of earning higher income than in paid employment, or by other favourable attributes such as more freedom, flexibility and self-realization. On the other hand, individuals may be "pushed" into self-employment due to their disadvantaged position in the labour market, such as unemployed who cannot find a job in the wage sector, or recent immigrants due to the language barriers, inappropriate education or qualifications, or discrimination (see, among others, Clark and Drinkwater, 1998, Constant and Zimmermann, 2006, Orrenius and Zavodny, 2009). Indeed, migrants are often found to be employed in risky and marginal jobs, including temporary and informal employment (Orrenius and Zavodny, 2009).

In general, immigrants and natives are likely to have different self-employment propensities due to a number of reasons, including differences in labour market prospects, different patterns of savings and wealth accumulation, differences in access to financial resources and credit. Different risk attitude is another crucial determinant, yet it has not been usually included into the analysis of the gap due to unavailable data on risk preferences. Migrants' selection and selection into self-employment are other important channels. Finally, cultural differences also play an important role.

In this paper, we analyse the immigrant-native gap in self-employment using a rich dataset for Italy over 2004-2020, namely the Bank of Italy Survey of Household Income and Wealth (SHIW). To investigate potential channels behind the gap, we also merge into the dataset additional aggregate

level variables taken from two different sources, namely, Italian National Institute of Statistics (ISTAT) and Study and Research Centre IDOS.

Italy is particularly well suited for such analysis as it is characterized by both widespread entrepreneurship and high immigration rates. Indeed, it has the largest number of small and medium size enterprises in the EU (around 3,5 million in 2023) and self-employed represent around 20% of the total working population.¹ In addition, it has experienced one of the fastest increases in immigration in recent decades. It has faced significant immigrant inflows, following EU eastern enlargements, and large refugees' inflows more recently. The share of foreign-born amounts to 10.4% in 2021 (OECD, 2022), which is comparable to traditional immigrant-receiving countries.

To estimate the gap, we employ standard probit regressions as well as propensity score matching techniques to check the robustness of our results. The data allows us to account for many observable individual and household characteristics that are important for self-employment decision. Furthermore, our data allows to control for risk aversion, which is usually unobserved, yet crucial for this type of analysis. In addition, we investigate the heterogeneity of the gap and potential channels behind it, including gender, skills, sector of employment, country of origin, migration motives and intermarriage patterns, as well as access to credit, migrants' networks, and easiness of running a business for immigrants.

Our main results indicate that, contrary to many existing studies, there is a significant *negative* immigrant-native gap in self-employment in Italy. The gap is the largest for men, for economic migrants (i.e., those who come for job-related reasons) and for migrants from Sub-Saharan Africa, while it is insignificant for migrants from Asia and Oceania. There is also evidence of assimilation, as self-employment proclivity increases with years since migration. The gap is present for both-immigrant couples and is small or insignificant for mixed immigrant-native couples, suggesting that intermarriage patterns and networks matter and pointing towards further evidence of assimilation. Indeed, immigrants married to a native may have more easy access to local networks and social capital, information about local labour market and access to financial resources, as well as might have also gone through an assimilation process, including learning the language. Moreover, we find that the gap is driven by low-skilled individuals and is largely insignificant for those with university degree, suggesting that low-skilled migrants may face more difficulties in having access to financial resources, information and dealing with the bureaucracy. Finally, the largest gap is found for those working in agriculture, which might reflect the importance of agriculture in Italy and popularity of

¹ See www.statista.com.

this sector among native entrepreneurs, and also the fact that many immigrants work in this sector illegally.

Regarding additional channels, we also find evidence of a negative impact of the number of firms run by immigrants in the region, possibly pointing towards competition in the labour market and substitutability between migrant and native firms, as well as evidence of a positive effect of the share of migrants coming from the same geographic region, confirming thus that networks matter. Finally, we find that having access to credit increases the probability of being self-employed, while having informal debt does not significantly affect entrepreneurship. Importantly, the effect of the immigrant dummy remains highly significant and robust to including these additional drivers as none of them seems to contribute to explaining the negative gap. The results remain also robust to alternative estimation techniques and definitions of self-employed.

The rest of the paper is organized as follows. The next section provides literature review. Data and empirical methodology are discussed in Section 3, while Section 4 presents the main results. Heterogeneity analysis and additional potential drivers are investigated in Section 5, and Section 6 presents robustness checks. Finally, Section 7 concludes and discusses implications for policy.

2. Literature review

Immigrants' entrepreneurship has been attracting an increasing attention in economic literature since the seminal paper by Borjas (1986). Usually, studies document a higher business ownership rate and self-employment proclivity among the foreign-born than the native born in many developed countries (see, for example, Borjas, 1986, Clark and Drinkwater, 1998, 2000, 2010, Lofstrom, 2002, Schuetze and Antecol, 2007, Fairlie et al., 2012, Fairlie and Lofstrom, 2015 for evidence for the US, the UK, Canada and Australia), while Constant and Zimmermann (2006) find similar self-employment propensity among immigrants and natives in Germany, and Georgarakos and Tatsiramos (2009a) find a lower survival probability in entrepreneurship for Mexicans and other Hispanic immigrants in the US, which is not transmitted into a second-generation.

The decision to become self-employed is driven by many factors. The socio-economic determinants of self-employment have been analysed in numerous studies and many of them focus on immigrant entrepreneurship (see Fairlie and Lofstrom, 2015 for a survey on immigrant entrepreneurship). Existing empirical evidence suggests that age, education, wealth and family structure are important. Moreover, migrant men and women may have different propensities to become entrepreneurs (see, for example, Colombelli et al., 2021). Immigrant-owned businesses are also more concentrated in certain sectors, such as construction, trade or professional services (Fairlie and Lofstrom, 2015). In addition, migrants are more likely to move into self-employment from

unemployment or inactivity (Constant and Zimmermann, 2014; Georgarakos and Tatsiramos, 2009a) and often self-employment provides a stepping-stone into a salaried employment (see, for example, Georgarakos and Tatsiramos, 2009b). Moreover, previous self-employment experience in a home country was found to be a significant determinant of self-employment in a destination country (Akee et al., 2013).

Migrant and ethnic networks also matter as migrant entrepreneurs often provide jobs for their co-nationals and have a comparative advantage in satisfying the demand for ethnic goods of co-nationals (Borjas, 1986; Borjas and Bronars, 1989)², as well as provide help regarding access to financial resources and credit. In this context, living in an ethnic enclave may increase self-employment (see Fairlie and Lofstrom, 2015 and the references therein). In addition, being married to a native may also affect self-employment via networks. Georgarakos and Tatsiramos (2009b) show that intermarriage with a native significantly affects both the probability of starting up a business and its survival, albeit with opposite effects. On the one hand, intermarriage by entailing easier access to local networks, which in turn may help transitions into paid employment, reduces the chances of becoming self-employed and starting up a business. On the other hand, once the business has been set up, networks gained via intermarriage may facilitate its survival.

Length of stay in the host country is also important. Borjas (1986) documents a strong positive impact of assimilation, measured by years since migration, on self-employment likelihood, arguing that, since self-employment requires financial capital, it is likely that newly arrived migrants have not accumulated enough wealth to start a business. He also shows that cohort effects matter as self-employment rate is larger among recent immigrant cohorts than in earlier cohorts relating this to a worsening of opportunities in the salaried sector for immigrants.

Fairlie and Lofstrom (2015) provide an excellent review of the literature on immigration and entrepreneurship, including both the determinants of the immigrant-native gap in self-employment probability as well as in self-employment earnings gap. As one of the main determinants of self-employment gap, the authors identify human capital, i.e. education and language proficiency. The relation with education is in general positive, albeit there is also mixed evidence (see Fairlie and Lofstrom, 2015 and the references therein). Nevertheless, as the authors argue, in the US, lower education attainment of Mexican Americans is partly responsible for their lower business ownership rate, while higher educational level of Asians translates into higher business ownership by this group.

² Borjas and Bronars (1989) provide a model of consumer discrimination and test its implications with empirical data for the US. They show that ethnic differences in self-employment and income arise in markets with consumer discrimination and incomplete information about the price of the good and the race of the seller. Their model also has important implications about the selection into self-employment, as it implies that able blacks are less likely to self-select into self-employment than able whites.

In addition, limited English language proficiency may impede communication with potential customers or suppliers thus lowering the probability of self-employment. On the other hand, limited language skills can also make it more difficult to find a job in the waged sector thus increasing the chances of self-employment.

Personal wealth, access to financial capital and liquidity constraints are undoubtedly crucial factors affecting probability to become an entrepreneur, and immigrants and ethnic minorities generally have lower wealth, fewer financial resources and experience more difficulties in access to external financial capital (see, for example, Cobb-Clark and Hildebrand, 2006; Fairlie et al., 2021, review of studies in Fairlie and Lofstrom, 2015; and more recently Bertocchi et al, 2023).

It is generally perceived that entrepreneurs are more willing to take risks. Indeed, risk attitudes is another important determinant of self-employment, which, however, is not always available in the data. Caliendo et al. (2009) show that individuals who are less risk averse are more likely to start a business in general, however, this positive effect comes from the transitions out of regular employment, while for those coming out of unemployment or inactivity there is no significant impact. In addition, Caliendo et al. (2010) find an inverse U-shaped relationship between risk attitudes and entrepreneurial survival, as self-employed whose risk attitudes are in the medium range survive significantly longer than those who have extremely low or high risk levels. Neither of these studies, however, considers migrants. Regarding migrants in general, they are usually found to be more willing to take risks (Orrenius and Zavodny, 2009; Dohmen et al., 2011; Akguc et al., 2016), although Bonin et al. (2009) using direct measure of risk preferences found that first-generation migrants in Germany have lower risk attitudes than natives, which equalize in the second generation. A recent study by Deole and Rieger (2022) shows that the immigrant-native gap in risk preferences has widened for recent immigration cohorts in Germany, and that risk preferences of economic migrants who intend to stay in Germany temporarily are similar to natives, while other immigrants are more risk averse than natives. They also report smaller gaps for migrants who are female, highly educated, proficient in the host country language, working in high-skilled jobs and, particularly relevant for our paper, for the self-employed.

Studies have also documented a substantial heterogeneity in self-employment propensity by ethnicity and country of origin, suggesting that cultural factors matter (see Borjas, 1986; Fairlie and Meyer, 1996; Clark and Drinkwater, 1998; see also Fairlie and Lofstrom, 2015 and the references therein). For example, Fairlie and Meyer (1996) find significant differences in self-employment for different ethnic and racial groups in the US, after controlling for individual characteristics, and explore several theories to explain these differences. In particular, they show that ethnic/racial group that comes from a country with high self-employment rate do not have high self-employment rate in

the US, and that the self-employment rate is higher for more advantaged ethnic/racial groups, and not the disadvantaged ones, as measured by wage earnings, self-employment earnings and unearned income. The latter finding suggests that immigrants may chose self-employment due to higher potential income and are not always “pushed” into it.

Finally, existing literature suggests that also motives of migration matter for self-employment decision. More recently, partly motivated by a “refugee crisis”, a growing body of the literature has analysed the self-employment of refugees and non-economic migrants. It has shown that those who are more likely to earn a higher salary in paid employment, i.e. study and economic migrants, are less likely to engage in self-employment, compared to family and asylum migrants, who are likely to earn lower wages (Kone et al., 2021). In addition, legal status in the destination country also plays a role, since illegal migrants face difficulties in obtaining formal employment contract as well as access to financial resources and institutions that are important for starting and running a business (see Fairlie and Lofstom, 2015 and the references therein).

Based on the evidence presented above, in the subsequent sections we analyse the significance of the immigrant-native gap in self-employment and investigate potential channels behind it.

3. Data and empirical strategy

In order to assess the immigrant-native gap in entrepreneurship we exploit the last eight waves of the Bank of Italy Survey of Household Income and Wealth (that is, 2004, 2006, 2008, 2010, 2012, 2014, 2016 and 2020), each including about 8,000 households and 19,000 individuals.³

The SHIW basic sample unit is the household, but detailed socio-demographic information is provided for each member of the households interviewed, including relationship with the head of the household, age, gender, marital status, education, and employment status. In our empirical analysis we thus focus on individual data. From the original sample, which includes 150,918 individuals, we drop non-working people (38,069 observations) and those aged less than 18 and more than 65 years old (61,580 observations), as well as those declaring negative consumption or non-reporting the sector of activity (23 and 132 observations, respectively). We are thus left with 51,114 individual observations.

Our empirical strategy consists of estimating different specifications of the following model:

$$y_{it} = \beta_0 + \beta_1 Immigrant_i + \beta_2 YSM_i + \mathbf{X}\boldsymbol{\beta} + \tau_t + a + \epsilon_i \quad (1)$$

³ The SHIW is organized as a rotating panel, since within each wave half of the sample units are refreshed with the new ones. Further details about the SHIW are available here: <https://www.bancaditalia.it/statistiche/tematiche/indagini-famiglie-impres>.

where y_{it} is a binary variable taking value 1 if the individual i is self-employed, and 0 otherwise, i.e. if s/he works as an employee. The binary variable $Immigrant_i$ takes value 1 when individual i is non-native, and 0 otherwise capturing the immigrant-native gap in the likelihood of being self-employed. Our preferred specification incorporates the continuous variable YSM_i measuring the years-since-migration of individual i , which is by construction equal to 0 for natives, as well as a rich set of control variables, gathered in matrix \mathbf{X} , including:

- Individual demographic characteristics: age, gender, marital status (dummies for singles, separated/divorced and widowed), and education (dummy taking value 1 for possessing a university degree, and 0 otherwise);
- Dummies for the sector of work (with agriculture as a reference category);
- Household-level characteristics: household size, household wealth quartile dummies, and the (financial) risk-aversion variable (which takes value 1 for households in which a financial respondent declared to prefer a “No risk, low returns” type of financial investment).

Finally, τ_t , and a represent year and macro-area of residence fixed effects, respectively, and ϵ_{it} are the errors.

Further, we investigate the heterogeneity of the immigrant-native gap and the potential drivers behind it. We first focus on gender and estimate the model for the subsamples of males and females. Subsequently, we investigate the differences by educational attainment (high vs. low education) and for different sectors of employment. Finally, we explore the role of intermarriage, region of origin and migration motives by replacing the immigrant dummy of model (1) with a set of covariates capturing each of these aspects.

More specifically, we estimate the following model:

$$y_{it} = \beta_0 + \beta_1 Det_i + \mathbf{X}\boldsymbol{\beta} + \tau_t + a + \epsilon_i \quad (2)$$

where the variable Det_i can refer to:

- 1) *Intermarriage* (estimated on the subsample of couples only): a set of dummies indicating couples of both immigrants, immigrant-native couples (mixed), and couples of both natives (a reference category);

- 2) *Region of origin*: a set of dummies capturing whether the immigrant comes from the EU15 and North America, new EU member states, other European countries, North Africa, Sub-Saharan Africa, Central and South America, Asia and Oceania (set to 0 for natives)⁴
- 3) *Migration motive*: a set of dummies capturing whether migration has taken place mainly for job related reasons, family reunion or other reasons (set to 0 for natives).

Regarding additional potential channels, we consider access to credit and indebtedness, as well as easiness of starting a business specifically for immigrants. Thus, we estimate the following model:

$$y_{it} = \beta_0 + \beta_1 Immigrant_i + \beta_2 YSM_i + \beta_3 Channel_{jt} + \mathbf{X}\boldsymbol{\beta} + \tau_t + a + \epsilon_i \quad (3)$$

where subscripts i, j , and t refer to individual, household and time, respectively. Depending on the driver we focus on, the variable $Channel_{jt}$ can refer to:

- 4) *Access to credit*: which is captured by the following alternative dummies:
 - Access to credit, taking value 1 when the household j has asked and obtained a loan in year t , and 0 otherwise;
 - Partially constraint, taking value 1 when the above loan has been asked and obtained, albeit not in the full amount requested, and 0 otherwise;
 - Discouraged, taking value 1 when the household j did not even ask for a loan in year t since was expected not to be financed, and 0 otherwise;
 - Informal debt, taking value 1 if the household j in year t has an informal debt (i.e. with parents, relatives or friends), and 0 otherwise. We consider this variable to account for potential substitutes of formal loans.
- 5) *Business-related indebtedness*, measured alternatively by:
 - Has professional debts, a dummy taking value 1 when household j in year t owns a debt specifically for its business, and 0 otherwise;
 - Amount paid for professional debts, a continuous variable capturing the amount paid in year t by household j for these loans;
 - Residual professional debts, a continuous variable indicating the amount which household j has still to repay in year t for these loans.

⁴ In the survey, each immigrant is asked to report his/her country of origin. However, for privacy reasons, data on individual countries of origin are not available for the external users and were provided by the Bank of Italy for this research at the aggregate level and only for the years 2006-2012.

6) *Easiness of doing business specifically for immigrants*, proxied by the following measures:

- Firms run by immigrants in the region of residence of household j in year t , either in absolute number or as a share of the total number of firms running in the region in that year;⁵
- Share of immigrants in the region of residence of household j in year t ;
- Network: proxied by the share of immigrants in the region of residence of household j in year t coming from the same geographical area as individual i in household j
- Services for immigrants: proxied by per-capita public expenditures for migrants in the region of residence of household j in year t .⁶

The potential problems when estimating model (1) by simple probit regressions include unobserved heterogeneity and self-selection. Not only migrants are a selected group of the population, but there is also a selection into self-employment. Important unobservable characteristics that may confound estimation of the effect include, among others, individual ability, motivation, entrepreneurial skills and risk preferences. To get around this problem and reduce the potential bias we first include a rich set of individual and household level characteristics, including education, wealth and sector of employment, that may partly capture the above confounders. We then also include financial risk aversion variable that is usually not available in the data. Finally, to specifically address this issue, we estimate a propensity score matching model and check whether the effect is robust.

Descriptive statistics of the main variables is presented in Table 1, while Table A1 in the Appendix provides a more detailed description of all the data and variables we use. In the whole sample, on average, 18% of individuals are self-employed, while 10.6% are immigrants. The proportion of self-employed is roughly double among natives than among immigrants, 19% and 9% respectively. Compared to natives, immigrants are younger (40 vs. 42 years old), and there is a lower proportion of males, single individuals and those with higher education among immigrants than among natives. Immigrants also have a smaller family size and are less wealthy compared to natives. Somewhat in contrast to the expectations but in line with some studies reviewed in Section 2, immigrants are found to be more risk averse than natives. Regarding sector of employment,

⁵ The data are retrieved from the Rapporto Immigrazione e Imprenditoria – Aggiornamento Statistico for the years 2015, 2017, 2018 and 2020 produced by the Centro Studi e Ricerche IDOS, <https://www.dossierimmigrazione.it>.

⁶ The share of immigrants in the region of residence, and the share of immigrants coming from the same region of origin were computed by the authors, using Istat regional data on total resident population and on immigrants by country of origin, aggregated as in Bertocchi et al. (2023).

immigrants are overrepresented in sectors such as agriculture, construction and private (e.g. domestic) services, and there is a significantly smaller share of immigrants than natives employed in transport, finance, real estate and other professional services as well as in public administration. Finally, main reasons for migration are job-related.

4. Main results

In this section, we investigate how the immigrant status of the individual affects the probability of being self-employed. Interestingly and in contrast to most of the existing studies, we find that there is a statistically significant and *negative* immigrant-native gap in the probability of entrepreneurship in Italy (see Table 2). Specifically, we estimate that an immigrant has 10.22 percentage points lower probability of being self-employed with respect to a native. This gap, which is particularly robust across all the estimated specifications, is economically relevant compared to the sample average, equal to 0.18. In addition, years since migration have a significant and positive effect on the probability of self-employment. This seems to suggest that, while initially migrants have lower chances of self-employment probably due to the absence of relevant qualifications, linguistic barriers, knowledge of local networks and social capital, or lower wealth and difficulties in access to financial resources, there is assimilation with time, as self-employment proclivity increases with years spent in Italy.

Regarding other determinants of self-employment, consistent with the literature, males, those with higher education and more wealthy individuals are more likely to be entrepreneurs. Risk averse individuals, as expected and in line with Caliendo et al. (2009, 2010), have lower likelihood of self-employment. With respect to sectors, compared to agriculture, self-employment is more likely in trade, equally likely in construction and real estate, while less likely in all remaining sectors.

5. Heterogeneity analysis and potential drivers

In this section, we move to the heterogeneity analysis and the investigation of the potential drivers of the gap, attempting thus to identify what can contribute to explaining the negative gap. We first focus on gender, skills, and sectors of employment, and then investigate the role of intermarriage, region of origin and migration motives. Finally, we focus on potential drivers explicitly related to entrepreneurship, considering access to credit and indebtedness, as well as easiness of running a business specifically for immigrants.

5.1. Gender

Existing literature shows that gender plays a relevant role in shaping the probability of being self-employed (see e.g. Colombelli et al., 2021, and Oggero et al, 2020). Table 3 reports estimated marginal effects by gender and suggests two interesting implications. First, the estimated effect is negative for both males and females, implying thus that the negative gap is not gender specific. Second, the gap is much larger (in absolute terms) for men, suggesting that for migrant men the likelihood of self-employment is twice smaller than for migrant women.

5.2. Education

It is likely that the gap in entrepreneurship is different for highly and low skilled individuals. To account for this, we first explore the potential role of education. The results in Table 4 confirm that the effect is indeed different. The estimates for individuals with lower level of education (less than a university degree) are negative, significant and robust across all specifications (see Panel A). On the other hand, the picture is more diverse for highly skilled individuals (those with a university degree), for whom the estimated effect loses its significance once additional controls are included (columns 2-5). However, when sectors of employment are added to the regression (column 6) the estimates become significant again. We interpret this latter result as a typical manifestation of a so-called “bad controls” problem (see, for example, Angrist and Pischke, 2015), which becomes particularly relevant in this context. In particular, sectors of employment are correlated both with immigrant status and with self-employment. In addition, they capture some of the effect of being an immigrant, as natives, particularly highly skilled, are likely to be selected into particular sectors, such as finance, or being high skilled professionals and consultants. Thus, sectors capture the potential advantage of being highly skilled (e.g., being self-employed in a particular high skilled sector is a consequence of being a native). In other words, including sectors as additional controls we may overcontrol for the effect of an immigrant status, in particular for highly skilled individuals. An additional problem is that sample size of highly skilled immigrants in some sectors is very small. Taking into account all these issues, the results including sectors, especially for the highly skilled, have to be interpreted with caution and considered as largely insignificant. Thus, we conclude that the negative gap in entrepreneurship is mainly driven by low-skilled, probably due to the difficulties that low-skilled migrants are likely to face in dealing with the bureaucracy required to start a business and in having access to information and financial resources.

5.3. Sector of employment

Considering that individuals with different skills sort themselves differently across various sectors, we then estimate the effect by sector of employment. Table 5 reports the estimates of the main parameters of interest in our preferred model specification, that includes all controls. We find that the estimated gap is remarkably stable across all sectors of employment in terms of size, significance, and magnitude, with the only exception of public administration, where no difference is retrieved between immigrants and natives.⁷ Moreover, the largest gap is found in agriculture, suggesting that immigrants face substantially lower probability than natives to be self-employed in this sector. This might reflect partly the fact that many natives in Italy are entrepreneurs in agricultural sector (indeed, keeping in mind the importance of agricultural production in Italy), and partly that many migrants are employed in this sector illegally.

5.4. Intermarriage

To account for the potential impact of intermarriage on the probability of being self-employed, we focus on the subsample of observations who are part of a stable couple (either in a marriage or in a partnership). Following the literature (see e.g., Georgarakos and Tatsiramos, 2009b) we define three dummy variables, identifying whether the individual is part of a couple of natives (both natives), of a couple of immigrants (both immigrants) or of a mixed couple (an immigrant married to a native).

The first column of Table 6 shows the estimated marginal effects of the immigrant dummy for the subsample of couples, in order to compare the results with the baseline model in Table 2. The estimated marginal effect is very close to the one obtained for the full sample (i.e. -0.1022, see column (1) of Table 2), pointing thus towards a statistically significant and almost identical native-immigrant gap also in the subsample of couples. In the following columns, the immigrant dummy is then replaced with the set of dummies capturing different couples defined above, with a couple of natives being the omitted category.

The results clearly show that the gap is entirely driven by couples of both immigrants, which is consistent with the previous studies. This suggests that intermarriage plays a significant role for the likelihood of entrepreneurship for migrants, as immigrants married to a native may indeed have more easily access to local networks, and hence to local information about labour and financial markets, social capital, formal credit, and better knowledge about the bureaucracy. Furthermore, through

⁷ Reliable estimates for the last sector ("Extra-territorial organizations and entities) are not available due to very small sample size (only 2 immigrants working as self-employed in this sector in our dataset).

intermarriage, immigrants might have also gone through an assimilation process, including learning the language, that makes them more similar to natives.

5.5. Region of origin

Existing literature shows substantial heterogeneity in self-employment propensity by ethnicity and country of origin, suggesting that cultural factors matter (see Borjas, 1986; Fairlie and Meyer, 1996; Clark and Drinkwater, 1998; Fairlie and Lofstom, 2015 and the references therein). In order to account for these differences, in Table 7 we estimate our baseline model replacing the immigrant dummy by a set of dummy variables capturing immigrant's country of origin, grouped into seven regions as follows: EU15 & North America (around 8.7% of immigrants in our sample), New EU member states (20.5%), Other Europe (27.7%), North Africa (12%), Sub-Saharan Africa (9.1%), Central & South America (19.4%), Asia & Oceania (12.6%). This information is only available for the years between 2006 and 2012. Hence, to allow comparison with the baseline results, in the first column of Table 7, we first report the estimates of the immigrant dummy over this time period.

The results are in line with those in Table 2, thus confirming the robustness of our baseline results also over this time period. Then, in the next columns, we investigate the differential effect by region of origin. The results in column (7), which is our preferred specification with full set of controls, suggest two interesting facts. First, the gap is negative for immigrants coming from all regions, with the only exception of Asia and Oceania, suggesting that for these migrants the likelihood of self-employment is similar to natives. Second, immigrants from Sub-Saharan Africa face the largest negative gap in self-employment, which is almost twice as big as the one faced by migrants from Europe and North America.

5.6. Migration motive

Previous literature has also found that reasons of migration matter for self-employment decision (Kone et al., 2021). We thus investigate the role of migration motives, differentiating between job-related reasons, family reunification and other reasons.

Results in Table 8, column (6) show that migration motives indeed play a role, since immigrants who come to Italy for job reasons face the largest negative gap in the probability of being self-employed with respect to natives. The gap is also negative and significant, though smaller in magnitude, for non-economic migrants, i.e. those who come for family reunification, while it is insignificant for migrants with other unspecified reasons of migration. In line with existing literature, this suggests that migrants who are more likely to earn a higher salary in paid employment, i.e. study

and economic migrants, are indeed less likely to engage in self-employment, compared to family and asylum migrants, who are likely to earn lower wages (Kone et al., 2021).

5.7. Access to credit and indebtedness

In this subsection we turn to the analysis of potential drivers that are specifically related to self-employment status. In particular, we first consider access to credit and indebtedness. To this aim, we add the additional dummies for having or not access to credit (Access to Credit), for having it only partially (Partially Constraint), or being discouraged to ask for a loan (Discouraged). In addition, we also consider a dummy for having an informal debt (i.e. debt with relatives or friends), which may act as a substitute for formal credit whenever individuals are not granted loans from the banks and other financial institutions.

Table 9 shows that having access to credit increases the probability of being self-employed. However, being self-employed is also significantly and positively correlated with having received a loan only partially and even with being discouraged or not having asked for it. Informal debt, on the other hand, does not seem to play a role in affecting the likelihood of being self-employed. Nevertheless, in all cases, including our preferred specification with all these additional variables entered together, the immigrant-native gap remains remarkably robust in terms of statistical significance and magnitude.

In Table 10 we investigate further the role of professional debt, measured either by a dummy for having debts specifically asked for business, or by the yearly amount paid for these professional debts, or the amount still left to be paid for these loans. Since this information is only available starting from 2010, in column (1) we first re-estimate our baseline specification over this subsample. Again, regardless for how having professional debts is measured, the negative immigrant-native gap remains large, robust and in line with our baseline results. Altogether, these results suggest that neither access to credit nor indebtedness seem to decrease the magnitude of the negative gap.

5.8. Starting-up and running a business by immigrants

Finally, we turn to some measures which could act as proxies for the easiness to start and run a business specifically for immigrants. In particular, we consider the following variables: the firms run by immigrants, both in absolute number and as share of the total number of firms, the share of immigrants in the region of residence, both overall and specifically coming from the same geographical area as a proxy for migrant networks, as well as the per-capita expenses for migrants as

a proxy for services specifically devoted to migrants. All variables refer to the region of residence of a household in our sample.

The results are reported in Table 11 and suggest several interesting implications. First, the number of firms run by immigrants is negatively correlated with the probability of self-employment. A possible explanation may be related to competition in the labour market and may suggest that migrant entrepreneurs might be substitutes to natives or previous migrants, as larger number of firms run by immigrants in the market decreases the chances to enter the market as an entrepreneur. Secondly, while the overall share of immigrants is not statistically significant, networks are positively correlated with self-employment, suggesting that, as expected and in line with the literature, migrant networks may indeed provide access to information and relevant resources or even a possibility to specialize in an ethnic business targeted to immigrant community. Third, services for migrants do not seem to significantly affect self-employment. We thus conclude that none of these proxies for the easiness of running a business specifically for migrants explains the immigrant-native gap found as the gap remains robust to the inclusion of these additional channels.

5.9. The gap across years and the impact of Covid-19

Several studies have now analyzed the effects of the Covid-19 pandemic on small business and self-employed (see, among others, Fairlie, 2020, Fairlie et al, 2022, Belitski et al., 2022, Miroshnychenko et al., 2023, a recent review in Sorgner, 2023, and references therein), albeit – to the best of our knowledge – none has provided evidence on its potential effect on the immigrant-native gap. Fairlie (2020) explores the early impact of Covid-19 on small business owners in the US, including immigrants and ethnic minorities. He finds the largest ever drop in active business owners, and that the losses were present in almost all industries. The largest loss has manifested for African-American businesses (a drop of 41%), followed by Latin and Asian business owners. The author also suggests that industry composition was partly responsible for these disproportional losses. Importantly for our study, he also shows that immigrant business owners experienced a loss in their activities of 36%.

In this subsection we explore if there was any impact of the pandemic on the immigrant-native gap in Italy and, more generally, if the gap has remained the same throughout the years. Figure 1 provides the answers: the gap has been always negative and significant, both economically and statistically. There has been a slow but constant convergence towards natives from 2004 till 2016, however the magnitude of the gap remained always larger than 10%. In 2020, the year when the Covid-19 pandemic outburst occurred, there has been a sharp reduction in the magnitude of the gap, reaching now roughly 8%. This would suggest that either migrants have been opening more

enterprises during the Covid-19, or that native entrepreneurs have been closing up their businesses on a relatively larger scale.

6. Robustness checks

In this section we investigate the robustness of our results to an alternative estimation strategy, to the exclusion of agriculture and to different definition of the dependent variable.

6.1 Employing alternative estimation methodologies

A potential concern comparing immigrants and natives relates to endogeneity and selection, as indeed there may still be unobservable characteristics that are also correlated with the status of immigrant. In order to eliminate or at least to reduce the potential bias, in this subsection we estimate our baseline regressions employing a matching estimator. Even if matching is based on the selection on observables, by matching on a rich set of observable characteristics and comparing observationally similar treated and control individuals, we hope to at least reduce the potential bias.

Specifically, we employ a propensity score matching model, in which in the first step we estimate the propensity score, i.e. the probability of being an immigrant, conditional on a set of observable characteristics. In order to do so, we select the largest possible set of covariates, namely: age, gender, marital status, household size, wealth quartiles, education, risk aversion, year, and macro-region. In the second step, the individuals are matched on the estimated propensity score, so as to balance the sample statistics between immigrants (the treated group) and natives (the control group). Table 12 and Figure 2 compare the selected characteristics of immigrants and natives before and after the PS matching and show that, although there are still some differences left after matching between the two groups (in particular in terms of gender, with immigrants being more likely to be men), the differences after matching are much smaller and largely statistically not significant. In addition, Figure 3 proves that the common support assumption, assuring that we are effectively matching only comparable immigrants and natives, is satisfied (as only 4 observations are found off the support).

Table 13 reports the average treatment effect for the treated (ATT). The PS matching estimator suggests a significant and negative gap of 2.13 percentage points, which is lower in magnitude but statistically significant and negative, and thus consistent with the estimates reported in the baseline regressions in Table 2. In general, the matching estimation strategy confirms the

robustness of our results and presents a similar picture: in particular, immigrant status is found to be statistically relevant and to reduce the probability of being self-employed.

Finally, using another estimation methodology, namely linear probability model, produces very similar results (see Table 14). Overall, employing alternative estimation methodologies and, in particular, comparing natives matched to similar immigrants, confirms the robustness of our baseline results and suggests a negative and significant gap in self-employment.

6.2 Using different sample and definition of the dependent variable

In this subsection we investigate how robust the results are to alternative definitions of the sample. In particular, following the existing literature, we first exclude agriculture from the analysis. The results excluding this sector (with manufacturing as a reference category) remain largely unchanged (see Table 15).

Subsequently, we experiment with a narrower definition of the dependent variable. So far, the dependent variable used included all those working in non-dependent employment, namely professionals, i.e. members of the arts or professions, freelancers, individual entrepreneurs, owners (or members) of a family business, and shareholders or partners in quoted businesses. In this subsection, we use a more restrictive definition of self-employed including in this category only individual entrepreneurs, freelancers, and owners or members of a family business, thus dropping professionals and shareholders. Table 16 reports a significant and negative effect of an immigrant dummy also when using this more restrictive definition of a dependent variable, thus confirming the robustness of our baseline results.

In addition, we explore the immigrant-native gap for each of these types of self-employment separately. We find that the gap is higher for members of the arts or professions and freelancers, and lower for shareholders, while there is no significant effect for sole proprietors and owners of family business (see Table 17).

7. Conclusion

Using unique survey data for Italy over the period 2004-2020, we document a sizeable self-employment gap between immigrants and natives. In particular, controlling for a rich set of individual and household characteristics, including risk aversion and years since migration, we find a negative gap ranging between 9 and 11 percentage points, suggesting that, in Italy, immigrants are less likely to be self-employed than natives. This gap is economically relevant considering that 1 out of 5

working individuals in our dataset work as self-employed. The negative effect is confirmed, albeit is lower in magnitude, when a propensity score matching strategy is used.

Moreover, we find that the gap is larger for men, for economic migrants and for those coming from Sub-Saharan Africa, while it is insignificant for migrants from Asia and Oceania. We also find evidence of assimilation, as self-employment proclivity increases with years since migration. In addition, networks and intermarriage patterns matter, since the gap is present for both-immigrant couples and is small or insignificant for mixed immigrant-native couples. This suggests that being married to a native may provide a better access to information or financial resources and credit needed to start a business, or, indeed, a job in such business per se. We also find that the gap is driven by low-skilled individuals and is largely insignificant for those with university degree, suggesting that low-skilled migrants may not have relevant skills required to start a business or may face more difficulties in having access to financial resources and dealing with the bureaucracy. Finally, the largest gap is found in agriculture, reflecting probably the importance of agriculture in Italy and popularity of this sector among native entrepreneurs, and also the fact that many immigrants work in this sector illegally.

Regarding other channels, we find that while access to formal credit and being credit constrained matter for self-employment, they do not help to reduce the gap, as neither does having an informal debt. In addition, we find evidence of a negative impact of the number of firms run by immigrants in the region, possibly pointing towards competition in the labor market and substitutability between migrant and native firms, as well as of a positive effect of the share of migrants coming from the same geographic region, confirming thus that networks matter. Importantly, the effect of the immigrant dummy remains highly significant and robust to including these additional drivers as none of them seems to reduce the magnitude of the gap. In other words, the negative effect of the immigrant status is robust to these additional confounding channels and is likely attributable to other reasons, including potential discrimination.

The negative gap we find is in contrast to many previous studies. We link this to the specificity of the Italian labour market, where entrepreneurship is widespread among natives, there is a high demand for unskilled immigrant labour, and especially a large informal sector. While in other countries immigrants may use self-employment as an alternative option or a stepping-stone into salaried employment, in Italy, they may end up instead in the informal sector due a variety of reasons, including popularity of self-employment among natives, possible difficulties in obtaining financial resources and credit, or potential discrimination. Indeed, as documented by Fullin and Reyneri (2010), in Italy immigrants face difficulties in entering self-employment, and are disadvantaged with respect to the quality and socio-professional status of their job, and this segregation to low rank occupations

is not due to their poor education. Entering self-employment to upgrade occupational status is not the case in Italy and both formal and informal barriers matter, while the chances are higher for those who have resided for long; this is due to good social status of self-employment and its popularity among natives, while immigrants fill in most difficult jobs (ibid). This in turn suggests important implications for policy.

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Table 1: Descriptive statistics, full sample and by immigrant.

| Variables | Full Sample | | | | | Natives | | | Immigrant | | | |
|---------------------------|-------------|-------|-----------|-----|-----|---------|-------|-----------|-----------|--------|-----------|---------|
| | Obs. | Mean | Std. dev. | Min | Max | Obs. | Mean | Std. dev. | Obs. | Mean | Std. dev. | Signif. |
| Self employed | 51,114 | 0.180 | 0.384 | 0 | 1 | 46,789 | 0.191 | 0.393 | 4,325 | 0.087 | 0.283 | *** |
| Professional | 51,114 | 0.042 | 0.200 | 0 | 1 | 46,789 | 0.046 | 0.209 | 4,325 | 0.010 | 0.099 | *** |
| Sole proprietor | 51,114 | 0.019 | 0.138 | 0 | 1 | 46,789 | 0.020 | 0.140 | 4,325 | 0.013 | 0.112 | *** |
| Freelance | 51,114 | 0.079 | 0.269 | 0 | 1 | 46,789 | 0.082 | 0.274 | 4,325 | 0.053 | 0.224 | *** |
| Family business | 51,114 | 0.022 | 0.147 | 0 | 1 | 46,789 | 0.024 | 0.152 | 4,325 | 0.008 | 0.088 | *** |
| Shareholder | 51,114 | 0.018 | 0.134 | 0 | 1 | 46,789 | 0.020 | 0.139 | 4,325 | 0.004 | 0.065 | *** |
| Immigrant | 51,114 | 0.106 | 0.308 | 0 | 1 | 46,789 | 0.000 | 0.000 | 4,325 | 1.000 | 0.000 | |
| Intermarriage | | | | | | | | | | | | |
| Both Natives | 28,602 | 0.895 | 0.307 | 0 | 1 | 26,671 | 0.975 | 0.156 | 1,931 | 0.420 | 0.494 | *** |
| Mixed Couple | 28,602 | 0.058 | 0.233 | 0 | 1 | 26,671 | 0.025 | 0.156 | 0 | 0.000 | 0.000 | |
| Both Immigrants | 28,602 | 0.048 | 0.213 | 0 | 1 | 0 | 0.000 | 0.000 | 1,931 | 0.580 | 0.494 | |
| Region of origin | | | | | | | | | | | | |
| Italy | 27,407 | 0.891 | 0.312 | 0 | 1 | 25,017 | 1.000 | 0.000 | 0 | 0.000 | 0.000 | |
| EU15&North America | 27,407 | 0.009 | 0.097 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.087 | 0.281 | |
| New EU | 27,407 | 0.022 | 0.148 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.205 | 0.404 | |
| Non EU | 27,407 | 0.030 | 0.171 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.277 | 0.448 | |
| North Africa | 27,407 | 0.013 | 0.114 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.120 | 0.325 | |
| Sub Saharan Africa | 27,407 | 0.010 | 0.099 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.091 | 0.288 | |
| Central and South America | 27,407 | 0.010 | 0.101 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.094 | 0.292 | |
| Asia and Oceania | 27,407 | 0.014 | 0.116 | 0 | 1 | 0 | 0.000 | 0.000 | 2,390 | 0.126 | 0.332 | |
| Migration motive | | | | | | | | | | | | |
| Family reunion | 50,004 | 0.022 | 0.148 | 0 | 1 | 0 | 0.000 | 0.000 | 3,215 | 0.261 | 0.439 | |
| Job | 50,004 | 0.060 | 0.238 | 0 | 1 | 0 | 0.000 | 0.000 | 3,215 | 0.700 | 0.458 | |
| Other reason | 50,004 | 0.003 | 0.058 | 0 | 1 | 46,789 | 0.000 | 0.000 | 3,215 | 0.039 | 0.193 | *** |
| Years since migration | 50,057 | 1.274 | 5.091 | 0 | 63 | 46,789 | 0.000 | 0.000 | 3,268 | 14.426 | 10.192 | *** |
| Year | 0 | 0.000 | 0.000 | 0 | 0 | 0 | 0.000 | 0.000 | 0 | 0.000 | 0.000 | |
| 2004 | 51,114 | 0.122 | 0.327 | 0 | 1 | 46,789 | 0.128 | 0.334 | 4,325 | 0.067 | 0.250 | *** |
| 2006 | 51,114 | 0.126 | 0.332 | 0 | 1 | 46,789 | 0.131 | 0.337 | 4,325 | 0.090 | 0.287 | *** |

| Variables | Full Sample | | | | | Natives | | | Immigrant | | | |
|------------------------|-------------|---------|-----------|-------|---------|---------|---------|-----------|-----------|--------|-----------|---------|
| | Obs. | Mean | Std. dev. | Min | Max | Obs. | Mean | Std. dev. | Obs. | Mean | Std. dev. | Signif. |
| 2008 | 51,114 | 0.127 | 0.333 | 0 | 1 | 46,789 | 0.127 | 0.333 | 4,325 | 0.125 | 0.331 | |
| 2010 | 51,114 | 0.127 | 0.333 | 0 | 1 | 46,789 | 0.125 | 0.331 | 4,325 | 0.142 | 0.349 | *** |
| 2012 | 51,114 | 0.122 | 0.328 | 0 | 1 | 46,789 | 0.118 | 0.323 | 4,325 | 0.157 | 0.364 | *** |
| 2014 | 51,114 | 0.123 | 0.328 | 0 | 1 | 46,789 | 0.121 | 0.326 | 4,325 | 0.140 | 0.347 | *** |
| 2016 | 51,114 | 0.126 | 0.332 | 0 | 1 | 46,789 | 0.124 | 0.330 | 4,325 | 0.138 | 0.345 | ** |
| 2020 | 51,114 | 0.127 | 0.333 | 0 | 1 | 46,789 | 0.125 | 0.331 | 4,325 | 0.140 | 0.347 | ** |
| Macroarea of residence | 0 | 0.000 | 0.000 | 0 | 0 | 0 | 0.000 | 0.000 | 0 | 0.000 | 0.000 | |
| North West | 51,114 | 0.264 | 0.441 | 0 | 1 | 46,789 | 0.261 | 0.439 | 4,325 | 0.293 | 0.455 | *** |
| North East | 51,114 | 0.259 | 0.438 | 0 | 1 | 46,789 | 0.247 | 0.431 | 4,325 | 0.365 | 0.482 | *** |
| Center | 51,114 | 0.203 | 0.402 | 0 | 1 | 46,789 | 0.200 | 0.400 | 4,325 | 0.224 | 0.417 | *** |
| South | 51,114 | 0.198 | 0.398 | 0 | 1 | 46,789 | 0.212 | 0.409 | 4,325 | 0.081 | 0.272 | *** |
| Islands | 51,114 | 0.076 | 0.265 | 0 | 1 | 46,789 | 0.080 | 0.272 | 4,325 | 0.037 | 0.190 | *** |
| Age | 51,114 | 42.465 | 10.587 | 19 | 64 | 46,789 | 42.755 | 10.660 | 4,325 | 40.024 | 9.613 | *** |
| Male | 51,114 | 0.583 | 0.493 | 0 | 1 | 46,789 | 0.584 | 0.493 | 4,325 | 0.567 | 0.495 | ** |
| Civil Status | | | | | | | | | | | | |
| Married | 51,114 | 0.612 | 0.487 | 0 | 1 | 46,789 | 0.609 | 0.488 | 4,325 | 0.634 | 0.482 | *** |
| Single | 51,114 | 0.303 | 0.460 | 0 | 1 | 46,789 | 0.309 | 0.462 | 4,325 | 0.257 | 0.437 | *** |
| Divorced | 51,114 | 0.070 | 0.255 | 0 | 1 | 46,789 | 0.068 | 0.252 | 4,325 | 0.086 | 0.281 | *** |
| Widow | 51,114 | 0.014 | 0.119 | 0 | 1 | 46,789 | 0.013 | 0.115 | 4,325 | 0.023 | 0.151 | *** |
| Higher Education | 51,114 | 0.178 | 0.383 | 0 | 1 | 46,789 | 0.186 | 0.389 | 4,325 | 0.116 | 0.320 | *** |
| Household size | 51,114 | 3.117 | 1.253 | 1 | 12 | 46,789 | 3.141 | 1.210 | 4,325 | 2.914 | 1.556 | *** |
| Net Wealth (in 1,000€) | 51,114 | 260.360 | 550.308 | -1586 | 84855.3 | 46,789 | 282.611 | 572.348 | 4,325 | 73.394 | 236.279 | *** |
| Risk averse | 46,667 | 0.496 | 0.500 | 0 | 1 | 42,687 | 0.475 | 0.499 | 3,980 | 0.664 | 0.472 | *** |
| Sector | | | | | | | | | | | | |
| Agriculture | 51,114 | 0.048 | 0.213 | 0 | 1 | 46,789 | 0.047 | 0.211 | 4,325 | 0.055 | 0.228 | ** |
| Manufacturing | 51,114 | 0.212 | 0.409 | 0 | 1 | 46,789 | 0.211 | 0.408 | 4,325 | 0.222 | 0.416 | |
| Construction | 51,114 | 0.071 | 0.257 | 0 | 1 | 46,789 | 0.065 | 0.246 | 4,325 | 0.123 | 0.329 | *** |
| Trade | 51,114 | 0.171 | 0.377 | 0 | 1 | 46,789 | 0.171 | 0.376 | 4,325 | 0.174 | 0.379 | |
| Transport | 51,114 | 0.052 | 0.222 | 0 | 1 | 46,789 | 0.053 | 0.224 | 4,325 | 0.043 | 0.204 | *** |
| Financial | 51,114 | 0.033 | 0.178 | 0 | 1 | 46,789 | 0.036 | 0.186 | 4,325 | 0.006 | 0.077 | *** |
| Real estate | 51,114 | 0.061 | 0.239 | 0 | 1 | 46,789 | 0.066 | 0.248 | 4,325 | 0.020 | 0.142 | *** |

| Variables | Full Sample | | | | | Natives | | | Immigrant | | | |
|------------------------------------|-------------|--------|-----------|-------|--------|---------|--------|-----------|-----------|--------|-----------|---------|
| | Obs. | Mean | Std. dev. | Min | Max | Obs. | Mean | Std. dev. | Obs. | Mean | Std. dev. | Signif. |
| Private services | 51,114 | 0.117 | 0.322 | 0 | 1 | 46,789 | 0.101 | 0.302 | 4,325 | 0.253 | 0.435 | *** |
| Public Administration | 51,114 | 0.233 | 0.423 | 0 | 1 | 46,789 | 0.248 | 0.432 | 4,325 | 0.100 | 0.300 | *** |
| International organizations | 51,114 | 0.003 | 0.051 | 0 | 1 | 46,789 | 0.003 | 0.051 | 4,325 | 0.003 | 0.055 | |
| Access to credit | 51,114 | 0.053 | 0.225 | 0 | 1 | 46,789 | 0.055 | 0.228 | 4,325 | 0.039 | 0.193 | *** |
| Partially constraint | 51,114 | 0.003 | 0.053 | 0 | 1 | 46,789 | 0.003 | 0.054 | 4,325 | 0.002 | 0.043 | |
| Discouraged | 51,114 | 0.035 | 0.185 | 0 | 1 | 46,789 | 0.035 | 0.184 | 4,325 | 0.038 | 0.192 | |
| Informal debt | 51,114 | 0.027 | 0.164 | 0 | 1 | 46,789 | 0.025 | 0.157 | 4,325 | 0.047 | 0.211 | *** |
| Has professional debts | 29,845 | 0.011 | 0.106 | 0 | 1 | 27,013 | 0.012 | 0.111 | 2,832 | 0.003 | 0.056 | *** |
| Amount paid for professional debts | 29,845 | 0.200 | 4.197 | 0 | 320 | 27,013 | 0.225 | 4.475 | 2,832 | 0.019 | 0.466 | *** |
| Residual professional debt | 29,845 | 1.273 | 37.312 | 0 | 2500 | 27,013 | 1.429 | 39.796 | 2,832 | 0.148 | 3.568 | *** |
| Share of immigrant firms | 36,862 | 11.000 | 10.725 | 0.245 | 66.53 | 33,431 | 10.794 | 10.567 | 3,431 | 12.525 | 11.715 | *** |
| Number of immigrant firms | 36,862 | 35.982 | 30.179 | 0.127 | 116.78 | 33,431 | 35.211 | 30.158 | 3,431 | 41.688 | 29.717 | *** |
| Share of immigrants | 51,114 | 0.092 | 0.117 | 0 | 0.62 | 46,789 | 0.090 | 0.116 | 4,325 | 0.111 | 0.120 | *** |
| Network | 51,114 | 0.001 | 0.008 | 0 | 0.13 | 46,789 | 0.000 | 0.000 | 4,325 | 0.013 | 0.023 | *** |
| Services for immigrants | 23,038 | 5.164 | 4.412 | 0.001 | 27.31 | 20,838 | 5.120 | 4.416 | 2,200 | 5.484 | 4.373 | *** |

Note: All statistics are computed using the sample weights.

Table 2: Immigrant-native gap in entrepreneurship

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1022*** (0.006) | -0.0906*** (0.007) | -0.0339*** (0.009) | -0.0395*** (0.009) | -0.0928*** (0.013) | -0.1075*** (0.011) |
| Age | | 0.0035*** (0.000) | 0.0019*** (0.000) | 0.0018*** (0.000) | 0.0016*** (0.000) | 0.0031*** (0.000) |
| Male | | 0.0687*** (0.005) | 0.0714*** (0.005) | 0.0726*** (0.005) | 0.0741*** (0.005) | 0.0608*** (0.005) |
| Single | | 0.0116* (0.007) | -0.0013 (0.007) | -0.0006 (0.007) | -0.0040 (0.007) | -0.0077 (0.006) |
| Divorced | | 0.0063 (0.010) | 0.0254** (0.010) | 0.0271** (0.011) | 0.0267** (0.011) | 0.0219** (0.010) |
| Widow | | -0.0327** (0.016) | -0.0154 (0.017) | -0.0129 (0.018) | -0.0109 (0.019) | -0.0361** (0.017) |
| Higher Education | | 0.0543*** (0.007) | 0.0144** (0.006) | 0.0129** (0.007) | 0.0130** (0.007) | 0.0874*** (0.008) |
| Household Size | | 0.0053** (0.002) | -0.0060*** (0.002) | -0.0058*** (0.002) | -0.0067*** (0.002) | -0.0052** (0.002) |
| Wealth, 2nd Quartile | | | 0.0652*** (0.006) | 0.0624*** (0.007) | 0.0575*** (0.007) | 0.0605*** (0.006) |
| Wealth, 3rd Quartile | | | 0.0734*** (0.006) | 0.0679*** (0.007) | 0.0630*** (0.007) | 0.0689*** (0.006) |
| Wealth, 4th Quartile | | | 0.2199*** (0.007) | 0.2132*** (0.008) | 0.2075*** (0.008) | 0.1999*** (0.007) |
| Risk Averse | | | | -0.0122** (0.005) | -0.0115** (0.005) | -0.0122*** (0.005) |
| Years since Migration | | | | | 0.0033*** (0.001) | 0.0037*** (0.001) |
| Sector: | | | | | | |
| Manufacturing | | | | | | -0.2075*** (0.014) |
| Construction | | | | | | -0.0239 (0.017) |
| Trade | | | | | | 0.0421*** (0.015) |
| Transport | | | | | | -0.1923*** (0.016) |
| Financial services | | | | | | -0.2037*** (0.016) |
| Real estate | | | | | | 0.0160 (0.018) |
| Private services | | | | | | -0.0637*** (0.016) |
| Public Administration | | | | | | -0.2790*** (0.014) |
| International organizations | | | | | | -0.2106*** (0.031) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Observations | 51,114 | 51,114 | 51,114 | 46,667 | 45,955 | 45,955 |
| R-squared | 0.0110 | 0.0300 | 0.0697 | 0.0701 | 0.0708 | 0.194 |

Note: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards, in parentheses. Fixed controls are year and macro region fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: Immigrant-native gap, by gender

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Panel A: Females | | | | | | |
| Immigrant | -0.0547*** (0.010) | -0.0494*** (0.013) | -0.0133 (0.014) | -0.0247* (0.014) | -0.0821*** (0.025) | -0.0823*** (0.024) |
| Risk Averse | | | | -0.0087 (0.007) | -0.0083 (0.007) | -0.0097 (0.007) |
| Years since Migration | | | | | 0.0026** (0.001) | 0.0023** (0.001) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Demographic | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | YES |
| Observations | 21,325 | 21,325 | 21,325 | 19,671 | 19,304 | 19,304 |
| R-squared | 0.0122 | 0.0217 | 0.0452 | 0.0461 | 0.0471 | 0.174 |
| Panel B: Males | | | | | | |
| Immigrant | -0.1380*** (0.008) | -0.1526*** (0.013) | -0.0530*** (0.014) | -0.0537*** (0.014) | -0.1280*** (0.027) | -0.1656*** (0.025) |
| Risk Averse | | | | -0.0152** (0.007) | -0.0145** (0.007) | -0.0142** (0.006) |
| Years since Migration | | | | | 0.0038*** (0.001) | 0.0048*** (0.001) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Demographic | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | YES |
| Observations | 29,789 | 29,789 | 29,789 | 26,996 | 26,651 | 26,651 |
| R-squared | 0.0141 | 0.0281 | 0.0795 | 0.0789 | 0.0787 | 0.204 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, dummies for civil status, dummy for higher education, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Immigrant-native gap, by level of education

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Panel A: Low Education | | | | | | |
| Immigrant | -0.1053*** (0.007) | -0.1106*** (0.014) | -0.0334** (0.014) | -0.0399*** (0.013) | -0.1045*** (0.025) | -0.1173*** (0.023) |
| Risk Averse | | | | -0.0129** (0.006) | -0.0124** (0.006) | -0.0131** (0.006) |
| Years since Migration | | | | | 0.0031*** (0.001) | 0.0033*** (0.001) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Demographic | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | YES |
| Observations | 41,124 | 41,124 | 41,124 | 37,169 | 36,544 | 36,544 |
| R-squared | 0.0128 | 0.0335 | 0.0841 | 0.0844 | 0.0851 | 0.209 |
| Panel B: High Education | | | | | | |
| Immigrant | -0.0577*** (0.021) | -0.0601* (0.034) | -0.0194 (0.034) | -0.0241 (0.035) | -0.0936 (0.062) | -0.1548*** (0.056) |
| Risk Averse | | | | -0.0083 (0.014) | -0.0069 (0.015) | -0.0083 (0.012) |
| Years since Migration | | | | | 0.0035 (0.003) | 0.0052** (0.002) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Demographic | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | YES |
| Observations | 9,990 | 9,990 | 9,990 | 9,498 | 9,411 | 9,411 |
| R-squared | 0.00696 | 0.0211 | 0.0324 | 0.0341 | 0.0352 | 0.193 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, gender, dummies for civil status, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Immigrant-native gap, by sector

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|
| Sector | Agriculture | Manufacturing | Construction | Trade | Transport | Financial | Real estate | Private services | Public administration |
| Immigrant | -0.3197*** (0.037) | -0.0896*** (0.017) | -0.1588*** (0.050) | -0.1235** (0.048) | -0.1113*** (0.018) | -0.1637*** (0.016) | -0.1795** (0.089) | -0.1085*** (0.035) | 0.0400 (0.041) |
| Risk Averse | 0.0173 (0.026) | -0.0127 (0.009) | -0.0170 (0.021) | -0.0187 (0.016) | 0.0028 (0.017) | 0.0115 (0.033) | -0.0191 (0.024) | -0.0357** (0.015) | 0.0009 (0.006) |
| Years since Migration | 0.0115*** (0.004) | 0.0041* (0.002) | 0.0032 (0.003) | 0.0053** (0.003) | 0.0055* (0.003) | 0.0528*** (0.013) | 0.0087* (0.005) | 0.0018 (0.003) | -0.0001 (0.001) |
| Fixed | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Demographic | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Wealth Quartile | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 1,857 | 9,119 | 3,117 | 7,591 | 2,353 | 1,819 | 3,208 | 5,366 | 11,391 |
| R-squared | 0.289 | 0.128 | 0.196 | 0.164 | 0.0814 | 0.0997 | 0.148 | 0.118 | 0.119 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. All regressions control for age, gender, civil status, education of the respondent as well as for household size, quartiles of wealth, year and macro-region of residence. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Immigrant-native gap, by intermarriage

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.0957*** (0.010) | | | | | | |
| Mixed Couple | | -0.0159 (0.014) | -0.0098 (0.020) | 0.0089 (0.020) | -0.0007 (0.018) | -0.0210 (0.021) | -0.0303 (0.018) |
| Both Immigrants | | -0.1407*** (0.009) | -0.1330*** (0.013) | -0.0795*** (0.020) | -0.0831*** (0.020) | -0.1056*** (0.021) | -0.1191*** (0.018) |
| Risk Averse | | | | | -0.0076 (0.008) | -0.0072 (0.009) | -0.0107 (0.008) |
| Years since Migration | | | | | | 0.0013 (0.001) | 0.0015 (0.001) |
| Fixed | NO | NO | YES | YES | YES | YES | YES |
| Demographic | NO | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | NO | YES |
| Observations | 28,602 | 28,602 | 28,602 | 28,602 | 26,390 | 26,034 | 26,034 |
| R-squared | 0.00766 | 0.0102 | 0.0265 | 0.0615 | 0.0609 | 0.0621 | 0.204 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, gender, dummies for civil status, dummy for higher education, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Immigrant-native gap, by region of origin

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1044*** (0.009) | | | | | | |
| EU15&NA | | -0.0604** (0.028) | -0.0492 (0.037) | -0.0178 (0.041) | -0.0167 (0.041) | -0.1185*** (0.034) | -0.1060*** (0.037) |
| New EU | | -0.1263*** (0.015) | -0.1060*** (0.019) | -0.0551** (0.025) | -0.0543** (0.025) | -0.1200*** (0.020) | -0.1237*** (0.019) |
| Other EU | | -0.1117*** (0.018) | -0.0976*** (0.022) | -0.0421 (0.027) | -0.0401 (0.028) | -0.1024*** (0.025) | -0.1211*** (0.021) |
| North Africa | | -0.1088*** (0.024) | -0.1061*** (0.024) | -0.0449 (0.033) | -0.0430 (0.034) | -0.1048*** (0.033) | -0.1252*** (0.026) |
| Sub Saharan Africa | | -0.1748*** (0.010) | -0.1718*** (0.011) | -0.1377*** (0.019) | -0.1366*** (0.019) | -0.1757*** (0.012) | -0.1776*** (0.012) |
| Central and South America | | -0.1024*** (0.022) | -0.0845*** (0.027) | -0.0385 (0.034) | -0.0377 (0.034) | -0.1027*** (0.036) | -0.1142*** (0.030) |
| Asia and Oceania | | -0.0316 (0.027) | -0.0251 (0.036) | 0.0551 (0.042) | 0.0579 (0.042) | -0.0243 (0.047) | -0.0619 (0.039) |
| Risk Averse | | | | | -0.0117 (0.008) | -0.0112 (0.008) | -0.0122* (0.007) |
| Years since Migration | | | | | | 0.0056*** (0.002) | 0.0055*** (0.002) |
| Fixed | NO | NO | YES | YES | YES | YES | YES |
| Demographic | NO | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | NO | YES |
| Observations | 27,407 | 27,407 | 27,407 | 27,407 | 27,407 | 26,765 | 26,765 |
| R-squared | 0.00992 | 0.0119 | 0.0303 | 0.0654 | 0.0656 | 0.0665 | 0.197 |

Notes: the table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, gender, dummies for civil status, dummy for higher education, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Immigrant-native gap, by migration motive

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Family reunion | -0.0884*** (0.013) | -0.0693*** (0.019) | -0.0287 (0.022) | -0.0294 (0.022) | -0.0885*** (0.027) | -0.0842*** (0.027) |
| Job | -0.1280*** (0.007) | -0.1217*** (0.009) | -0.0642*** (0.013) | -0.0641*** (0.013) | -0.0932*** (0.017) | -0.1077*** (0.014) |
| Other reason | -0.0146 (0.038) | 0.0166 (0.047) | 0.0577 (0.046) | 0.0542 (0.046) | 0.0045 (0.047) | -0.0215 (0.043) |
| Risk Averse | | | | -0.0114* (0.006) | -0.0110* (0.006) | -0.0120** (0.005) |
| Years since Migration | | | | | 0.0029** (0.001) | 0.0028** (0.001) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Demographic | NO | YES | YES | YES | YES | YES |
| Wealth Quartile | NO | NO | YES | YES | YES | YES |
| Sector | NO | NO | NO | NO | NO | YES |
| Observations | 50,004 | 50,004 | 50,004 | 45,846 | 45,702 | 45,702 |
| R-squared | 0.0122 | 0.0319 | 0.0700 | 0.0701 | 0.0703 | 0.194 |

Notes: the table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards are reported in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, gender, dummies for civil status, dummy for higher education, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9: Immigrant-native gap: access to credit

| | (1) | (2) | (3) | (4) | (6) |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1071*** (0.014) | -0.1071*** (0.014) | -0.1074*** (0.014) | -0.1076*** (0.014) | -0.1066*** (0.014) |
| Access to credit | 0.0221* (0.012) | | | | 0.0243** (0.012) |
| Partially constraint | | 0.2139*** (0.065) | | | 0.2179*** (0.065) |
| Discouraged | | | 0.0368** (0.014) | | 0.0391*** (0.015) |
| Informal debt | | | | 0.0092 (0.015) | 0.0017 (0.015) |
| Observations | 45,955 | 45,955 | 45,955 | 45,955 | 45,955 |
| R-squared | 0.194 | 0.195 | 0.194 | 0.194 | 0.196 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level are reported in parentheses. All regression specifications include controls for age, gender, civil status, education, years since migration, and sector of employment as well as household size, household's wealth (in quartile dummies), and risk aversion. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10: Immigrant-native gap: professional debts

| | (1) | (2) | (3) |
|------------------------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1101*** (0.016) | -0.1135*** (0.015) | -0.1133*** (0.015) |
| Has professional debts | 0.3924*** (0.040) | | |
| Amount paid for professional debts | | 0.0019 (0.001) | |
| Residual professional debts | | | 0.0004 (0.000) |
| Observations | 29,631 | 29,631 | 29,631 |
| R-squared | 0.206 | 0.194 | 0.195 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level are reported in parentheses. All regression specifications include controls for age, gender, civil status, education, years since migration, and sector of employment as well as household size, household's wealth (in quartile dummies), and risk aversion. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11: Immigrant-native gap: easiness of running a business for migrants.

| | (1) | (2) | (3) | (4) | (5) |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1077*** (0.015) | -0.1068*** (0.015) | -0.1071*** (0.014) | -0.1229*** (0.014) | -0.1055*** (0.018) |
| Number of immigrant firms | -0.0001 (0.000) | | | | |
| Share of immigrant firms | | -0.0005*** (0.000) | | | |
| Share of immigrants | | | -0.0272 (0.028) | | |
| Network | | | | 1.0288** (0.426) | |
| Services for immigrants | | | | | -0.0014 (0.001) |
| Observations | 36,431 | 36,431 | 23,038 | 45,955 | 45,955 |
| R-squared | 0.196 | 0.197 | 0.196 | 0.194 | 0.194 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level are reported in parentheses. All regression specifications include controls for age, gender, civil status, education, years since migration, and sector of employment as well as household size, household's wealth (in quartile dummies), and risk aversion. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12: Descriptive statistics, before and after propensity score matching, 2006–2020

| | Before PS matching | | | | After PS matching | | | |
|------------------------|--------------------|---------|------------|------------|-------------------|---------|------------|----------|
| | Immigrant | Natives | Difference | t-stat | Immigrant | Natives | Difference | t-stat |
| Macroarea of residence | 2.23 | 2.70 | -0.47 | -21.79 *** | 2.23 | 2.24 | -0.01 | -0.58 |
| Year | 2011.80 | 2011.30 | 0.50 | 6.73 *** | 2011.80 | 2011.80 | 0.00 | 0.33 |
| Wealth quartile | 1.66 | 2.82 | -1.16 | -64.64 *** | 1.66 | 1.68 | -0.02 | -0.90 |
| Higher education | 0.13 | 0.21 | -0.08 | -12.41 *** | 0.13 | 0.14 | -0.01 | -1.81 * |
| Household size | 3.01 | 3.21 | -0.20 | -9.82 *** | 3.01 | 3.02 | -0.01 | -0.17 |
| Age | 41.49 | 44.28 | -2.79 | -15.44 *** | 41.49 | 41.06 | 0.43 | 1.90 * |
| Gender | 0.53 | 0.58 | -0.05 | -5.89 *** | 0.53 | 0.50 | 0.04 | 3.30 *** |
| Civil Status | 1.50 | 1.46 | 0.04 | 3.37 *** | 1.50 | 1.48 | 0.02 | 0.88 |
| Risk averse | 0.65 | 0.46 | 0.19 | 23.20 *** | 0.65 | 0.64 | 0.00 | 0.35 |

For each variable, the table reports the mean for immigrants and natives, and the difference between the two means before and after propensity score matching is applied. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 13: Propensity score matching estimates

| Matching Estimate | |
|--|--------------------------|
| ATT | -0.0213*** (0.007747) |
| Obs. | 46,667 |
| <p>The estimated average treatment effect on the treated (ATT) is obtained based on the bias-corrected Abadie and Imbens (2011) matching estimator, where the treatment is being an immigrant. The dependent variable is the dummy for being self-employed and *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.</p> | |

Table 14: Immigrant-native gap: linear probability model

| | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.1014*** (0.006) | -0.0855*** (0.009) | -0.0205** (0.009) | -0.0249*** (0.009) | -0.0636*** (0.015) | -0.0983*** (0.015) |
| Age | | 0.0700*** (0.006) | 0.0741*** (0.006) | 0.0752*** (0.006) | 0.0766*** (0.006) | 0.0663*** (0.006) |
| Male | | 0.0124 (0.009) | -0.0015 (0.009) | -0.0006 (0.009) | -0.0035 (0.009) | -0.0099 (0.008) |
| Single | | 0.0071 (0.012) | 0.0245** (0.012) | 0.0263** (0.013) | 0.0261** (0.013) | 0.0192 (0.012) |
| Divorced | | -0.0280 (0.020) | -0.0100 (0.020) | -0.0069 (0.020) | -0.0053 (0.021) | -0.0300 (0.021) |
| Widow | | 0.0518*** (0.009) | 0.0106 (0.009) | 0.0093 (0.010) | 0.0093 (0.010) | 0.0707*** (0.009) |
| Higher Education | | 0.0055* (0.003) | -0.0061** (0.003) | -0.0059** (0.003) | -0.0067** (0.003) | -0.0056** (0.003) |
| Household Size | | 0.0700*** (0.006) | 0.0741*** (0.006) | 0.0752*** (0.006) | 0.0766*** (0.006) | 0.0663*** (0.006) |
| Wealth, 2 nd Quartile | | | 0.0651*** (0.008) | 0.0614*** (0.008) | 0.0569*** (0.008) | 0.0659*** (0.008) |
| Wealth, 3 rd Quartile | | | 0.0749*** (0.008) | 0.0683*** (0.008) | 0.0641*** (0.008) | 0.0767*** (0.008) |
| Wealth, 4 th Quartile | | | 0.2235*** (0.010) | 0.2169*** (0.010) | 0.2129*** (0.010) | 0.2122*** (0.010) |
| Risk Averse | | | | -0.0122** (0.006) | -0.0115* (0.006) | -0.0132** (0.006) |
| Years since Migration | | | | | 0.0022** (0.001) | 0.0028*** (0.001) |
| Manufacturing | | | | | | -0.2104*** (0.019) |
| Construction | | | | | | -0.0318 (0.022) |
| Trade | | | | | | 0.0294 (0.021) |
| Transport | | | | | | -0.1977*** (0.021) |
| Financial services | | | | | | -0.2163*** (0.025) |
| Real estate | | | | | | 0.0388* (0.023) |
| Private services | | | | | | -0.0744*** (0.020) |
| Public Administration | | | | | | -0.3037*** (0.019) |
| International Organization | | | | | | -0.2258*** (0.037) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Observations | 51,114 | 51,114 | 51,114 | 46,667 | 45,955 | 45,955 |
| R-squared | 0.0091 | 0.0267 | 0.0654 | 0.0656 | 0.0658 | 0.1721 |

Notes: The table reports the OLS estimates of the coefficients of a linear probability model, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards, in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 15: Immigrant-native gap, excluding agriculture

| | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.0907*** (0.007) | -0.0794*** (0.009) | -0.0278** (0.012) | -0.0328*** (0.011) | -0.0865*** (0.016) | -0.1011*** (0.014) |
| Age | | 0.0032*** (0.000) | 0.0018*** (0.000) | 0.0017*** (0.000) | 0.0016*** (0.000) | 0.0031*** (0.000) |
| Male | | 0.0659*** (0.006) | 0.0688*** (0.006) | 0.0696*** (0.006) | 0.0709*** (0.006) | 0.0581*** (0.006) |
| Single | | 0.0089 (0.009) | -0.0026 (0.009) | -0.0012 (0.009) | -0.0047 (0.009) | -0.0075 (0.008) |
| Divorced | | 0.0093 (0.013) | 0.0262** (0.013) | 0.0283** (0.014) | 0.0281** (0.014) | 0.0221* (0.013) |
| Widow | | -0.0360* (0.021) | -0.0209 (0.023) | -0.0193 (0.023) | -0.0175 (0.023) | -0.0393* (0.020) |
| Higher Education | | 0.0580*** (0.010) | 0.0210** (0.009) | 0.0196** (0.009) | 0.0197** (0.009) | 0.0888*** (0.010) |
| Household Size | | 0.0038 (0.003) | -0.0067** (0.003) | -0.0064** (0.003) | -0.0073** (0.003) | -0.0050* (0.003) |
| Wealth, 2 nd Quartile | | | 0.0634*** (0.008) | 0.0610*** (0.008) | 0.0560*** (0.008) | 0.0601*** (0.007) |
| Wealth, 3 rd Quartile | | | 0.0699*** (0.008) | 0.0642*** (0.008) | 0.0591*** (0.008) | 0.0639*** (0.007) |
| Wealth, 4 th Quartile | | | 0.1982*** (0.010) | 0.1908*** (0.010) | 0.1850*** (0.010) | 0.1804*** (0.010) |
| Risk Averse | | | | -0.0153*** (0.006) | -0.0146** (0.006) | -0.0134** (0.005) |
| Years since Migration | | | | | 0.0033*** (0.001) | 0.0037*** (0.001) |
| Construction | | | | | | 0.1812*** (0.014) |
| Trade | | | | | | 0.2497*** (0.012) |
| Transport | | | | | | 0.0145 (0.012) |
| Financial services | | | | | | 0.0054 (0.014) |
| Real estate | | | | | | 0.2247*** (0.014) |
| Private services | | | | | | 0.1417*** (0.011) |
| Public Administration | | | | | | -0.0722*** (0.007) |
| International Organization | | | | | | -0.0044 (0.029) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Observations | 48,986 | 48,986 | 48,986 | 44,775 | 44,098 | 44,098 |
| R-squared | 0.0102 | 0.0288 | 0.0620 | 0.0627 | 0.0634 | 0.189 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards, in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 16: Immigrant-native gap: alternative definition of self-employed

| | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Immigrant | -0.0472*** (0.006) | -0.0424*** (0.008) | -0.0010 (0.010) | -0.0062 (0.010) | -0.0356** (0.014) | -0.0512*** (0.012) |
| Age | | 0.0022*** (0.000) | 0.0012*** (0.000) | 0.0011*** (0.000) | 0.0010*** (0.000) | 0.0021*** (0.000) |
| Male | | 0.0381*** (0.005) | 0.0406*** (0.005) | 0.0403*** (0.005) | 0.0415*** (0.005) | 0.0350*** (0.005) |
| Single | | 0.0088 (0.008) | 0.0005 (0.007) | 0.0000 (0.007) | -0.0026 (0.007) | -0.0035 (0.007) |
| Divorced | | 0.0066 (0.010) | 0.0208* (0.011) | 0.0244** (0.012) | 0.0249** (0.012) | 0.0203* (0.011) |
| Widow | | -0.0243 (0.016) | -0.0124 (0.018) | -0.0107 (0.018) | -0.0087 (0.019) | -0.0254 (0.016) |
| Higher Education | | -0.0676*** (0.006) | -0.0830*** (0.005) | -0.0826*** (0.006) | -0.0832*** (0.006) | -0.0310*** (0.007) |
| Household Size | | 0.0051** (0.002) | -0.0018 (0.002) | -0.0020 (0.002) | -0.0024 (0.002) | -0.0024 (0.002) |
| Wealth, 2 nd Quartile | | | 0.0460*** (0.006) | 0.0421*** (0.006) | 0.0385*** (0.006) | 0.0406*** (0.006) |
| Wealth, 3 rd Quartile | | | 0.0488*** (0.006) | 0.0447*** (0.006) | 0.0415*** (0.007) | 0.0455*** (0.006) |
| Wealth, 4 th Quartile | | | 0.1456*** (0.008) | 0.1386*** (0.008) | 0.1349*** (0.009) | 0.1313*** (0.008) |
| Risk Averse | | | | -0.0018 (0.005) | -0.0015 (0.005) | -0.0051 (0.005) |
| Years since Migration | | | | | 0.0015* (0.001) | 0.0019** (0.001) |
| Manufacturing | | | | | | -0.1735*** (0.017) |
| Construction | | | | | | -0.0744*** (0.020) |
| Trade | | | | | | 0.0220 (0.020) |
| Transport | | | | | | -0.1676*** (0.019) |
| Financial services | | | | | | -0.2200*** (0.018) |
| Real estate | | | | | | -0.1444*** (0.019) |
| Private services | | | | | | -0.0863*** (0.019) |
| Public Administration | | | | | | -0.2326*** (0.017) |
| International Organization | | | | | | -0.1469*** (0.036) |
| Fixed | NO | YES | YES | YES | YES | YES |
| Observations | 51,114 | 51,114 | 51,114 | 46,667 | 45,955 | 45,955 |
| R-squared | 0.0120 | 0.0355 | 0.0658 | 0.0643 | 0.0650 | 0.177 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards, in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 17: Immigrant-native gap, by type of self-employed

| | (1) | (2) | (3) | (4) | (5) |
|-----------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| | Professional | Sole proprietor | Freelance | Family business | Shareholder |
| Immigrant | -0.0437*** (0.003) | 0.0012 (0.007) | -0.0434*** (0.009) | -0.0095 (0.006) | -0.0196*** (0.003) |
| Risk Averse | -0.0055** (0.003) | -0.0019 (0.002) | 0.0001 (0.004) | -0.0035 (0.002) | -0.0013 (0.002) |
| Years since Migration | 0.0022*** (0.000) | 0.0001 (0.000) | 0.0019*** (0.001) | -0.0002 (0.000) | 0.0010** (0.000) |
| Fixed | YES | YES | YES | YES | YES |
| Demographic | YES | YES | YES | YES | YES |
| Wealth Quartile | YES | YES | YES | YES | YES |
| Sector | YES | YES | YES | YES | YES |
| Observations | 45,955 | 45,821 | 45,955 | 45,821 | 45,821 |
| R-squared | 0.292 | 0.169 | 0.109 | 0.253 | 0.162 |

Notes: The table reports the marginal effects of a probit regression, estimated using population weights. Robust standard errors, clustered at the household level from model (2) onwards, in parentheses. Fixed controls are year and macro region effects. Demographic controls include age in years, gender, dummies for civil status, dummy for higher education, and household size. * significant at 10%; ** significant at 5%; *** significant at 1%.

Figure 1: The immigrant-native gap over the 2004-2020 period.

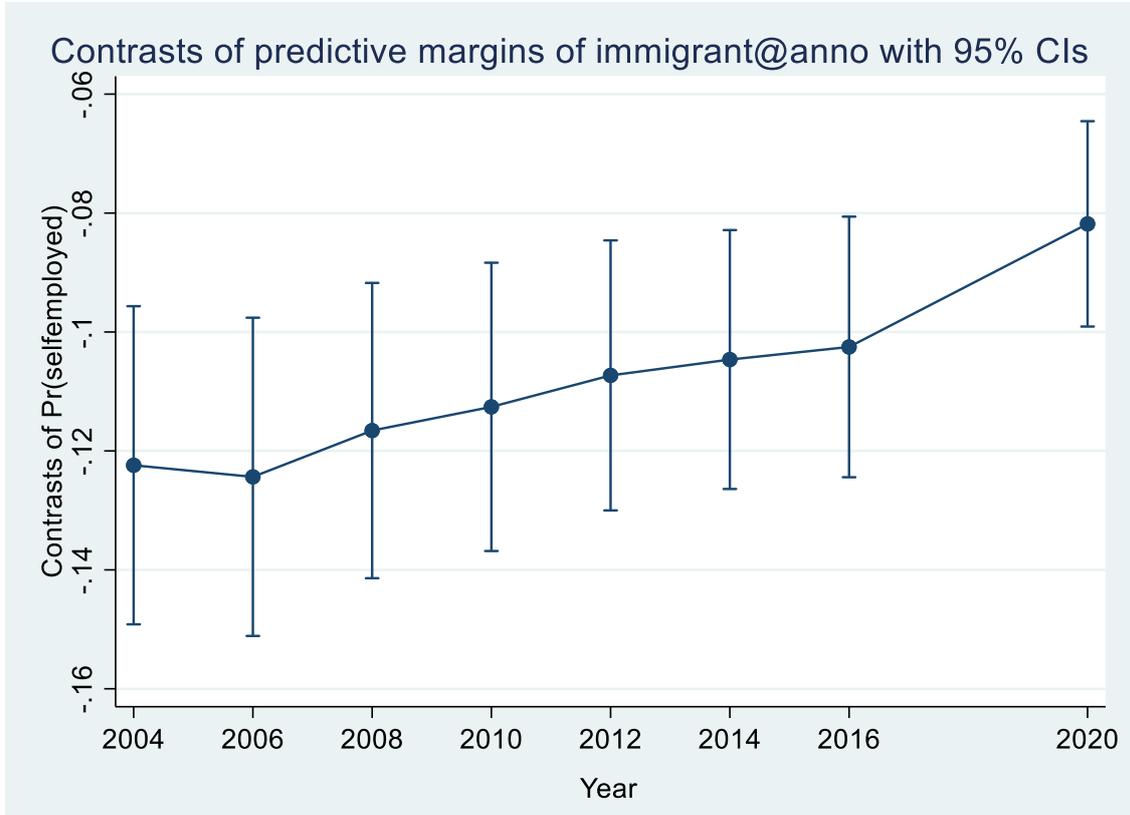


Figure 2: Standardized bias across covariates before and after PS matching

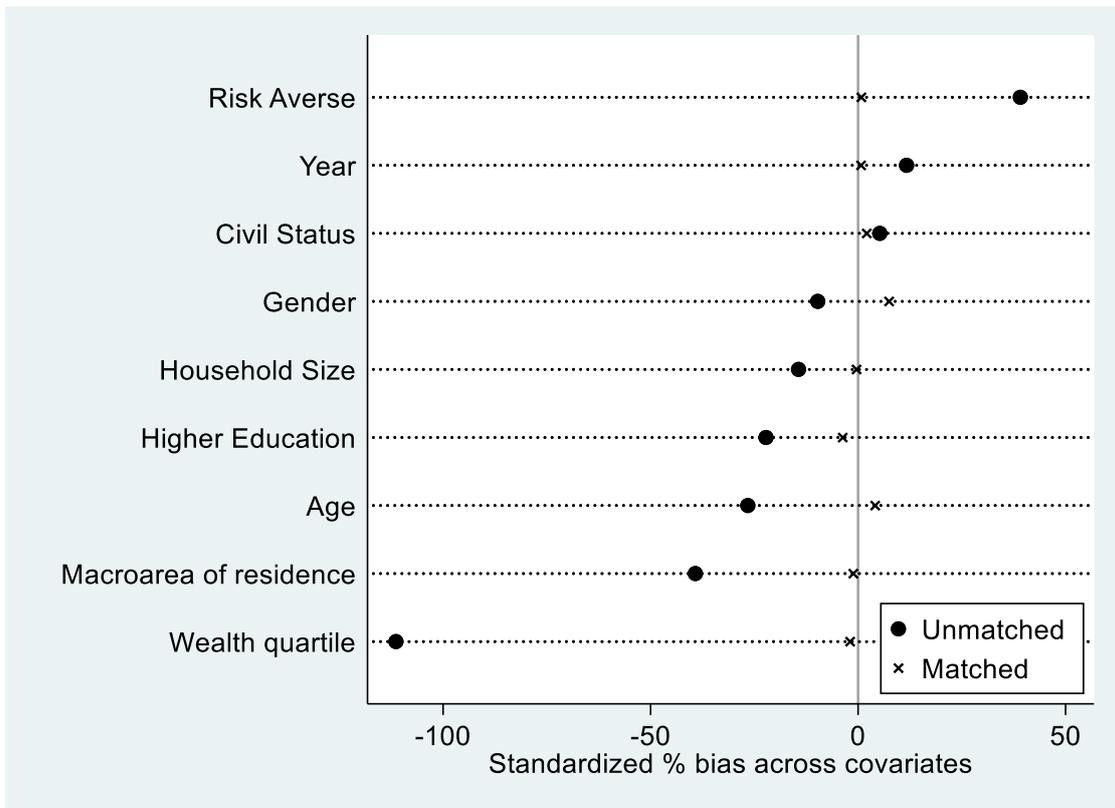
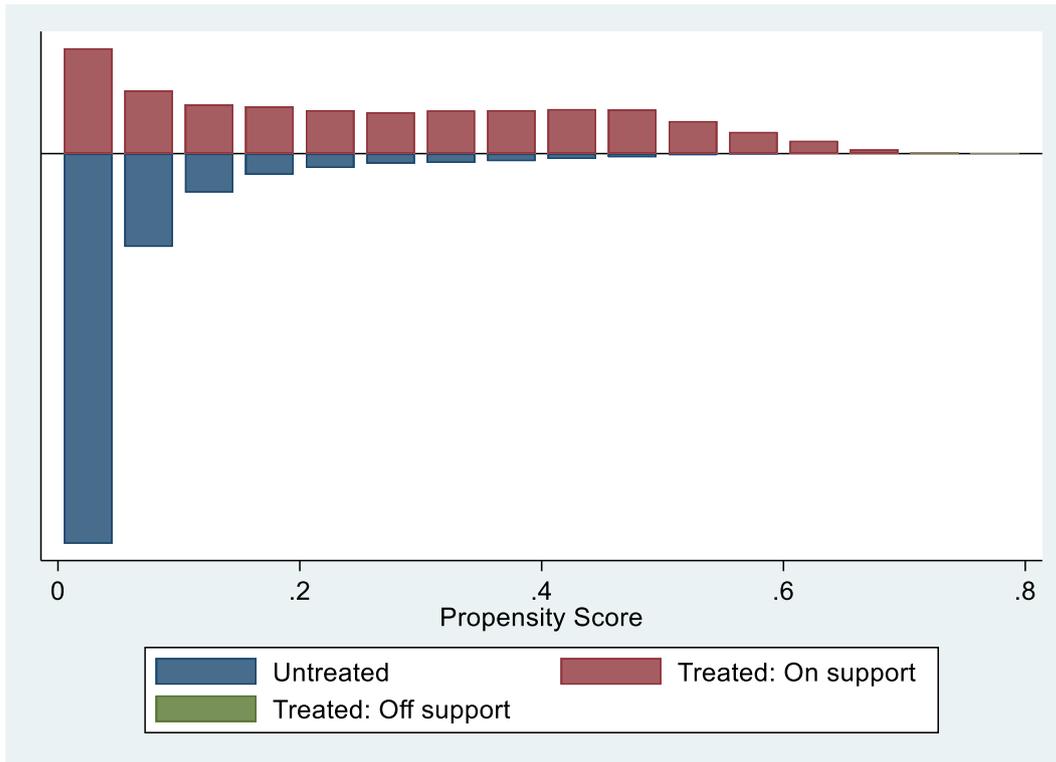


Figure 3: Propensity score distribution, by treatment and common support status



APPENDIX

Table A1: Data Description

| VARIABLE | Description | Source |
|------------------|--|--------|
| Self-employed | Binary variable assuming value 1 for individuals working as self-employed, and 0 for those working as employees. | SHIW |
| Professional | Binary variable assuming value 1 for self-employed individuals working as members of arts and professions, and 0 otherwise. | SHIW |
| Sole proprietor | Binary variable assuming value 1 for self-employed individuals being sole proprietors of their business, and 0 otherwise. | SHIW |
| Freelance | Binary variable assuming value 1 for self-employed individuals working as freelances, and 0 otherwise. | SHIW |
| Family business | Binary variable assuming value 1 for self-employed individuals being proprietors or members of a family business, and 0 otherwise. | SHIW |
| Shareholder | Binary variable assuming value 1 for self-employed individuals being active shareholders or partner of a business, and 0 otherwise. | SHIW |
| Immigrant | Binary variable assuming value 1 for foreign-born individuals, and 0 for natives. | SHIW |
| Intermarriage | <p>Set of binary variables locating who – within the couple – is a foreign-born, if any (defined only for households including a couple, either married or in a stable union). The dummies are:</p> <ul style="list-style-type: none"> - Both Natives takes value 1 for households where both members of the couple are natives, and 0 otherwise - Mixed Immigrant Head takes value 1 for couple households where the household head is foreign-born, while the spouse is not, and 0 otherwise - Mixed Immigrant Spouse takes value 1 for couple households where the spouse is foreign-born, while the head of the household is not, and 0 otherwise - Both Immigrants takes value 1 for couple households where both the household head and the spouse are foreign- born, and 0 otherwise. | SHIW |
| Region of Origin | <p>Set of binary variables representing the macro-area of the country of birth of the household head among the following:</p> <ul style="list-style-type: none"> - Italy - EU15 & North America (One the EU15 countries or Canada or USA) - New EU (Bulgaria, Malta, Cyprus, Croatia, Estonia, Latvia, Poland, Romania, Slovakia, Slovenia, or Hungary) - Other Europe (Any other European country not included above) - North Africa - Sub-Saharan Africa - Central & South America - Asia & Oceania | SHIW |

| | | |
|------------------------|--|------|
| Migration motive | Set of binary variables representing the main reason for migration among the following: <ul style="list-style-type: none"> - Family reunion (join parents or other relatives who formerly moved to Italy) - Job - Other reason (any other reason) | SHIW |
| Years Since Migration | Discrete variable representing the years since the first arrival in Italy of the head of the household. This variable is set to 0.5 for immigrants who are interviewed less than 12 months since arrival (so as to distinguish them from natives). | SHIW |
| Macroarea of residence | Set of binary variables taking value 1 for households residing in the relevant macro-region within Italy (i.e., North West, North East, Center, South, and Islands), and 0 otherwise. | SHIW |
| Age | Integer variable representing the age in years of the head of the household. | SHIW |
| Male | Binary variable taking value 1 for households headed by a male, and 0 otherwise. | SHIW |
| Civil status | Set of binary variables representing the marital status of the individual among the following: <ul style="list-style-type: none"> - Married takes value 1 for individuals married or in a stable cohabitation, and 0 otherwise. - Single takes value 1 for individuals who never married before, 0 otherwise. - Divorced takes value 1 for divorced or separated individuals, and 0 otherwise. - Widow takes value 1 for widows, and 0 otherwise. | SHIW |
| Higher Education | Binary variable taking value 1 for individuals having completed a university degree, and 0 otherwise. | SHIW |
| Household Size | Number of household members. | SHIW |
| Net Wealth | Sum of real and financial assets net of liabilities, in thousand €. | SHIW |
| Risk Averse | Binary variable taking value 1 if risk aversion level is 4, 0 otherwise. Risk-aversion is measured by a categorical variable representing the preferred risk profile of financial investments among the following: 1 = High risk, high returns 2 = Reasonable risk, good returns 3 = Low risk, reasonable returns 4 = No risk, low returns. | SHIW |
| Sector | Set of binary variables representing the sector of employment of the working individual among the following: 1 = Agriculture 2 = Manufacturing 3 = Construction (and building) 4 = Trade (wholesale and retail trade, lodging and catering services) 5 = Transport (transport and communication) 6 = Financial (financial and credit services and insurance institutions) 7 = Real estate (real estate, renting services, other professional and business activities) 8=Private services (domestic and other private services) | SHIW |

| | | |
|------------------------------------|---|-----------|
| | 9=P.A. (Public Administration, i.e. general government, defense, education, health and other public services) 10= International Organizations (extra-territorial organizations and entities) | |
| Access to credit | Binary variable taking value 1 when the individual has asked and obtained a loan, and 0 otherwise | SHIW |
| Partially constraint | Binary variable taking value 1 when the requested loan has been only partially granted (not in the full amount requested) | SHIW |
| Discouraged | Binary variable taking value 1 when the individual declared s/he did not apply for credit since s/he expected not to be financed | SHIW |
| Informal debt | Binary variable taking value 1 for households indebted with relatives or friends, and 0 otherwise. | SHIW |
| Has professional debts | Binary variable taking value 1 when household j in year t owns a debt specifically for its business, and 0 otherwise. | SHIW |
| Amount paid for professional debts | Continuous variable measuring the amount paid in year t by household j for professional loans | SHIW |
| Residual professional debt | Continuous variable measuring the amount left to be paid by household j in year t for the professional loans | SHIW |
| Number of immigrant firms | Quantitative discrete variable counting the number of firms run by immigrants in the region of residence of household j in year t . | RII |
| Share of immigrant firms | Continuous variable computed as the number of firms run by immigrants over total number of firms in the region of residence of household j in year t . | RII/ISTAT |
| Share of immigrants | Continuous variable measuring the share of immigrants in the region of residence of household j in year t . | ISTAT |
| Network | Continuous variable measuring the share of immigrants in the region of residence of household j in year t coming from the same geographical area as individual i in household j | ISTAT |
| Services for immigrants | Continuous variable measuring the public expenditures for migrants in proportion of the population of the region of residence of household j in year t . | ISTAT |

Note: SHIW stands for (Bank of Italy) Survey on Household Income and Wealth, RII stands for (Rapporto Immigrazione ed Imprenditoria – Aggiornamento Statistico produced by the Centro Studi e Ricerche IDOS), and ISTAT stands for Italian National Statistical Institute (Istituto nazionale di STATistica).