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IFN Working Paper No. 1235, 2018

Self-employed Immigrants and Their Employees: Evidence from Swedish Employer-Employee Data

Mats Hammarstedt and Chizheng Miao

Self-employed immigrants and their employees: Evidence from Swedish employer-employee data

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Chizheng Miao

Abstract

We present a study of immigrant self-employment in Sweden using the recent matched employer-employee data from 2014. We find large variations in self-employment rates among immigrant groups as well as between immigrants with different points for their time immigration to Sweden. High self-employment rates are found for male immigrants from the Middle East. Immigrants are less likely than natives to have employees in their firms but after controlling for firm characteristics we find that self-employed immigrants are more likely than self-employed natives to have employees. Especially non-European immigrants are more likely than natives to employ other immigrants, and even non-European and recently arrived immigrants, in their firms. Immigrants are more likely than natives to hire their spouses as employees. We conclude that self-employed immigrants play a role in the labour market integration of other immigrants. We also conclude that the family plays a central role for self-employment activities among immigrants and that more knowledge regarding the explanations behind the results is needed.

Keywords: Self-employment, Immigrants, Employment, Employees, Sweden

JEL Codes: J61, L26, F22, J21

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1. Introduction

The self-employment sector plays an important role in the integration of foreign born individuals on the labour market. Self-employment may be a route into the labour market for individuals who would like to make a living in a new country, and immigrants who start their own businesses may also offer employment opportunities for other immigrants.

Research has shown that there are differences in self-employment rates between the foreign-born population and natives in several OECD countries.¹ Much research has been devoted to the explanations behind the observed differences, and factors such as discrimination in wage-employment, traditions from the home country, the existence of ethnic enclaves, and family traditions has all been put forward as explanations for differences in self-employment rates between immigrants and natives.²

This paper presents new evidence regarding immigrant self-employment in Sweden. There are different reasons for why it is interesting to present a study regarding this based on data from Sweden and our study contribute to research in this area in different ways. Firstly, previous research has shown high rates of self-employment among certain groups of immigrants, such as immigrants from the Middle East.³ Since especially the inflow of immigrants from the Middle East has continued to increase during the 2000's we have good reasons to conduct a study which also include more recent immigrant waves to Sweden.

Furthermore, self-employed individuals may create employment opportunities not only for themselves but also for other individuals. Previous research has shown that self-employed immigrants are more likely than natives to employ other immigrants in their firms.⁴ In this paper we add knowledge regarding this issue by exploring the extent to which self-employed immigrants employ certain groups of immigrants, such as immigrants from their own group, recently arrived immigrants, and family members in their firms. Thereby, our study highlights several dimensions of immigrant self-employment and the role that self-employed immigrants plays in the process of integrating immigrants into the labour market.

Our study is conducted with the help of unique matched employer-employee data obtained from Statistics Sweden covering the period 2000 to 2014. We start with a description of how immigrant self-employment rates in Sweden have evolved during the 2000s. Thereafter we turn our attention to different dimensions of immigrant self-employment for the year 2014. We investigate the extent to which self-employed immigrants have employees in their firms, and the extent to which self-employed immigrants from different regions employ immigrants from certain regions in their firms. We also investigate if there are differences between different groups of self-employed immigrants and natives as regards the extent to which they employ recently arrived immigrants in their firms and the extent to which self-employed male and female immigrants employ their spouses in their firms.

¹ For studies from the US, see e.g. Borjas (1986), Yuengert (1995), Fairlie and Meyer (1996), Fairlie (1999), Hout and Rosen (2000) Fairlie and Robb (2007) and Robb and Fairlie (2009). For a study from Australia, see Le (2000). For studies from European countries, see e.g. Clark and Drinkwater (2000) and Clark et al (2017) for the UK, Constant and Zimmermann (2006) for Germany and Hammarstedt (2001, 2004, 2006) for Sweden.

² Determinants behind the self-employment decision among immigrants in different countries have been tested by e.g. Borjas (1986), Yuengert (1995), Fairlie and Meyer (1996), Clark and Drinkwater (2000), Hammarstedt and Shukur (2009), Andersson and Hammarstedt (2010, 2011, 2015).

³ See Hammarstedt (2001, 2006), Hammarstedt and Shukur (2009).

⁴ See Andersson and Wadensjö (2009).

Our results reveal that there are large variations in self-employment rates between different groups of immigrants in Sweden. While especially male immigrants originating from the Middle East are over-represented in self-employment, low self-employment rates are found among immigrants from Africa and Latin America. In contrast to earlier arrived immigrants from the Middle East, the recent arrived ones are less likely to become self-employed than natives. Immigrants are also less likely than natives to have employees in their firms, but after controlling for firm characteristics we find that self-employed immigrants are more likely than self-employed natives to have employees. Furthermore, immigrants are more likely than natives to hire immigrants, and also non-European and recently arrived immigrants as employees. Self-employment among immigrants may therefore play an important role in the integration process since being employed by an immigrant may be a route into the Swedish labour market for newly arrived immigrants. Finally, our results also reveal that both male and female immigrants are more likely than natives to hire their spouses as employees.

The remainder of the paper is organised as follows. The immigrant population in Sweden is described in Section 2. Section 3 identifies the factors affecting the self-employment decision and arguments for why we can expect variations in self-employment rates between immigrant groups and natives and for why can expect the hiring behaviour to differ between immigrant and native firms. Section 4 contains the data; Section 5 explains the empirical strategy. Section 6 offers some descriptive statistics and Section 7 presents the results. Finally, Section 8 concludes.

2. The immigrant population in Sweden

Sweden has a long history of immigration. The characteristics of this immigration have changed over the years.⁵ After the Second World War, immigration to Sweden consisted primarily of refugees from Eastern Europe. However, in the wake of the 1950s industrial and economic expansion, labour force migration reached significant proportions. The labour force migration peaked during the 1950s and 1960s and consisted almost entirely of immigrants from Sweden's neighbours (e.g., Finland) and from countries in Western and Southern Europe (e.g., Italy, Greece, West Germany, Yugoslavia).

Labour force migration tapered off during the late 1960s. Since then, immigration to Sweden has primarily consisted of refugee immigrants and 'tied movers', or relatives of already admitted immigrants. In the 1970s, refugee migration from Latin America increased. During the 1980s, many refugees came from Africa and the Middle East.

Migration from Europe increased temporarily again during the early 1990s. This involved refugees fleeing the civil war in what had been Yugoslavia. Since the mid-1990s, most of the immigrants to Sweden have been refugees from countries in and around the Middle East and Africa. During the 1990s and since 2000, refugees from Iraq have immigrated to Sweden. In the 2000s, people from Iraq, Somalia, Syria and Afghanistan have accounted for most of the immigration to Sweden. Consequently, the size of Sweden's foreign-born population has increased over the years.

As of 2018, almost 20 per cent of Sweden's total population was born abroad. The change from labour force migration to refugee migration has transformed the composition of the country's immigrant population. During recent decades, the share of immigrants born outside Europe has grown markedly. In 2018, around 55 per cent of the foreign-born population

⁵ Boguslaw (2012) presents a detailed description and discussion about Sweden's immigration history.

originated from outside Europe (e.g., Iraq, Syria, Iran, Somalia). Immigrants from European countries are primarily from Finland, Poland and the former Yugoslavia.⁶

3. Theoretical framework

3.1 Factors influencing immigrants' self-employment decisions

Researchers have paid a great deal of attention to factors influencing immigrants' decisions to become self-employed and to determine why differences in self-employment propensities between immigrants and natives are to be expected.⁷ Several factors, aside from ethnic background, may affect an individual's decision to become self-employed. Le (1999) and Simoes et al. (2016) conclude that men are disproportionately represented in self-employment. They also find that self-employment is positively related to age, but at a decreasing rate.

One important factor for an individual's self-employment decision is his/her family situation. Marriage and children are positively associated with self-employment propensities for different reasons. Borjas (1986) argues that family members are a source of reliable labour and a married couple can invest more financial capital than a single person. Lentz and Laband (1983, 1990) have shown that family background also plays an important role in self-employment propensity, since family traditions are a strong determinant for whether or not an individual is self-employed. The children of self-employed parents are more likely to be self-employed than children whose parents were employees.

Access to financial capital is also positively related to the propensity to become and remain self-employed. Wealth and owning property are important factors, since equity in a home is an important source of capital that also increases a person's chance of securing a business loan. Other factors have a more ambiguous impact on the self-employment decision. Such factors are the self-employed person's health and education. Simoes et al. (2016) underlines that health and education affects self-employment propensities.

There are also explanations for differences in self-employment rates between immigrants and natives. The disadvantage theory by Light (1972, 1979) and Moore (1983) contends that immigrants are over-represented in self-employment, because factors such as discrimination or lack of proficiency in the national language make them less competitive in the labour market. Clark and Drinkwater (2000) and Hammarstedt (2006) have found evidence that such disadvantages pushes immigrants towards self-employment.

Other difficulties could also reduce self-employment propensities among immigrants. As mentioned previously, access to financial capital is an important factor in the propensity to become and remain self-employed. Blanchflower et al. (2003), Blanchard et al. (2008), and Asiedu et al. (2012) all indicate that, in the United States, self-employed immigrants are discriminated against by banks and financial institutions. A similar study by Aldén and Hammarstedt (2016) reached the same conclusion in Sweden. This discrimination may reduce self-employment propensities among immigrants.

⁶ See Statistics Sweden, www.scb.se.

⁷ In the United States, studies have been conducted by Borjas (1986), Yuengert (1995), Fairlie and Meyer (1996), Fairlie (1999), Hout and Rosen (2000), Fairlie and Robb (2007) and Robb and Fairlie (2009). In Australia, these issues have been addressed by Le (2000). Clark and Drinkwater (2000) conducted a European study. Clark et al. (2017) conducted a United Kingdom study. Constant and Zimmermann (2006) conducted a German study and Hammarstedt (2001) and Aldén and Hammarstedt (2016) conducted a Swedish study.

Another explanation for the disparities in self-employment rates between immigrants from different countries is that immigrants come from countries with different self-employment traditions. Frazier (1957) and Light (1984) formulated the home-country self-employment hypothesis. In other words, immigrants who come from countries with a large self-employment sector are more likely to be self-employed in their new country than are immigrants whose home country lacks such a tradition. The theory has been tested empirically, but the results are ambiguous. Yuengert (1995) found support for the hypothesis on United States data, while Fairlie and Meyer (1996) did not. Hammarstedt and Shukur (2009) found no clear support when the theory was tested empirically on data from Sweden. No support for the theory was found when Tubergen (2005) conducted a cross-sectional study on data from 17 countries.

Family traditions are also important to consider. Intergenerational links are a strong determinant for an individual's decision to become self-employed. However, the strength in the intergenerational transmission may vary between immigrants and natives. Previous research by Fairlie (1999) and Hout and Rosen (2000) illustrates that having a self-employed father increases self-employment rates among immigrants in the United States and that the transmission across generations varies between different ethnic groups. Andersson and Hammarstedt (2010, 2011) show that the strength of the intergenerational transmission varies between immigrants and natives, and also between males and females with different ethnic backgrounds, in Sweden.

Furthermore, the existence of different cultures may also affect self-employment propensities among immigrants. Kinzer and Sagarin (1950) and Light (1972) argue that self-employment may be promoted because immigrants are living geographically close to each other in ethnic enclaves. The opportunities for self-employment arise because immigrants from a particular group have an advantage in providing customers from that group living in the same area with different goods and services.

The empirical results from the research regarding ethnic enclaves and self-employment propensities among immigrants are ambiguous. Borjas (1986) and Toissant-Comeau (2008) illustrate that that ethnic enclaves enhanced the propensity to be self-employed among immigrants in the United States, while Yuengert (1995) and Aguilera (2009) found either no effect, or a negative effect, of ethnic enclaves. The positive effect was found in Australia by Le (2000) and in Sweden by Andersson and Hammarstedt (2015). Finally, in the United Kingdom, Clark and Drinkwater (2002) found a negative effect of ethnic enclaves on self-employment propensities.

Differences in culture may lead immigrants to form ethnic networks. Light (1972) and Waldinger (1990) argue that networks may offer immigrants information about markets and institutional conditions, in addition to the much-needed access to financial capital. Here again, the evidence points in different directions. In the United States, Bonnett (1981), Min (1988), Bond and Townshed (1996) and Van Auken and Neely (1998) have shown that ethnic networks enhance immigrants' self-employment propensities. However, a study from Sweden by Andersson and Hammarstedt (2015) indicates that such networks are an obstacle to self-employment among immigrants, because large networks increase the competition for customers. Thus, immigrants may be over-represented in self-employment, when compared to natives, but the opposite conclusion seems just as likely. Consequently, this is an empirical question.

3.2 The employment decision of self-employed immigrants

Compared with factors affecting immigrant self-employment decisions, knowledge about the decision of self-employed immigrants to hire employees is relatively lacking. Henley (2005) found that self-employed individuals from ethnic minority groups in the United Kingdom are less likely to hire employees, compared with self-employed natives. In the United States, Fairlie and Miranda (2017) have illustrated that among the self-employed people, there are ethnic and gender differences in the probability of hiring an employee within the first, two and seven years of the self-employment activities. More specifically, some ethnic groups in the United States (e.g., Asians, Hispanics) have a higher probability of hiring employees, rather than whites. Moreover, female-owned businesses are less likely to hire employees than male-owned businesses during the first years after business start-up.

Fairlie and Miranda (2017) show that some characteristics of business owners (e.g., education, previous working experience) do not strongly predict the employment decision. At the firm level, they illustrate that some business characteristics (e.g., assets, branches of businesses) are more important factors for the employment decision than other business characteristics (e.g., revenue).

The time spent in the host country relates to immigrants' self-employment decision and to their employment decision. Clark et al. (2017) have shown that the time of arrival is closely related to the probability of employing others. Self-employed businesses in the United Kingdom that are operated by more recently arrived immigrants are less likely to have employees than those businesses operated by immigrants that arrived earlier.

Many studies have researched the different hiring behaviours between self-employed natives and immigrants. However, few studies have investigated the characteristics of the employees of self-employed immigrants. One important question to ask is whether self-employed immigrants are more likely to employ workers from their own country. Andersson and Wadensjö (2007) have illustrated that both natives and immigrants are more likely to employ workers of their own nationality. Moreover, they also show that the probability of hiring immigrant employees among self-employed natives increases with the proportion of immigrants at the municipal level.

Borjas (1986) and Lin et al. (2000) argue that self-employed immigrants and natives have incentives to hire their spouses in the firm. This is because the family is an important source for labour for a self-employed individual. Family support may make self-employment less demanding. In addition, hiring one's spouse may be a way to allocate time within the household and to maximize family income. Thus, it may be attractive for self-employed immigrants and natives to hire their spouses.

4. Data

We use data from the LISA (Longitudinal integration database for health insurance and labour market studies) database at Statistics Sweden. This database contains information about all individuals who reside in Sweden that are 16 years of age or older. In the first part of the analysis, we used data from 2000 to 2014 to present trends in immigrant self-employment. Our data is based on the total population living in Sweden during each of those years. We include individuals between the ages of 20 and 64. We use Statistics Sweden's definition of self-employment, where a person is defined as self-employed if he or she is registered as self-employed in November of the year of observation. The self-employment activities can be in

incorporated firm with limited liability or unincorporated firm.⁸ The share of self-employed who are active in incorporated firms with limited liability in 2014 are presented in Table A1 in the Appendix. Immigrants are more often than natives active as self-employed in unincorporated firms. This is especially the case for non-European immigrants.

To explore immigrant propensities for self-employment, we define an immigrant as a person born outside of Sweden. We classify immigrants into eight groups, depending on where they were born: 1) Nordic countries (excluding Sweden), 2) Western Europe, 3) Eastern Europe, 4) Southern Europe, 5) the Middle East, 6) Asia, 7) Africa and 8) Latin America.⁹ The comparison group is made up of individuals born in Sweden.

The annual self-employment rate is calculated as the number of self-employed individuals between 20 and 64 years of age, divided by the number who is not self-employed. People who are registered as students, retired or working in the agricultural sector are excluded.

We then turn our attention to self-employment propensities among immigrants in 2014. Our working sample includes individuals aged 20 through 64 years in 2014. After excluding students, retirees and workers in the agricultural sector, our sample consists of 4 690 775 individuals: 978 741 immigrants and 3 712 034 natives.

We subdivided the eight immigrant groups according to their year of immigration: prior to 1996, between 1996 and 2005 and after 2005. We apply the following control variables to each individual: age, educational attainment, marital status, the number of dependent children under age 18 and the region of residence (at the local labour market level) in Sweden.

Individual data from the LISA database is linked to the employer data. This is made possible, because each firm and each employee have a unique identification number. We have information about the firm in which an individual was employed in November of 2014. We are thus able to use matched employer-employee data and trace everyone employed by someone who was self-employed.¹⁰ This enables us to investigate who is being hired by self-employed immigrants and natives.

We create a variable that measures whether a person was self-employed with at least one employee or not. The data provides information about whether the business has employees and about the gender and the birth region of those employees. For the immigrants, it also contains information about their year of arrival in Sweden.

Using those information, we created a set of variables that measures whether a self-employed individual has at least one female employee, at least one immigrant employee, at least one male immigrant employee, at least one female immigrant employee, at least one non-European immigrant employee, at least one non-European male immigrant employee, at least one non-European female immigrant employee, at least one recent arrived immigrant employee (immigrated after 2009) and at least one recently arrived non-European immigrant employee (immigrated after 2009).

⁸ In Sweden, firms can be broadly divided into incorporated and unincorporated firm. The major difference is that the former type of firm needs at least initial capital investment of SEK 50 000 and has limited liability. In the data, we can observe whether the individual is self-employed with incorporated firm (in Swedish, it is called *aktiebolag*) or with unincorporated firm.

⁹ Immigrants from North America and Oceania are classified as being from Western Europe.

¹⁰ It is possible that several self-employed people own the same firm.

Furthermore, we can link the spouse in the data and identify whether the self-employed person is hiring his/her spouse as an employee or not. We consider self-employed individuals hiring their spouse if the spouse is wage-employed in the same firm.

5. Empirical strategy

To investigate immigrant self-employment and the employees of self-employed immigrants, we analyse three types of outcome variables using three model specifications. We begin by studying how the propensity for self-employment differs between immigrant and native groups. We use the binary outcome variable to indicate whether or not an individual is self-employed and estimate the following linear probability model separately for males and females:

$$SE_i = \alpha + \beta_j \sum_{j=1}^{24} immg_{ij} + X_i' \gamma + LA_l + \varepsilon_i \quad (1)$$

where i, j and l indicate the individual, immigrant group and local labour market, respectively. SE_i is a latent variable, indicating whether someone was self-employed or not in 2014. SE_i is 1 if the person is self-employed and 0 otherwise. The variable $immg_{ij}$ includes a set of immigrant group dummies based on the region of birth for individual i . These immigrant group dummies are interacted with the three cohort dummies, indicating the point of time for immigration for individual i .

The following immigrant groups were included: Nordic countries, Western Europe, Eastern Europe, Southern Europe, the Middle East, Asia, Africa and Latin America. The cohorts used include immigrated prior to 1996, immigrated between 1996 and 2005 and immigrated between 2006 -2014. Thus, 24 (8 x 3) groups are included in the estimations. The comparison group is made up of native born individuals.

Our variable of interest is β_j , which is the estimated coefficient associated with different immigrant groups immigrating to Sweden at different points in time. X_i is a vector of socio-economic variables consisting of age, marital status, education and the number of dependent children. LA_l is a set of residential local labour market dummies, which controls for the local labour market fixed effect. Finally, ε_i is the error term.

We also want to answer the question of whether immigrant self-employment contributes to job creation. Therefore, we restrict the sample to those individuals who are self-employed. We investigate whether the self-employed immigrant is more likely to have an employee at the firm or not than self-employed natives. We specify the following linear probability model for self-employed males and females separately:

$$Empl_i = \alpha + \beta_j \sum_{j=1}^8 immg_{ij} + X_i' \gamma + Z_m' \delta + LA_l + \epsilon_i \quad (2)$$

where i, j, m and l indicates the individual, immigrant group, firm and local labour market, respectively. The binary dependent variable $Empl_i$ indicates whether the self-employment business contains at least one employee or not. The variable of interest $immg_{ij}$ indicates the eight different immigrant groups among the self-employed immigrants, with the self-employed natives as the reference group. X_i is a vector of the same socio-economic variables at the individual level, as in specification (1). Z_i is a set of firm characteristics, including the industry dummies at one digital level and the firm type: whether it is an incorporated firm

with limited liability or unincorporated firm. Again, LA_l is a set of residential local labour market dummies.

Furthermore, we want to analyse whether the self-employed immigrant is more likely to hire certain groups of immigrants, and their spouse, as employees. To determine this, we further restrict the sample to self-employed individuals with employees. We specify the following model separately for self-employed males and females who have employees:

$$EE_type_i = \alpha + \beta_j \sum_{j=1}^8 immg_{ij} + X_i' \gamma + Z_m' \delta + LA_l + \epsilon_i \quad (3)$$

where i, j, m and l indicates the individual, immigrant group, firm and local labour market, respectively. The dependent variable EE_type_i indicates different binary outcome variables that relate to the likelihood of having any immigrant and gender-specific employees and having the spouse as the employee in the firm. Again, the variables $immg_{ij}$ are the eight immigrant group dummies for those self-employed immigrants with employees. In the regression, the reference group is self-employed natives with employees. Compared with Specification (2), among the firm characteristics, we further control for the firm size in the regression specification (3).¹¹

6. Descriptive statistics

6.1 Trends in immigrant self-employment between 2000 and 2014

We explore trends in immigrant self-employment in Sweden since 2000 by calculating self-employment rates for the eight immigrant groups between the years of 2000 and 2014 (Tables 1 and 2). High rates of self-employment are found among immigrants from the Middle East. Table 1 illustrates a slight decrease in the self-employment rate among males from the Middle East during that time period. The share of immigrants from the Middle East, however, has increased markedly. In addition, literature has shown that recently arrived immigrants are often less likely than other immigrants to establish a business, leading to the conclusion that the self-employment rate initially decreases in a group when its size increases.

The self-employment rate among male natives increased from 7 per cent to 8.7 per cent from 2000 to 2014. Among the male immigrants from the Nordic countries, Western and Eastern Europe, the self-employment rates were found to be similar to those of male natives; they increased slightly. The self-employment rates among male immigrants from Southern Europe and Asia were between 5 and 7 per cent. The self-employment rate among Latin American and African males is somewhat lower. It is worth noting that the self-employment rate among Africans dropped somewhat during the period. As with male immigrants from the Middle East, one explanation for this is the increased share of recently arrived immigrants from countries in Africa.

¹¹ All variables are presented in Table A2 in the Appendix.

**Table 1. Self-employment rate (per cent) for different groups of male immigrants and natives
2000-2014 (20 to 64 years of age)**

	(1) Nordic countries	(2) Western Europe	(3) Eastern Europe	(4) Southern Europe	(5) Middle East	(6) Asia	(7) Africa	(8) Latin America	(9) Natives
2000	5.5	7.3	7.0	5.0	13.3	5.4	4.1	2.9	7.0
2001	5.5	7.0	7.0	5.0	13.1	5.3	4.2	3.0	6.9
2002	6.0	7.5	7.2	5.1	13.4	5.8	4.3	3.3	7.4
2003	5.9	7.3	7.1	5.2	13.4	5.8	4.2	3.4	7.2
2004	6.7	8.6	8.1	5.6	14.3	6.6	4.2	3.4	9.1
2005	6.7	8.5	8.2	5.6	13.8	6.4	4.2	3.5	9.0
2006	6.9	8.6	8.3	5.5	13.0	6.3	4.1	3.6	9.0
2007	7.3	9.0	8.1	5.7	12.5	6.2	4.0	3.9	10.3
2008	7.3	8.7	7.9	5.6	12.1	6.0	3.9	3.9	9.1
2009	7.4	8.8	8.3	5.6	11.8	5.9	3.6	4.1	9.1
2010	7.7	8.9	8.8	5.7	11.6	5.6	3.4	4.3	9.1
2011	7.8	8.8	9.2	5.6	11.4	5.5	3.3	4.5	9.1
2012	7.8	8.9	9.2	5.4	11.2	5.6	3.2	4.5	8.9
2013	7.9	8.9	9.2	5.5	10.8	5.5	3.0	4.6	8.9
2014	7.8	8.9	9.1	5.4	10.2	5.6	2.8	4.7	8.7

Notes: The self-employment rate is defined as the ratio between the number of self-employed persons and the total population aged 20 to 64.

Table 2 reveals much lower self-employment rates among females than among males. Relatively high self-employment rates are found among females from Western Europe, Eastern Europe and Asia.

Most self-employment rates rose during the period. Exceptions are for females from the Middle East and Africa. As for males, one explanation for this is that many of these immigrants arrived in Sweden recently, and therefore, are less likely than others to be self-employed.

Table 2. Self-employment rate (per cent) for different groups of female immigrants and natives 2000-2014 (20 to 64 years of age)

	(1) Nordic countries	(2) Western Europe	(3) Eastern Europe	(4) Southern Europe	(5) Middle East	(6) Asia	(7) Africa	(8) Latin America	(9) Natives
2000	3.0	4.4	3.9	2.1	4.0	3.0	1.2	1.5	3.5
2001	3.0	4.2	3.9	2.1	3.9	3.1	1.3	1.4	3.4
2002	3.2	4.7	4.0	2.1	4.2	3.4	1.3	1.7	3.5
2003	3.1	4.6	4.0	2.1	4.1	3.2	1.4	1.7	3.4
2004	3.7	5.4	4.6	2.4	4.5	3.6	1.3	2.0	4.2
2005	3.7	5.6	4.6	2.4	4.5	3.7	1.4	2.2	4.2
2006	3.8	5.7	4.6	2.3	4.4	4.0	1.4	2.3	4.2
2007	3.9	5.8	4.7	2.4	4.3	4.0	1.3	2.4	4.5
2008	3.8	5.7	4.9	2.4	4.1	4.2	1.3	2.3	4.2
2009	4.0	5.8	5.2	2.4	3.9	4.3	1.2	2.4	4.2
2010	4.1	5.9	5.5	2.4	3.9	4.5	1.2	2.6	4.3
2011	4.1	5.9	5.8	2.4	3.8	4.7	1.2	2.8	4.3
2012	4.1	6.0	6.0	2.4	3.7	4.8	1.2	3.0	4.3
2013	4.1	5.9	6.2	2.3	3.6	5.1	1.2	2.9	4.3
2014	4.2	6.0	6.3	2.3	3.5	5.2	1.2	3.0	4.2

Notes: The self-employment rate is defined as the ratio between the number of self-employed persons and the total population aged 20 to 64.

6.2 Background characteristics of self-employed immigrants

In Table 3, we present descriptive statistics for self-employed individuals with different regions of origin in 2014. In most groups, the self-employed are, on average, approximately 45 years of age. Large differences between the groups are in terms of their educational attainment. Many of the less-educated self-employed immigrants are from the Middle East and Asia. Among the self-employed males from the Middle East, about 33 per cent have only a primary school education. Among self-employed males from Asia, the comparable figure is about 24 per cent. The share of less-educated self-employed immigrants from countries in Africa is around 17 per cent.

About 25 per cent of the self-employed female immigrants from the Middle East have a primary school education; the comparable figure among self-employed females from Asia is almost 35 per cent. Among African females, the share is around 19 per cent.

Table 3. Descriptive statistics for self-employed individuals in 2014 (20 to 64 years of age)

	(1) Share of self- employment ^(a) (%)	(2) Age	(3) Primary school (%)	(4) Secondary school (%)	(5) University (%)	(6) Married (%)	(7) Number of children in the household
Men							
Nordic countries	8.2 (4 177/50 778)	50.2	18.8	47.1	34.1	53.6	0.9
Western Europe	9.6 (4 313/45 090)	46.5	9.6	30.1	60.3	57.9	1.1
Eastern Europe	10.0 (4 735/47 429)	43.0	7.8	49.4	42.8	61.2	0.9
Southern Europe	5.5 (4 121/ 74 446)	45.5	16.7	55.2	28.1	60.6	1.3
Middle East	10.4 (15 598/149 561)	44.1	32.4	38.7	28.9	71.9	1.7
Asia	6.2 (2 927/47 465)	42.3	24.1	36.1	39.8	60.2	1.3
Africa	2.9 (1 555/ 54 221)	45.7	17.1	42.0	40.9	65.7	1.7
Latin America	4.8 (1 114/ 23 443)	44.0	12.4	44.4	43.2	41.0	1.0
Native	8.8 (168 963/1 921 637)	46.3	14.2	54.6	31.2	49.6	1.1
Women							
Nordic countries	4.3 (2 598/60 767)	50.7	11.6	40.6	47.8	58.4	0.9
Western Europe	6.5 (2 206/34 180)	46.6	5.5	26.0	68.5	67.2	1.1
Eastern Europe	6.5 (4 337/66 981)	43.7	5.0	40.6	54.4	57.7	0.9
Southern Europe	2.4 (1 599/66 513)	45.6	18.0	48.8	33.2	63.2	1.2
Middle East	3.6 (3 985/111 158)	42.3	25.4	44.3	30.3	72.4	1.8
Asia	5.4 (4 179/77 134)	42.5	34.5	28.7	36.8	55.1	1.1
Africa	1.3 (585/45 521)	41.8	18.5	37.1	44.4	59.0	1.8
Latin America	3.1 (742/24 057)	44.3	9.2	42.3	48.5	50.4	1.2
Native	4.2 (75 851/1 790 397)	46.2	8.3	49.7	42.0	54.1	1.1

Notes: (a) Number of individuals in parentheses. After excluding individuals with missing values on some of the explanatory variables, the self-employment rates in 2014 in this table are found to be slightly different from the corresponding self-employment rates for 2014 presented in Tables 1 and 2.

We find a high share of highly educated self-employed male and female immigrants from countries in Western Europe, Eastern Europe and Latin America. Among the self-employed males originating from countries in Western Europe, about 60 per cent had a university education. Among females, this share was even higher (i.e., over 68 per cent). The share of highly educated self-employed females from countries in Eastern Europe was slightly more than 54 per cent. Among females from Latin America, this share was almost 49 per cent.

Most of the self-employed immigrants were married, indicating that the family situation plays an important role in the self-employment decision. The percentage of self-employed married immigrants was especially high, over 70 per cent, among the people from the Middle East.

6.3 In which branches of business are immigrants self-employed?

Tables 4 and 5 illustrate the distribution of self-employed immigrants across various branches of business. According to Table 4, a high share of self-employed male immigrants from European countries works in the manufacturing and construction sector. This is also the case for native males. Furthermore, a large share of males from these regions is also self-employed in the business service sector. A very small share of immigrants from these groups is self-employed in the hotel and restaurant sector.

The picture is different for males originating from the Middle East and other parts of Asia. For these groups, we find that the majority of the self-employed are active either in the hotel and restaurant sector or in the sales and retail trade sector.

Table 4. Self-employment (share in per cent) among male immigrants divided by branches of business in 2014 (20 to 64 years of age)

	(1) Native	(2) Nordic countries	(3) Western Europe	(4) Eastern Europe	(5) Southern Europe	(6) Middle East	(7) Asia	(8) Africa	(9) Latin America
Manufacturing/ Construction	34.1	35.1	20.4	55.2	21.1	5.1	7.8	5.8	19.9
Sales/ Retail Trade	14.7	14.1	11.2	10.3	17.7	22.7	17.4	19.1	10.8
Transportation/ Warehouse	6.0	4.8	1.9	4.0	12.1	12.9	8.3	28.2	5.9
Hotel/ Restaurant	2.3	1.5	8.1	3.2	15.8	35.2	38.0	9.9	6.4
Personal Services	6.0	7.0	9.2	3.5	5.7	9.9	6.7	6.2	10.4
Business Services	20.7	20.3	27.5	12.7	16.4	5.4	10.4	15.9	28.0
Healthcare/ Social Work	2.1	3.1	2.9	3.1	2.1	3.0	1.7	4.6	2.5
Others	14.3	14.0	18.7	8.0	9.1	5.7	9.8	10.4	16.1
Number of Individuals	168 963	4 177	4 313	4 735	4 121	15 598	2 927	1 555	1 144

Table 5 depicts the branches of business in which female immigrants are self-employed. The table reveals large differences between groups, including between females and males. The majority of the female self-employed are active in the personal or business service sectors. Among female immigrants from the Middle East or Asia, a large share of the self-employed is active in the hotel and restaurant business or in the service sector. Female natives and female immigrants from other regions are more often active in the business service sector.

In addition to the differences in educational attainment among self-employed immigrants shown in Tables 2 and 3, there are differences in the branches of the business self-employed in which immigrants are active. The explanation may be found in the immigrants' educational attainment. Immigrants from countries in the Middle East are less educated and more likely to become self-employed in sales, trade, hotels and restaurants. Being self-employed in the construction or manufacturing sector requires a higher level of education.

Table 5. Self-employment (share in per cent) among female immigrants divided by branches of business in 2014 (20 to 64 years of age)

	(1) Native	(2) Nordic countries	(3) Western Europe	(4) Eastern Europe	(5) Southern Europe	(6) Middle East	(7) Asia	(8) Africa	(9) Latin America
Manufacturing/ Construction	6.5	7.3	5.3	11.4	5.4	2.5	2.8	2.7	7.0
Sales/ Retail Trade	14.0	13.3	10.2	10.2	11.6	17.2	12.8	16.9	11.5
Transportation/ Warehouse	1.0	1.0	0.5	0.9	1.5	1.5	0.4	3.2	0.4
Hotel/ Restaurant	3.6	3.0	7.3	3.1	12.9	20.6	28.2	8.2	5.4
Personal Services	26.1	21.8	19.0	17.2	24.3	27.9	31.9	20.1	22.9
Business Services	25.0	27.5	31.9	38.0	24.8	6.7	12.6	24.4	30.3
Healthcare/ Social Work	8.6	11.6	6.2	7.5	5.4	6.9	2.3	9.1	9.7
Others	15.2	14.4	19.6	11.6	14.1	16.7	9.1	15.2	12.8
Number of Individuals	75 851	2 598	2 206	4 337	1 599	3 985	4 179	585	742

6.4 The employees of the self-employed immigrants

Table 6 presents data on the self-employed immigrants who have employees. The results reveal that native males are more likely than immigrant males to have employees. About 68 per cent of the native self-employed persons have at least one employee. Among male immigrants, this share ranges from about 45 per cent, among immigrants from Eastern Europe, to about 62 per cent, among immigrants from the Middle East. The share of male immigrants with at least one female employee ranges from about 30 per cent, among immigrants from Africa, to more than 47 per cent, among immigrants from Asia.

Male immigrants from non-European countries are more likely than native males to have immigrant employees, especially employees with a non-European background. We also observe that self-employed male immigrants from European countries are more likely to have immigrant employees than self-employed native men are. However, self-employed European immigrants are much less likely than self-employed non-Europeans to hire non-European immigrants. Furthermore, self-employed immigrants are more likely than self-employed natives to hire a recently arrived immigrant as an employee. About 7 per cent of the self-employed natives hire at least one recently arrived immigrant employee, while the corresponding figure ranges from about 9 per cent, among self-employed males from the Nordic countries, to about 40 per cent, among male immigrants from the Middle East.

Regarding the likelihood of hiring a spouse as an employee, the proportion varies from about 5 per cent, among the self-employed male immigrants from Latin America, to about 13 per cent, among the self-employed male immigrants from Asia. The proportion is about 7.5 per cent among the self-employed native men.

Turning to the employees of self-employed females, the share of self-employed females that has at least one employee is lower than the self-employed men for all immigrant groups,

including natives. The share with at least one employee ranges from 39 per cent, among self-employed females from Eastern Europe and Latin America, to about 50 per cent, among self-employed females from the Middle East.

Furthermore, the share of self-employed females that has at least one female employee is higher than that among males for all groups of immigrant females and natives. The pattern of hiring immigrant employees among self-employed females is similar to that of self-employed males. Self-employed female immigrants are more likely to hire employees with an immigrant background, and also recently arrived immigrants, than natives. Self-employed non-European immigrant females are much more likely to hire non-European immigrant employees than are self-employed natives and self-employed immigrant women from European countries.

Turning to the proportion of having the husband as an employee for self-employed women, we observe that somewhat more than 3 per cent of the self-employed native females hire their husbands as employees in the firms. The proportion is higher among self-employed female immigrants than among female self-employed natives. The highest share is found among self-employed females from the Middle East. In this group, almost 7 per cent of the self-employed females were found to hire their husbands as employees.

Table 6. Employees of the self-employed immigrants in 2014 (20 to 64 years of age)

	Native	Nordic countries	Western Europe	Eastern Europe	Southern Europe	Middle East	Asia	Africa	Latin America
<i>Self-employed males</i>									
Share with employee	67.7	58.3	45.4	44.7	59.4	62.4	59.0	50.2	51.7
<i>Number of individuals^(a)</i>	154 381	3 669	3 698	4 170	3 555	1 3446	2 463	1 286	948
With at least one female employee	34.0	31.8	34.8	31.9	39.0	34.7	47.3	30.7	38.4
With at least one immigrant employee	20.0	27.7	33.5	55.0	58.7	71.3	65.2	55.4	49.2
With at least one male immigrant employee	16.2	22.0	26.6	45.0	50.1	63.4	52.8	49.2	39.8
With at least one female immigrant employee	8.6	11.8	18.6	24.5	26.0	25.8	39.1	21.7	26.3
With at least one non-European immigrant employee	10.5	11.6	18.2	8.4	19.9	68.1	62.6	51.7	43.3
With at least one non-European male immigrant employee	8.2	9.3	14.6	7.1	17.2	60.9	51.1	47.2	34.3
With at least one non-European female immigrant employee	4.8	5.2	9.9	3.2	7.0	22.6	36.3	18.4	21.2
With at least one recently arrived immigrant employee	6.6	8.8	17.8	38.4	33.3	39.1	39.8	29.4	30.8
With at least one recently arrived non-European immigrant employee	3.1	4.0	8.3	4.1	9.6	36.6	38.0	28.2	25.9
With spouse as an employee	7.5	8.0	8.6	10.3	10.2	7.0	13.1	6.3	5.1
<i>Number of individuals with at least one employee</i>	104 504	2 138	1 680	1 863	2 112	8 385	1 454	646	490
<i>Self-employed females</i>									
Share with employee	46.7	40.7	32.0	38.7	46.7	49.5	43.0	45.3	39.0
<i>Number of individuals^(a)</i>	64 205	2 095	1 731	3 488	1 263	2 919	3 341	437	593
With at least one female employee	46.9	42.6	35.4	48.2	50.0	46.3	47.7	43.9	42.9
With at least one immigrant employee	18.6	26.3	27.9	52.5	54.8	61.1	57.6	53.5	46.3
With at least one male immigrant employee	11.4	16.4	17.4	24.7	40.2	45.4	37.5	38.9	30.7
With at least one female immigrant employee	13.1	18.2	20.4	39.8	33.7	32.3	40.4	35.9	30.7
With at least one non-European immigrant employee	10.9	14.0	15.6	10.1	21.5	58.3	54.4	50.0	43.3
With at least one non-European male immigrant employee	6.8	8.0	10.5	6.7	13.2	44.5	35.7	35.9	28.1
With at least one non-European female immigrant employee	7.6	10.9	10.9	7.0	13.6	28.5	37.6	30.8	29.0
With at least one recently arrived immigrant employee	6.6	9.3	13.2	37.4	30.3	33.6	38.1	31.8	30.3
With at least one recently arrived non-European immigrant employee	3.5	5.5	7.4	5.3	9.0	31.5	36.6	28.3	26.8
With spouse as an employee	3.2	3.2	3.4	4.1	5.9	6.6	4.9	5.6	5.2
<i>Number of individuals with at least one employee</i>	29 962	852	553	1 350	590	1 446	1 435	198	231

Notes: in per cent. (a) Due to the exclusion of self-employed people with missing information on the number of employees, the number of self-employed in this table might be different from the numbers in Table 3.

7. Results

7.1 Immigrant self-employment propensities

In this section, we present the regression estimates for the propensity of being self-employed for different immigrant-cohort groups, using native as the reference group. We use a linear probability model to estimate this propensity separately for men and women.

In Table 7, we illustrate the results for men. We first run the raw regression in Column 1 and then gradually add the control variables for the individual characteristics and the local labour market fixed effect in Columns 2 and 3. Most of the estimated results remain robust across all specifications, although the magnitude of the estimated coefficients changes slightly.

We focus the interpretation on the results in Column 3. In general, the propensity of being self-employed varies between different immigrant groups and cohorts. Males from Western Europe, Eastern Europe and the Middle East who immigrated to Sweden before 2006 are more likely to be self-employed than are native men. Immigrants from Southern Europe, Africa and Latin America are less likely to be self-employed.

The Middle Eastern group stands out, since Middle Eastern immigrant men who arrived before 1996 have the highest propensity for self-employment. The estimated coefficient suggests they are over 4 percentage points more likely to be self-employed than native men. However, among Middle Eastern immigrants who arrived after 2005, the probability of being self-employed is about 3 percentage points lower than for native men. The results indicate that the time spent in Sweden is an important determinant of immigrant self-employment. This result also indicates that the decline in the self-employment rate among the Middle Eastern group could be attributed to a low propensity of self-employment among recent immigrants.

Table 7. Linear probability estimates of the propensity of being self-employed among males in 2014 (20 to 64 years of age).

	(1) Males	(2) Males	(3) Males
Nordic countries before 1996	-0.002 (0.002)	-0.024*** (0.002)	-0.025*** (0.002)
Nordic countries 1996-2005	0.008** (0.004)	0.001 (0.004)	-0.002 (0.004)
Nordic countries 2006-2014	-0.033*** (0.002)	-0.024*** (0.002)	-0.027*** (0.002)
Western Europe before 1996	0.031*** (0.003)	0.017*** (0.003)	0.011*** (0.003)
Western Europe 1996-2005	0.021*** (0.003)	0.017*** (0.003)	0.012*** (0.003)
Western Europe 2006-2014	-0.016*** (0.002)	0.001 (0.002)	-0.003* (0.002)
Eastern Europe before 1996	0.015*** (0.003)	0.007*** (0.003)	0.002 (0.003)
Eastern Europe 1996-2005	0.026*** (0.004)	0.030*** (0.004)	0.025*** (0.004)
Eastern Europe 2006-2014	0.007*** (0.002)	0.017*** (0.002)	0.011*** (0.002)
Southern Europe before 1996	-0.021*** (0.001)	-0.035*** (0.001)	-0.036*** (0.001)
Southern Europe 1996-2005	-0.030*** (0.002)	-0.038*** (0.002)	-0.037*** (0.002)
Southern Europe 2006-2014	-0.059*** (0.001)	-0.044*** (0.001)	-0.047*** (0.001)
Middle East before 1996	0.068*** (0.002)	0.049*** (0.002)	0.042*** (0.002)
Middle East 1996-2005	0.043*** (0.002)	0.035*** (0.002)	0.031*** (0.002)
Middle East 2006-2014	-0.041*** (0.001)	-0.033*** (0.001)	-0.033*** (0.001)
Asia before 1996	-0.001 (0.002)	-0.002 (0.002)	-0.005** (0.002)
Asia 1996-2005	-0.000 (0.003)	0.001 (0.003)	-0.004 (0.003)
Asia 2006-2014	-0.054*** (0.001)	-0.034*** (0.001)	-0.038*** (0.001)
Africa before 1996	-0.031*** (0.002)	-0.048*** (0.002)	-0.059*** (0.002)
Africa 1996-2005	-0.047*** (0.002)	-0.049*** (0.002)	-0.057*** (0.002)
Africa 2006-2014	-0.077*** (0.001)	-0.067*** (0.001)	-0.069*** (0.001)
Latin America before 1996	-0.039*** (0.002)	-0.040*** (0.002)	-0.048*** (0.002)
Latin America 1996-2005	-0.030*** (0.004)	-0.028*** (0.004)	-0.038*** (0.004)
Latin America 2006-2014	-0.052*** (0.003)	-0.038*** (0.003)	-0.048*** (0.003)
Control variables	No	Yes	Yes
LA fixed effect	No	No	Yes
Observations	2 414 070	2 414 070	2 414 070
R-squared	0.005	0.019	0.022

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is native. The control variables include age, secondary school, university, marital status and the number of dependent children. The LA fixed effect controls for the residential local labour market fixed effect.

Table 8 presents the results for women. As with males, we focus on the results in Column 3. Immigrant women from Western Europe, Eastern Europe and Asia are more likely than native women to be self-employed, whereas immigrant women from the Nordic countries, Southern Europe, Africa and Latin America are less likely to be self-employed. In contrast to males from the Middle East, females from the Middle East who arrived between 1996 and 2005 are less likely to be self-employed than native women. Comparing the estimated coefficients across cohorts within the same immigrant group, we do not find strong evidence for the fact that more recently arrived immigrant women are less likely to be self-employed than immigrant women who arrived earlier.

To sum up, we find that that the propensity of being self-employed varies among immigrants in Sweden. In line with the previous literature, male immigrants from the Middle East, with an early date of arrival, are overrepresented in the self-employment sector in Sweden.

Table 8. Linear probability estimates of the propensity of being self-employed among females in 2014 (20 to 64 years of age).

	(1) Females	(2) Females	(3) Females
Nordic countries before 1996	0.000 (0.001)	-0.008*** (0.001)	-0.010*** (0.001)
Nordic countries 1996-2005	0.012*** (0.003)	0.011*** (0.003)	0.009*** (0.003)
Nordic countries 2006-2014	-0.009*** (0.002)	-0.001 (0.002)	-0.004** (0.002)
Western Europe before 1996	0.027*** (0.002)	0.022*** (0.002)	0.019*** (0.002)
Western Europe 1996-2005	0.031*** (0.003)	0.030*** (0.003)	0.027*** (0.003)
Western Europe 2006-2014	0.014*** (0.002)	0.021*** (0.002)	0.019*** (0.002)
Eastern Europe before 1996	0.017*** (0.002)	0.012*** (0.002)	0.008*** (0.002)
Eastern Europe 1996-2005	0.024*** (0.002)	0.024*** (0.002)	0.021*** (0.002)
Eastern Europe 2006-2014	0.026*** (0.001)	0.031*** (0.001)	0.027*** (0.001)
Southern Europe before 1996	-0.014*** (0.001)	-0.019*** (0.001)	-0.019*** (0.001)
Southern Europe 1996-2005	-0.021*** (0.001)	-0.022*** (0.001)	-0.023*** (0.001)
Southern Europe 2006-2014	-0.028*** (0.001)	-0.022*** (0.001)	-0.024*** (0.001)
Middle East before 1996	0.011*** (0.001)	0.005*** (0.001)	0.000 (0.001)
Middle East 1996-2005	-0.005*** (0.001)	-0.007*** (0.001)	-0.011*** (0.001)
Middle East 2006-2014	-0.026*** (0.001)	-0.024*** (0.001)	-0.026*** (0.001)
Asia before 1996	0.013*** (0.001)	0.012*** (0.001)	0.010*** (0.001)
Asia 1996-2005	0.025*** (0.002)	0.024*** (0.002)	0.022*** (0.002)
Asia 2006-2014	0.005*** (0.001)	0.010*** (0.001)	0.008*** (0.001)
Africa before 1996	-0.019*** (0.001)	-0.023*** (0.001)	-0.030*** (0.001)
Africa 1996-2005	-0.026*** (0.001)	-0.027*** (0.001)	-0.032*** (0.001)
Africa 2006-2014	-0.036*** (0.001)	-0.032*** (0.001)	-0.032*** (0.001)
Latin America before 1996	-0.013*** (0.001)	-0.015*** (0.001)	-0.020*** (0.001)
Latin America 1996-2005	-0.006** (0.003)	-0.007*** (0.003)	-0.013*** (0.003)
Latin America 2006-2014	-0.011*** (0.002)	-0.007*** (0.002)	-0.012*** (0.002)
Control variables	No	Yes	Yes
LA fixed effect	No	No	Yes
Observations	2 276 705	2 276 705	2 276 705
R-squared	0.002	0.006	0.009

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is natives. The control variables include age, secondary school, university, marital status and the number of dependent children. The LA fixed effect controls for the residential local labour market fixed effect.

7.2 *The propensity of having employees*

Self-employed individuals create jobs for themselves and sometimes for others as well. In this section, we analyse three aspects of immigrant self-employment job creation. Firstly, we look for differences between various self-employed immigrant and native groups in their propensity to have employees in their firms. Secondly, we identify differences between self-employed immigrants and natives in the propensity to have immigrant employees; we also look for differences among immigrant groups in the propensity to hire non-European immigrants and in the propensity to have employees of a different gender. Finally, we estimate if there are differences between different groups of immigrants and natives in the propensity of hiring recently arrived immigrants and in the propensity of hiring their spouses in the firms.

All estimations are conducted with the help of a linear probability model and presented separately for males and females. Table 9 presents the estimation results on the employees of self-employed men. In Column 1 and 2, the outcome variables indicate whether or not the self-employed individual has any employees. In Column 1, we show the raw correlation between the likelihood of having an employee in the firm among different self-employed immigrant groups. We find that the immigrant-owned firms, on average, are less likely to have an employee than the native-owned firms. In Column 2, we follow the regression model Specification (2) and control for individual and firm characteristics. After controlling the individual and firm characteristics, the estimation result illustrates that self-employed immigrant males generally have a higher probability of having employees than do self-employed native males, except immigrant business owners from the Nordic and Western European countries. In Table A3 in the Appendix, we further show that this result is mainly driven by self-employed immigrants with unincorporated firms.

From Columns 3 to 9, we restrict the sample to self-employed individuals with at least one employee and we use regression model Specification (3). In Column 3, we estimated the propensity for self-employed males with employees to have at least one female employee. We find that self-employed immigrants from the Middle East are less likely to have female employees than native self-employed men. On average, self-employed immigrant men from the Middle East are about 3 percentage points less likely to have a female employee than self-employed native men. Self-employed immigrant males from Eastern and Southern Europe, Asia and Latin America are more likely to have at least one female employee in the firm than self-employed native males.

In Column 4, we estimate the propensity to have at least one immigrant employee. In general, the probability of having at least one immigrant employee is higher among all groups of self-employed immigrant males than among self-employed native males.¹² When we look at the propensity of having at least one male immigrant employee (Column 5), we find that self-employed immigrant males are more likely to hire male immigrant employees than self-employed native males. Among self-employed immigrant men, self-employed immigrants from the Middle East have the highest probability of employing male immigrants, with the average propensity of about 38 percentage points higher than that of the self-employed native men.

We present the results for the probability of having at least one female immigrant employee in Column 6. We find that self-employed immigrant males are more likely to have a female

¹² The result is in line with the results in Åslund et al. (2014), who illustrate that employees who share an origin with their managers earn higher wages and have lower separation risks than other workers.

employee with an immigrant background than self-employed native males. Although self-employed immigrant men from the Middle East are less likely to have a female employee in the firm than self-employed native men are, they are more likely to hire a female immigrant employee.

Turning to the probability of hiring at least one employee from a non-European country, Column 7 shows that this propensity is higher among self-employed immigrant males from all regions, except Eastern Europe, than among self-employed native men. Moreover, the estimated coefficients are much larger among non-European self-employed immigrant males than the coefficients among European self-employed immigrant males. Finally, the results from Columns 8 and 9 illustrate that self-employed non-European immigrant males are more likely to hire both male and female non-European immigrants than self-employed native males.

Table 9. Linear probability estimates of the propensity of having employees among self-employed males (20 to 64 years of age).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Self-employed male with employees								
	Employee	Employee	Female	Immigrant employee			Non-European immigrant employee		
				Any	Male	Female	Any	Male	Female
Nordic countries	-0.094*** (0.008)	-0.004 (0.004)	-0.001 (0.009)	0.089*** (0.009)	0.072*** (0.008)	0.037*** (0.006)	0.020*** (0.006)	0.020*** (0.006)	0.008* (0.004)
Western Europe	-0.223*** (0.008)	-0.030*** (0.004)	0.001 (0.011)	0.124*** (0.010)	0.104*** (0.009)	0.083*** (0.009)	0.056*** (0.008)	0.048*** (0.007)	0.039*** (0.006)
Eastern Europe	-0.230*** (0.008)	0.050*** (0.006)	0.058*** (0.010)	0.346*** (0.011)	0.283*** (0.011)	0.179*** (0.010)	-0.020*** (0.006)	-0.012** (0.006)	-0.002 (0.004)
Southern Europe	-0.083*** (0.008)	0.082*** (0.006)	0.041*** (0.010)	0.333*** (0.010)	0.292*** (0.010)	0.163*** (0.009)	0.047*** (0.008)	0.047*** (0.008)	0.016*** (0.005)
Middle East	-0.053*** (0.004)	0.176*** (0.004)	-0.033*** (0.006)	0.406*** (0.006)	0.379*** (0.006)	0.140*** (0.006)	0.460*** (0.006)	0.421*** (0.006)	0.153*** (0.005)
Asia	-0.087*** (0.010)	0.068*** (0.008)	0.070*** (0.012)	0.331*** (0.012)	0.261*** (0.012)	0.259*** (0.012)	0.396*** (0.012)	0.314*** (0.012)	0.282*** (0.012)
Africa	-0.175*** (0.014)	0.095*** (0.011)	-0.011 (0.016)	0.312*** (0.019)	0.293*** (0.019)	0.126*** (0.015)	0.358*** (0.019)	0.339*** (0.019)	0.130*** (0.014)
Latin America	-0.160*** (0.016)	0.077*** (0.012)	0.071*** (0.020)	0.260*** (0.021)	0.212*** (0.020)	0.168*** (0.018)	0.295*** (0.021)	0.233*** (0.020)	0.158*** (0.018)
<i>Individual characteristics</i>									
Control variables	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm characteristics</i>									
Firm size	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm type	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LA fixed effect	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	187 616	187 616	123 272	123 272	123 272	123 272	123 272	123 272	123 272
R-squared	0.012	0.714	0.244	0.342	0.332	0.232	0.380	0.360	0.235

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is self-employed native men. The control variables include age, secondary school, university, marital status and the number of children in the household.

The results for self-employed females with employees are presented in Table 10. In Column 1, without controlling for any individual and firm characteristics, we find that firms owned by female immigrants from the Nordic countries, Western and Eastern Europe, Asia and Latin America are less likely to have an employee in the firm than firms owned by native females. In Column 2, we show that self-employed immigrant women are more likely to have employees than self-employed native females after we have controlled for the individual and firm characteristics. The only exception is self-employed individuals from the Nordic and Western European countries. As for self-employed men, we find that this result is driven by self-employed females with unincorporated firms (Table A3 in the Appendix).

In terms of the probability of hiring at least one female employee in the firm, in Column 3, we find that self-employed women from Western Europe, the Middle East, Asia and Africa are less likely to have a female employee in the firm than self-employed native females while self-employed female immigrants from Eastern Europe and Southern Europe are more likely to have a female employee in the firm than self-employed native women.

In Columns 4 to 9, we find that self-employed women, particularly from non-European countries, are more likely to hire immigrants and also non-European immigrants as employees. Although self-employed women from Western Europe, the Middle East, Asia and Africa are less likely to have a female employee in the firm, they have a higher probability than self-employed native women of having a female employee with an immigrant background.

In summary, we observe that self-employed immigrants on average are less likely to have employee than self-employed natives. However, after controlling for individual and firm characteristics, we show that immigrant-owned firms, particular among unincorporated firms, are more likely than native-owned firms to have employees. Moreover, self-employed immigrants from non-European countries are much more likely than natives to have immigrant employees in the firm.¹³ In terms of the gender of the employees, self-employed men and women from the Middle East are less likely than natives to hire female employees, but they are more likely than self-employed natives to have a female employee with an immigrant background.¹⁴ One possible explanation for why immigrant business owners are more likely to hire immigrant employees is about employer preference. As argued by Becker (1957) employers may prefer to hire employees from their own country or region. Another possible explanation may relate to the production of ethnic related goods or services, which demands ethnicity specific human capital. Lazear (1999) has shown that information and coordination costs are lower if the business owners and employees share a similar culture and language and that this may lead to increased productivity.

¹³ Given the self-employed individuals with employees, we have estimated the likelihood of hiring at least one immigrant with a lower educational background (at the primary school level). The results suggest that self-employed immigrants are more likely than self-employed natives to hire those immigrants. These results are available upon request.

¹⁴ We have repeated the regression analysis separately for incorporated firms with liability and unincorporated firms. The results are similar with table 10 and 11. These results are available upon request.

Table 10. Linear probability estimates of the propensity of having employees among self-employed females (20 to 64 years of age).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Self-employed female with employees								
	Employee	Employee	Female	Immigrant employee			Non-European immigrant employee		
				Any	Male	Female	Any	Male	Female
Nordic countries	-0.060*** (0.011)	-0.002 (0.005)	-0.021 (0.015)	0.079*** (0.013)	0.056*** (0.011)	0.049*** (0.011)	0.033*** (0.009)	0.017** (0.008)	0.032*** (0.009)
Western Europe	-0.147*** (0.011)	-0.019*** (0.006)	-0.080*** (0.019)	0.102*** (0.017)	0.067*** (0.014)	0.084*** (0.015)	0.051*** (0.013)	0.039*** (0.011)	0.039*** (0.012)
Eastern Europe	-0.080*** (0.008)	0.104*** (0.006)	0.052*** (0.014)	0.340*** (0.013)	0.138*** (0.011)	0.277*** (0.013)	0.003 (0.008)	0.007 (0.006)	0.007 (0.006)
Southern Europe	0.000 (0.014)	0.069*** (0.010)	-0.007 (0.019)	0.302*** (0.019)	0.239*** (0.018)	0.177*** (0.018)	0.061*** (0.015)	0.026** (0.012)	0.041*** (0.013)
Middle East	0.029*** (0.009)	0.150*** (0.008)	-0.095*** (0.014)	0.359*** (0.013)	0.297*** (0.012)	0.166*** (0.012)	0.416*** (0.013)	0.329*** (0.013)	0.191*** (0.012)
Asia	-0.037*** (0.009)	0.077*** (0.007)	-0.065*** (0.014)	0.328*** (0.013)	0.215*** (0.012)	0.260*** (0.013)	0.376*** (0.013)	0.238*** (0.012)	0.292*** (0.013)
Africa	-0.014 (0.024)	0.117*** (0.018)	-0.065* (0.033)	0.310*** (0.033)	0.258*** (0.031)	0.215*** (0.031)	0.365*** (0.033)	0.275*** (0.032)	0.229*** (0.030)
Latin America	-0.077*** (0.020)	0.080*** (0.015)	-0.044 (0.030)	0.238*** (0.030)	0.177*** (0.029)	0.152*** (0.027)	0.298*** (0.030)	0.200*** (0.028)	0.202*** (0.027)
<i>Individual characteristics</i>									
Control variables	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm characteristics</i>									
Firm size	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm type	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LA fixed effect	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	80 072	80 072	36 617	36 617	36 617	36 617	36 617	36 617	36 617
R-squared	0.004	0.732	0.196	0.358	0.357	0.281	0.376	0.361	0.291

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is self-employed native men. The control variables include age, secondary school, university, marital status and the number of children in the household.

7.3 The propensity of having the recently arrived immigrants as employees

An immigrant's labour market performance is closely related to the length of their residence in the country. In Sweden, the employment rate among the recently arrived immigrants is essentially lower than among immigrants who have been resident in the country for a long time. The employment rate is especially low among non-European immigrants with a recent year of arrival.¹⁵ Hence, it is worthwhile to look at whether self-employed immigrants create jobs for newly arrived immigrants.

Table 11. Linear probability estimates of hiring recently arrived immigrants among self-employed individuals (20 to 64 years of age).

	(1)	(2)	(3)	(4)
	Self-employed males		Self-employed females	
	Recently arrived immigrants	Recently arrived Non-European immigrants	Recently arrived immigrants	Recently arrived Non-European immigrants
Nordic countries	0.029*** (0.006)	0.011*** (0.004)	0.029*** (0.009)	0.018*** (0.007)
Western Europe	0.093*** (0.009)	0.031*** (0.006)	0.063*** (0.013)	0.036*** (0.010)
Eastern Europe	0.308*** (0.011)	0.007 (0.004)	0.295*** (0.013)	0.017*** (0.006)
Southern Europe	0.233*** (0.010)	0.035*** (0.006)	0.197*** (0.017)	0.027*** (0.011)
Middle East	0.238*** (0.006)	0.249*** (0.006)	0.221*** (0.012)	0.239*** (0.012)
Asia	0.233*** (0.012)	0.255*** (0.012)	0.267*** (0.013)	0.289*** (0.012)
Africa	0.201*** (0.017)	0.222*** (0.017)	0.229*** (0.032)	0.235*** (0.031)
Latin America	0.217*** (0.020)	0.211*** (0.019)	0.210*** (0.028)	0.222*** (0.028)
<i>Individual characteristics</i>				
Control variables	Yes	Yes	Yes	Yes
<i>Firm characteristics</i>				
Firm size	Yes	Yes	Yes	Yes
Firm type	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
LA fixed effect	Yes	Yes	Yes	Yes
Observations	123 272	123 272	36 617	36 617
R-squared	0.257	0.265	0.292	0.291

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is self-employed natives with employees. The control variables include age, secondary school, university, marital status and the number of children in the household.

Table 11 presents the regression results of the probability of hiring at least one recently arrived immigrant as an employee among self-employed immigrants. A recently arrived immigrant is defined as a person who immigrated to Sweden after 2009. From Column 1 and Column 3, we find that both self-employed male and female immigrants are more likely to have a recently arrived immigrant as an employee in the firm than self-employed natives.

¹⁵ See Aldén and Hammarstedt (2015).

However, the estimated coefficients are relatively smaller among self-employed immigrants from the Nordic and Western European countries than other self-employed immigrant groups. Moreover, from Columns 2 and 4, we see that both self-employed male and female immigrants are more likely to have a recently arrived non-European immigrant employee in the firm than self-employed native males and females, especially among self-employed immigrants from non-European countries. Thus, this analysis implies that self-employed immigrants could play an important role in helping newly arrived immigrants to integrate into the labour market.

7.4 The propensity of having the spouse as an employee

Social networks, especially informal networks, play an important role when immigrants search for jobs.¹⁶ Self-employed immigrants may provide employment opportunities to their family members or relatives (i.e., spouse). The family business theory argues that there is a possibility that the spouse of the self-employed person joins the business to maximize the family income or self-employment profits.¹⁷ Therefore, in this subsection, we investigate the extent to which self-employed immigrants hire their spouses in the firm.

Table 12. Linear probability estimates of hiring the spouse as an employee among self-employed individuals (20 to 64 years of age).

	(1) Self-employed males hire wife as an employee	(2) Self-employed females hire husband as an employee
Nordic countries	0.006 (0.006)	0.005 (0.006)
Western Europe	0.014** (0.007)	0.006 (0.008)
Eastern Europe	0.055*** (0.007)	0.023*** (0.006)
Southern Europe	0.036*** (0.007)	0.028*** (0.010)
Middle East	0.007* (0.004)	0.034*** (0.007)
Asia	0.070*** (0.009)	0.020*** (0.006)
Africa	0.007 (0.009)	0.026 (0.016)
Latin America	0.009 (0.010)	0.029** (0.014)
<i>Individual characteristics</i>		
Control variables	Yes	Yes
<i>Firm characteristics</i>		
Firm size	Yes	Yes
Firm type	Yes	Yes
Industry dummies	Yes	Yes
LA fixed effect	Yes	Yes
Observations	123 272	36 617
R-squared	0.042	0.028

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all the regressions, the reference group is self-employed natives with employees. The control variables include age, secondary school, university, marital status and the number of children in the household.

In Table 12, we illustrate how immigrant self-employment is correlated to the propensity of having the spouse as an employee in the firm. Column 1 shows that self-employed men from Western, Eastern and Southern European countries, the Middle East, Asia are more likely to have the wives as employees in their firms. For self-employed women, presented in Column

¹⁶ See Carlsson et al. (2018).

¹⁷ See Borjas (1986) and Lin et al. (2000).

2, we find that self-employed immigrants from Eastern and Southern Europe, the Middle East, Asia and Latin America are more likely to have the husbands as the employees in their firms than self-employed native women.

8. Conclusions

We have presented a study of immigrant self-employment in Sweden. Our results have shown variations in self-employment rates among immigrant groups as well as among immigrants who arrived in Sweden at different times.

In line with what have been found in previous research, our study shows that immigrants from the Middle East are over-represented in self-employment.¹⁸ The highest self-employment propensities are found for male immigrants from the Middle East who arrived in Sweden before 1996. Other groups, such as male as well as female immigrants from Africa and Latin America, are much less likely than natives to be self-employed.

It is often argued that self-employment among immigrants is a way to escape unemployment and that immigrants with high rates of unemployment therefore should be over-represented in self-employment. Immigrants from the Middle East and from Africa are known to have difficulties on the Swedish labour market.¹⁹ Against this background, it is an interesting to observe that while male immigrants from the Middle East are disproportionately over-represented in self-employment compared to natives, self-employment among immigrants from Africa seems rare in Sweden.

What then might explain the high rates of self-employment among immigrants from the Middle East? One plausible explanation may be the disadvantages that immigrants from the Middle East encounter on the labour market. It has also been argued that self-employment among immigrants may be related to traditions from their home-country. Several countries in the Middle East have relatively large self-employment sectors, so immigrants from those countries might come to Sweden with more experience of self-employment.²⁰

Our study also pays attention to the employees of self-employed immigrants and gives us important insights regarding the recruitment behaviour of immigrant firms. In this regard, we find that self-employed immigrants are less likely than self-employed natives to have employees. However, after controlling for individual and firm characteristics we find that self-employed immigrants, and particularly those with unincorporated firms, are more likely than self-employed natives to have employees. Furthermore, self-employed immigrants are more likely than natives to hire immigrants as employees.²¹ This is especially true of self-employed immigrants from non-European countries. Self-employed immigrants from the Middle East are less likely than natives to have female employees, but they are more likely than self-employed natives to hire females with an immigrant background. Further, immigrants are more likely than natives to hire immigrants with a recent year of arrival as employees.

Finally, our results also reveal that immigrants are more likely than natives to hire their spouses as employees. This suggests that family formation and the supply of family labour is of importance for immigrants' possibilities to succeed as self-employed in Sweden.

¹⁸ See Hammarstedt (2001), Andersson and Hammarstedt (2015).

¹⁹ See i.e. Aldén and Hammarstedt (2015).

²⁰ Hammarstedt and Shukur (2009) shows that immigrants from countries with large self-employment sectors are over-represented in self-employment in Sweden.

²¹ This is in line with the result in Andersson and Wadensjö (2009).

To sum up, our results show that immigrant self-employment may play an important role in the integration process. Self-employed immigrants provide employment opportunities not only for themselves but also for other immigrants, so self-employment may be one route into the Swedish labour market for recently arrived immigrants and for immigrants from non-European countries.

However, knowledge regarding the explanations behind the results is still limited. More research in this area is needed, not least in order to improve our understanding of the mechanisms behind the results and how the employees of self-employed immigrants perform in the labour market in the long run.

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Appendix

Table A1. Summary statistics for the firm type: share of incorporated firm with limited liability in 2014 (20 – 64 years of age)

	(1) Natives	(2) Nordic countries	(3) Western Europe	(4) Eastern Europe	(5) Southern Europe	(6) Middle East	(7) Asia	(8) Africa	(9) Latin America
Self-employed men	62.6	52.0	39.1	28.1	38.0	24.5	34.0	25.3	34.1
<i>Individuals</i>	154 381	3 669	3 698	4 170	3 555	13 446	2 463	1 286	948
Self-employed women	41.1	34.6	25.8	20.2	29.8	20.8	20.5	23.6	22.8
<i>Individuals</i>	64 205	2 095	1 731	3 488	1 263	2 919	3 341	437	593

Notes: in percentages. Firm type equals 1 if self-employed in corporate firms with limited liability (*aktiebolag*) and 0 otherwise.

Table A2. List of variables***Outcome variables***

Self-employed	Dummy variable: 1 if self-employed, 0 if wage employed or unemployed.
Self-employed with employee	Dummy variable: 1 if self-employed with at least one employee, 0 if self-employed without an employee.
Self-employed with at least one female employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one female employee, otherwise 0.
Self-employed with at least one immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one immigrant employee, otherwise 0.
Self-employed with at least one male immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one male immigrant employee, otherwise 0.
Self-employed with at least one female immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one female immigrant employee, otherwise 0.
Self-employed with at least one non-European immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one non-European immigrant employee, otherwise 0.
Self-employed with at least one non-European male immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one non-European male immigrant employee, otherwise 0.
Self-employed with at least one non-European female immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one non-European female immigrant employee, otherwise 0.
Self-employed with at least one recently arrived immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one immigrant employee who arrives after 2009, otherwise 0.
Self-employed with at least one recently arrived non-European immigrant employee	Dummy variable: given self-employment with employee, 1 if self-employed with at least one non-European immigrant employee who arrives after 2009, otherwise 0.
Self-employed with the spouse as an employee	Dummy variable: given self-employment with employee, 1 if the spouse of the self-employed person is wage employed in the same firm, otherwise 0.

Explanatory variables

Natives	Dummy variable: 1 if born in Sweden, otherwise 0.
Nordic countries	Dummy variable: 1 if born in Nordic countries excluding Sweden, otherwise 0.

Western Europe	Dummy variable: 1 if born in Western European countries, Northern America and Oceania, otherwise 0.
Eastern Europe	Dummy variable: 1 if born in Eastern European countries, otherwise 0.
Southern Europe	Dummy variable: 1 if born in Southern European countries, otherwise 0
Middle East	Dummy variable: 1 if born in Middle Eastern countries, otherwise 0
Asia	Dummy variable: 1 if born in Asian countries, otherwise 0.
Africa	Dummy variable: 1 if born in African countries, otherwise 0.
Latin America	Dummy variable: 1 if born in Latin American countries, otherwise 0.
Age	Continuous variable: age in 2014.
Marriage	Dummy variable: 1 if married, otherwise 0.
Primary School	Dummy variable: 1 if primary school, otherwise 0.
Secondary School	Dummy variable: 1 if secondary school, otherwise 0.
University	Dummy variable: 1 if university educated, otherwise 0.
Children in the household	Continuous variable: the number of registered children in the household.
Firm size	Categorical variable: 1: micro firm if the number of employees is between 1-9; 2: small firm if the number of employees is between 10-49; 3: medium and large firm if the number of employees is above 49.
Firm type	Dummy variable: 1 if incorporated firm with limited liability (<i>aktiebolag</i>), 0 if unincorporated firm.
LA dummies	Dummy variables for each local labour market based on residential information. The classification is based on the Statistics Sweden 2014 classification with a total of 73 local labour markets.
Industry dummies	The industry is classified as: manufacturing/ construction, sales/ retail trade, transportation/ warehouse, hotel/ restaurant, personal services, business services, healthcare/ social work, and others.

Table A3. Linear probability estimates of the propensity of having employees among self-employed people (20 to 64 years of age), by firm type.

	(1)	(2)	(3)	(4)
	Self-employed males		Self-employed females	
	Incorporated firms	Unincorporated firms	Incorporated firms	Unincorporated firms
Nordic countries	-0.001 (0.002)	-0.001 (0.008)	-0.002 (0.003)	-0.001 (0.008)
Western Europe	-0.001 (0.002)	-0.025*** (0.006)	-0.001 (0.004)	-0.020*** (0.008)
Eastern Europe	-0.001 (0.002)	0.081*** (0.008)	0.000 (0.003)	0.135*** (0.008)
Southern Europe	0.002 (0.001)	0.122*** (0.010)	0.003 (0.003)	0.088*** (0.013)
Middle East	-0.002 (0.001)	0.191*** (0.006)	-0.003 (0.004)	0.155*** (0.010)
Asia	-0.007* (0.004)	0.095*** (0.011)	-0.005 (0.004)	0.083*** (0.009)
Africa	-0.014* (0.007)	0.113*** (0.015)	-0.003 (0.010)	0.135*** (0.023)
Latin America	0.002 (0.003)	0.131*** (0.018)	-0.001 (0.007)	0.110*** (0.019)
Observations	107,333	80,283	30,156	49,916
R-squared	0.002	0.170	0.004	0.152

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The reference group is self-employed natives. All control variables are the same as column 2 table 9.