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Immigrant entrepreneurship and the origin of bankers

Tove Eliasson

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Immigrant entrepreneurship and the origin of bankers

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Abstract

Earlier research has shown that immigrant- and minority entrepreneurs have difficulties accessing capital through the formal financial markets. This essay studies what role immigrant employees within the local bank sector have for the probability of immigrants to run their own businesses. I use linked employer-employee data covering the whole Swedish labor market for the years 1987 to 2003 and utilize a nationwide refugee dispersal policy to get exogenous variation in the exposure to co-ethnic bank employees. Results suggest that there is a positive relation between co-ethnic bank employees and the probability of being self-employed. This effect is most pronounced for immigrants who arrived with low education, for males and for those residing in metropolitan regions. The effects are substantial and robust to a wide set of controls for labor market characteristics of the ethnic group at the local level. These results provides evidence of an ethnic component in the formal credit markets.

Key words: Self-employment, immigrant entrepreneurs, capital access, information asymmetry, minority representation

JEL codes: G21, M13, J71

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Contents

1	Introduction	3
2	Capital access for immigrant entrepreneurs	5
2.1	Lower rates of bank loans	5
2.2	Co-ethnic bankers and potential capital access	6
3	Data and sample selection	8
3.1	Defining the explanatory variable	9
3.2	Descriptive statistics	10
4	Econometric strategy	12
4.1	OLS specification	12
4.2	Municipal group level covariates	13
5	OLS results	14
6	Analysis based on initial exogenous variation	17
6.1	Placement of refugees: the policy	17
6.2	Modeling the impact of placement	18
6.3	Instrumental variable analysis	19
6.4	Results based on initial exogenous variation	20
6.5	The importance of local group quality	23
7	Extensions	23
7.1	Own-group employees of a similar sector	23
7.2	Dynamics of self-employment: entry and exit	27
8	Sensitivity	29
9	Concluding remarks	31
10	Appendix	36
10.1	Variable description	36
10.1.1	List of municipal group level covariates	39
10.2	Description; bank, insurance and self-employment	40
10.3	Further regression results	44

1 Introduction

Immigrants from low-income source countries struggle to find employment in many western countries. Self-employment may offer an alternative entry way into the labor market for these individuals (Blume et al., 2009; Andersson Joona and Wadensjö, 2008), but starting a business is not without its own constraints. In particular, small businesses are often liquidity constrained,¹ and the relationship with lenders can therefore be crucial for the start-up and survival of small firms. Banks base their credit decisions on both objective credit scores and subjective assessments of the business idea. This has been suggested to contribute to immigrant- and minority entrepreneurs facing discrimination from lenders (Cavaluzzo and Cavaluzzo, 1998; Blanchflower et al., 2003; Bates, 1989).

The aim of this essay is to contribute to the literature by studying the role of local co-ethnic bank employees for the probability of immigrants to run their own businesses. To this end, I use a linked employer–employee data set covering the whole Swedish labor market for the years 1987 to 2003, from which I can define the country of origin of both bank employees and small business owners. This analysis adds to our understanding of the relationship between banks and entrepreneurs. It also provides novel evidence of the role of minority representation in a sector where there is room for subjective personal assessments. To the extent that credit is allocated according to factors unrelated to the potential prospects of the business idea, society loses out on investment and individual entrepreneurs lose a potential income source. For this reason it is important to understand which factors determine capital access for small business owners.

Following Bates (1989), a number of articles have tried to explain group differences in credit acquisition for small firm start-ups and survival.² A more recent strand of this literature focuses on how social ties between lenders and entrepreneurs affect the accessed credit, with a specific focus on shared ethnicity or language. Using survey data, both Aaronson et al. (2004) and Raijman and Tienda (2010) show that same-language suppliers are important for trade credit.

The credit decision performed by the bank is also similar to decisions made in a range of areas in which there is room for discretion. These types of decisions have been extensively studied by scholars within the field of minority representation, focusing on contexts such as educational administration, the police and the judicial

¹ Evans and Leighton (1989); Evans and Jovanovich (1989); Lindh and Ohlsson (1996, 1998); Blanchflower and Oswald (1998).

²See for example Blanchflower et al. (2003); Fraser (2009); Cavaluzzo and Cavaluzzo (1998); Cavaluzzo and Wolken (2005).

system. Typically, these studies show that minority representation is positively related to minority outcomes (see Bradbury and Kellough (2011) for an overview). For Sweden it has also been shown that immigrant managers are more prone to hire immigrant employees than native managers are, indicating a relatively favorable behavior towards the non-majority group from minority managers (Åslund et al., forthcoming).

There are, however, very few previous studies on how representation in banks affects capital allocation. Fisman et al. (2012) is the main exception to this. They study the personal loan market in India and make use of a rotation of bank managers between regions, which implies a near random assignment of a customer to either a bank official from the own group or from another group. Their results indicate that in-group bank officials perform better ex ante screening, as in-group borrowers have higher repayment rate as well as larger variance of the loan amount. My aim is to contribute with new knowledge regarding the relationship between entrepreneurs and formal banks in an industrialized western context, focusing on credit access for a group which has been shown to have difficulties in many labor markets.

Banks may employ individuals from a specific country in response to the groups' demand for credit. Therefore OLS estimates imply the existence of an ethnic component in the capital market, but they do not tell us the direction of causality. This, along with individuals potentially sorting into municipalities with good banking and business opportunities, may bias the estimates. In an attempt to remedy this bias, I use a nationwide refugee dispersal policy in place in the second half of the 1980s as a source of exogenous settlement.³ During this time the refugees who arrived to Sweden were placed in municipalities all over the country, thus providing settlement patterns that are exogenous to the outcome. This means that, for the group of refugees who were placed through this policy, we can estimate the effect of the exogenous exposure to co-ethnic bankers their first year in Sweden, as well use initial exposure as an instrument for exposure in later years.

The OLS results show a positive co-variation between co-ethnic bank employees and the probability of being self-employed. Results from specifications using the exogenous arrival year exposure to co-ethnic bankers are in line with the OLS estimates. These results imply that self-employment is facilitated by the exposure to local own-group bank employees. The estimates are largest for low educated, for males and for those residing in metropolitan areas. Highly educated individuals potentially have more relevant experience and credentials which facilitate capital ac-

³It was in place between 1985 and 1994 but its strictest application was between 1987 and 1991 (see institutional background).

cess and entry into the regular labor market. Thus it is likely that the low educated immigrants benefit more from the community’s resources in this regard. To ensure that what we estimate is not the effect of a good labor market position of the group at the local level, a wide range of municipal group level covariates are controlled for in the model. A number of sensitivity checks are performed for the whole group and for the group of low educated, and the results are robust to changes in the definitions of the main variables as well as other variables.

The remainder of this essay is structured as follows. The next section describes immigrant entrepreneurship and capital allocation, while section 3 describes the data and the sample, and presents some descriptive statistics. The econometric model is outlined in section 4 and in section 5 presents the baseline result. Section 6 outlines an analysis based on initial exogenous variation in co-ethnic bank representation, and presents results from this analysis. Section 7 presents two extensions of the baseline model, and section 8 presents a sensitivity analysis. Section 9 concludes.

2 Capital access for immigrant entrepreneurs

2.1 Lower rates of bank loans

To start-up and run a small business is often entailed with difficulties, many of which are related to the large information asymmetries which complicate banks’ credit decisions. The bank clerks have imperfect knowledge regarding the productivity of the entrepreneur, and they therefore carefully assess the default risk before granting a loan. In this process the banks use information on past defaults or employment history, as well as less objective measures such as the bank clerks’ personal assessment of the business idea (Fraser, 2009; Committee on Foreign Born Entrepreneurship, 1999).

Regardless the evaluation method, there are factors which might affect the capital decision negatively for immigrants. When asked about barriers for running business, immigrants from countries outside of Europe state that they find it difficult to access the necessary capital far more often than natives and European immigrants do (Agency for Economic and Regional Growth, 2011, 2007). However, part of these differences can be explained by factors such as lack of own business capital and an inclination to start firms in over-established sectors. Also, the formal requirements might act as a barrier for recently arrived immigrants who do not have credit histories on record in the host country. It is not clear to what degree these factors explain the larger perceived difficulty of loan access (Committee on Foreign Born

Entrepreneurship, 1999).

Even immigrants with strong credentials and relevant experiences from the country of origin might face other difficulties than natives do when applying for a loan. Immigrants may not always have proper information regarding the host country financial system. Furthermore, bank clerks may find it more difficult to evaluate a business idea posed by a person with foreign background, both due to cultural differences and the potential language barrier (Committee on Foreign Born Entrepreneurship, 1999). This uncertainty may lead to statistical discrimination, where immigrants face credit decision based more on the perceived productivity of the group, than of the individual (Phelps, 1972). In addition, trust built through personal contacts with credit suppliers are important for reducing credit uncertainty (Fraser, 2009) and immigrants' short history within the host country system makes them less likely to have a well-established contact with bank employees.

Potentially as a consequence of the poor access to financial markets, immigrants finance their businesses to a higher degree with capital obtained from family and friends than native entrepreneurs do. Abbasian and Yazdanfar (2012) show, for a sample of entrepreneurs in Sweden, that the share of immigrant entrepreneurs who has used bank loans as a means of start-up finance is 29%, compared to 35% for native born entrepreneurs. A governmental report shows that the main financial sources for small business owners differs substantially depending on country of origin (Agency for Economic and Regional Growth, 2007).⁴ Immigrants' loan applications also seem to be rejected far more often than natives' applications. Between 8 and 10 percent (depending on year studied) of native entrepreneurs state that their application has been rejected while for the immigrants from refugee countries (i.e. the group I study), between 30-50 % state that they have applied for a loan and been rejected. Interviews with small business owners indicate that some individuals also refrain from applying for loans as they expect to be rejected (Agency for Economic and Regional Growth, 2007).

2.2 Co-ethnic bankers and potential capital access

There are two main reasons why bank employees from the own ethnic group may be positively related to the probability of obtaining capital for small businesses, and hence also for the probability of being self-employed. These individuals may improve

⁴Amongst immigrant entrepreneurs from former Yugoslavia, Romania and Poland between 44 and 49 percent have used bank loans as start-up funding, while the same number for entrepreneurs from Turkey, Africa, Iran, Lebanon and Chile is between 31 and 36 percent. Only 26 percent of entrepreneurs from the Middle East seem to have used bank loans when starting up their business.

information used by both the entrepreneur and the bank officials and provide the trust or contacts needed for a positive credit decision. But they might also make relatively favorable decisions towards members of their own group, what is usually referred to as active representation (Bradbury and Kellough, 2011).⁵

Notably, the average share of the bank sector which the own group constitutes is around 0.1%, which indicates that there would be virtually no chance to meet with a co-ethnic bank employee when applying for a loan if the choice of bank office was random. But we do not expect the applicants to randomly approach a bank, instead they are likely turn to the bank where the likelihood of a positive credit decision is the largest.

If there is local representation of the own ethnic group in a local bank office the applicant is expected to turn to the bank where this co-ethnic banker is employed. The likelihood of a positive credit decision at this particular bank may be larger than in other banks regardless if the applicant meets with the own-group employee or not. The reason for this is that the presence of a minority banker may alter the perception of the particular group among other clerks and thereby affect the decisions made by the whole office (Bradbury and Kellough, 2011).

Furthermore, the information that the potential entrepreneurs have regarding the financial system may be improved by residing nearby a banker from the own country. Once there is someone in the group working in a bank at the local level the community has better access to proper information regarding financial businesses. Again, as co-ethnic bankers are very rare, an individual would most likely not benefit from this knowledge without actively searching for it within the community. Therefore the relevant factor is whether the knowledge regarding banking is available in the community, rather than the number of individuals who will be able to provide this knowledge.

As we expect individuals to act non-randomly when choosing bank office, and when searching for financial information, the explanatory variable of interest will be defined as a dummy variable in the empirical model (see section 3.1). This will indicate whether or not an individual is exposed to at least one co-ethnic banker locally. This variable will capture both the probability of improved knowledge, and own-group representation, in the local bank, and the improved financial system knowledge within the local group. Thus we will not be able to distinguish between

⁵It might also be the case that own-group bank clerks behave the opposite way and reject applications from their own group in fear of being accused of favoritism. Both the positive and negative effect of active representation are likely of very small importance here since the number of own-group bank clerks is small.

these mechanisms.

As the banks might act upon a local demand from the entrepreneurs through employing individuals from particular countries, we cannot interpret a positive correlation as a causal effect of local co-ethnic bank employees on the probability of being self-employed. Instead a positive OLS estimate should be seen as a market outcome where banks and entrepreneurs act in response to one another. In this process the shared background would function as a mediator for reducing uncertainty and providing information related to credit access.

3 Data and sample selection

For this study I use register data over the Swedish labor market for the years 1987 to 2003, where individuals are linked to their workplace through tax records on annual income. In this data I can see if anyone is self-employed.⁶ I also have information of the industry of each firm or workplace, from which I can define those working in the bank sector.⁷ The data contains information on municipality of residence as well as municipality of workplace, which means that I can study co-ethnic bank employees both residing and working locally.

Apart from this, I also have information on individual characteristics, including country of origin and the immigration year, as well as year of birth, sex, and level of education.⁸ I restrict the analysis to the group of non-western immigrants in Sweden, since this group highly overlaps with the group of refugee immigrants for which I can use the placement policy as an source of exogenous settlement. Own-group individuals is quite broadly defined (17 groups) as small source countries are grouped due to confidentiality reasons.⁹ Throughout the text I will use the term co-ethnic or own-group individual as a short term for an individual from the same country/region of origin.¹⁰

⁶Until 1993 self-employment only included sole traders but from 1993 there is information on both sole traders and limited liability companies. For a further description of the definition of self-employment, see the variable description and figure 3 in the appendix.

⁷Industry coding for 1987 and 1988 are imputed from the industry coding in 1989 due to missing information in the earlier years. See graphical explanation of this in the variable description in the appendix.

⁸For the individuals immigration before 1990 many have missing educational information the first years, so for everyone for whom there is no data indication of further education acquired in Sweden I impute the early observations with the first observed non-missing educational level.

⁹See country of origin definitions in variable description in the appendix, and distribution over countries of origin in table 9 in the appendix.

¹⁰I am aware that the crude country of origin measure that is used here does not by any means

I study individuals who were between 18 and 55 when arriving to Sweden, and who arrived between 1987 and 1991 when the placement policy was most effective. I further restrict the sample to individuals who did not have an adult relative already residing in Sweden at the time of arrival, since tied movers were not subject to the governmental placement.¹¹ This will be referred to as the main sample, and in an extension, I reestimate the model using a larger set of non-western immigrants.

As outcome variable I use a dummy variable capturing self-employment status at a particular point in time, based on individuals for whom self-employment is the main income source.¹² Both individuals who are unemployed and employed in regular employment are thus defined as not being self-employed. In an extension I also study entry into, and exits from, self-employment.

3.1 Defining the explanatory variable

It follows from the discussion in section 2.2 that the processes determining the access to financial information and the choice of local bank office is likely to be non-random. This means that if there is a local own-group bank representative the applicant might turn to the bank where she is employed. Therefore the key explanatory variable is defined as a dummy, *co-ethnic banker*, indicating the exposure to at least one co-ethnic banker locally.

From the data, the co-ethnic banker dummy can be defined based on the bankers' municipality of residence, or municipality of work. These alternatives would capture slightly different mechanisms, but defining the variable *co-ethnic banker* based on where bankers live or work yields variables which are highly correlated (0.73).¹³

capture an individuals' ethnicity, why the term may be misleading. A similar term which could be used would be co-national, but it also has its limitations. It should be noted that, regardless which concept is used, the variable captures relations between individuals who share the same country/region of origin.

¹¹A comparison is made with Immigration Boards numbers on residence permits for refugee of asylum reasons, and for each of the studied immigration years my data includes a slightly smaller number than those of the immigration board. My sample only includes individuals arriving at an age between 18 and 55, while their numbers include all immigrants. Another comparison is made with Åslund and Fredriksson (2009) who use the same placement policy for identification. For the immigrations years which they study the sample I use here includes slightly less individuals (20,307 compared to 22,556) and the distribution of countries/regions of origin looks very similar. Therefore I conclude that the data used for instrumental variable analysis here is a reasonable approximation of refugee immigrants entering during the studied years.

¹²An individual is only coded as self-employed if annual incomes from self-employment is positive.

¹³The variables differ mostly in the metropolitan regions, where commuting over municipality borders are common.

This means that the variable will capture both the possibility of meeting a co-ethnic banker in the community and the possibility of meeting a co-ethnic banker in the local bank, whichever of these definitions is used. For this reason I will perform the baseline analysis on the variable based on the municipality of residence of the bankers, and use the variable based on bankers' municipality of work as a sensitivity check.¹⁴

I also perform a robustness check where the explanatory variable is instead defined as the share of the local co-ethnics who are employed in banks.

3.2 Descriptive statistics

Table 1 shows descriptive statistics for the data containing all non-western immigrants arriving to Sweden between 1987 and 1991, for which I can use the government placement as a source of exogenous settlement. Mean values are also presented divided by treatment status; i.e the value of the *co-ethnic banker* variable.

The data consists of a large share of men, due to the exclusion of tied movers. The studied group consists of both low and highly educated individuals. About half of the individuals in the data do not have a positive annual income, and the earnings are low.¹⁵

Among the studied individuals, 4 percent are self-employed, and the likelihood of self-employment is increasing with time spent in Sweden (see figure 4 in the appendix). The share employed in a bank is about 0.1 percent.¹⁶ Despite the very low share employed in banks, about 46 percent of the individuals have someone from their own country/region of origin residing in the same municipality who works in a bank. This can partly be explained by the fact that the bankers primarily work in larger municipalities, and municipalities where the group constitutes a larger share

¹⁴In commuting regions bank customers might turn to a bank in a neighboring municipality when applying for a loan. If this is the case, it is not certain what the explanatory variable based on bankers' municipality of work captures. With a co-ethnic banker residing in the municipality, an individual might turn to the bank where this banker is employed, even if that bank is located in a neighboring municipality. Therefore defining the dummy by bankers who reside locally is the preferred choice.

¹⁵Description is presented for the year 1996, which is chosen because it is in the middle of the studied period. For most variables the mean values in 1996 is very similar to the mean values in the pooled data, but for the indicator for having positive annual earnings and mean earnings it is clear that 1996 represents a year with very low employment rate and earnings. This has to do with the economic crisis in Sweden in the middle of the 1990s.

¹⁶When calculating the exposure to co-ethnic bankers a sample consisting of all immigrants from non-western countries is used, regardless of their year of arrival or whether they arrived as tied movers.

Table 1: Mean individual characteristics year 1996

	All	Co-ethnic banker=1	Co-ethnic banker=0
Age	37.3991	37.2377	37.5373
Share male	0.5829	0.5793	0.5860
Education Missing	0.0124	0.0125	0.0124
No more than 8 years	0.1895	0.1678	0.2080
9 years	0.1854	0.1800	0.1900
2 year high school	0.1548	0.1558	0.1539
3 year high school	0.2024	0.2174	0.1896
University, at most 2 years	0.1339	0.1405	0.1283
University, more than 2 years	0.1099	0.1126	0.1075
PhD	0.0117	0.0134	0.0102
Positive annual earnings	0.5291	0.5418	0.5182
Earnings (1,000 SEK)	20.0761	20.2303	19.9442
Self-employed	0.0400	0.0369	0.0426
Employed in bank	0.0010	0.0017	0.0005
Own-group banker	0.4612	1.0000	0.0000
Placed in metropolitan area	0.4858	0.6338	0.3590
Municipality size (in 1,000s)	149.4033	251.6320	61.8947
<i>Municipal group level covariates</i>			
Employment rate	0.4959	0.5187	0.4763
Share self-employed	0.0352	0.0364	0.0342
Mean earnings (1,000 SEK)	38.9110	40.9626	37.1548
Share with university education	0.2422	0.2601	0.2269
Share of local population	0.0106	0.0142	0.0076
Share with above median income	0.2650	0.2797	0.2524
Mean years in country	9.6549	10.5599	8.8803
N	53,518	24,683	28,835

Note: Earnings are the mean annual income from work with a zero income for those without income. Deflated to 1980 values. Mean earnings at the group local level is among individuals with a positive annual income. Distribution over countries of origin presented in table 9 in the appendix. The remaining municipal group level covariates are described in table 10 in the appendix.

of the local population. This means that many countrymen are exposed to each banker's presence. 63 percent of those treated were placed in a metropolitan region at arrival to Sweden and this is true for only 36 percent among those non-treated. The treated group resides in municipalities where the own group consists of more highly educated individuals with higher annual incomes.

The appendix shows mean values for the group municipality level covariates which are not shown here. It also shows the distribution over country of origin. The largest groups in the data are individuals from states in the Middle East, Iran, Chile and Eastern Africa.

4 Econometric strategy

4.1 OLS specification

I estimate the effect of the presence at least one local co-ethnic banker on the self-employment probability. Here i is the index for individual, c is country of origin, m is municipality of residence and t is year of observation. I also control for individual characteristics such as level of education when arriving to Sweden, sex and age (X_{it}). When controlling for both country of origin fixed effects (θ_c) and municipality fixed effects (ψ_m) the variation used for identification is the variation within groups between municipalities and within municipalities between groups. I also control for year of immigration fixed effects (ρ_{t_0}), eliminating the bias from different entry cohorts meeting different labor markets at the time of entry, and year fixed effects (π_t). A control for time-varying municipality size is also added. Standard errors are clustered at the level of the local group, as this is where the main identifying variation comes from.

$$\begin{aligned} pr(\text{Self-employed})_{it} = & \alpha + \beta \text{Co-ethnic banker}_{it} + \gamma X_{it} + \mu V_{cmt} + \theta_c + \psi_m \\ & + \rho_{t_0} + \pi_t + \epsilon_{it} \end{aligned} \quad (1)$$

This analysis hinges on the assumption that local financial market knowledge and banks in the local area matters for credit decisions. The Agency for Economic and Regional Growth (2012) shows that entrepreneurs in remote and low population-density regions perceive capital access as a larger difficulty than entrepreneurs in larger cities, which implies that capital is to some extent supplied at the local level. This supports the claim that local banking is important for the capital acquisition for small firms.

In the baseline analysis I focus on the probability of being self-employed at a particular point in time. I will also explore the dynamics of the self-employment entry and exit in an extension.

4.2 Municipal group level covariates

It is possible that *co-ethnic banker* will capture something more than the pure effect of improved access to banks and financial knowledge on self-employment probability. This would be the case if there is some omitted variable which is correlated both to the self-employment rate and the representation of the group in the banks, for example the groups' local labor market position. To rule out this possibility I control for an extensive set of covariates at the level of the local group (V_{cmt}).¹⁷

A number of variables are included to control for the labor market position of the group at the local level, such as the employment rate, mean earnings and share with income above the median. I also control for share with university education. But as these variables might be imperfect measures of how well the group is integrated at the local labor market, I also control for the mean income of, and share of university educated at, the workplaces where the co-ethnics of an individual work.

It should be noted here that even though ethnic businesses only constitute a small fraction of immigrant businesses in Sweden (Committee on Foreign Born Entrepreneurship, 1999) it is likely that ethnic businesses will start up as a response to a demand for ethnic goods. A high share of the co-ethnics working in the formal bank sector might imply high purchasing power of the group, which could possibly be correlated with a high demand for ethnic products. If this is the case, we could see that a high share of co-ethnics in the bank sector positively correlates with the probability of becoming self-employed due to the omitted demand variable. But this risk is reduced by the inclusion of group local level income variables, as discussed above. The demand for ethnic goods is also potentially larger among more recent immigrants, which means that another way to control for ethnic demand is to include controls for the mean time spent in Sweden in the local community.

As banks might employ clerks from a specific country in response to the credit demand from this specific group it is useful to control for the share of the individuals from ones' own country who are themselves self-employed. The own-group members defining this variable includes all immigrants from the same country in the munic-

¹⁷These variables are, just as the *co-ethnic banker* variable, defined in a sample consisting of all immigrants from non-western countries, regardless of their year of arrival or whether they arrived as tied movers. The variables are aggregated at the level of the own group in the municipality of residence, after excluding the own observation.

ipality, except for the individuals in the main sample. The individuals in the main sample are excluded as this control variable otherwise will be a group municipality level aggregation of the outcome variable.¹⁸ The group might also be represented in the local bank only because the group constitutes a large share of the population in the municipality. For this reason I control for the share of the population which the own group constitutes at the local level. For a full description of the covariates included, see variable list and table 10 in the appendix.

5 OLS results

Table 2 presents the baseline OLS estimates for the probability of being self-employed in a given time period t . The estimate for the whole group is presented in column 1, and the remaining columns presents results for different subsamples. Column 1 shows that having a local co-ethnic working in a bank is associated with a 0.6 percentage point increase in the probability of being self-employed which translates to about a 15% increase in the mean self-employment rate. In this study, both individuals who are unemployed and have a regular employment are coded as not being self-employed, why an increasing self-employment rate should not be interpreted as an increased employment rate in the group.

We see that for those individuals who arrived to Sweden with at most high school education (column 2 and 3) co-ethnic bank employees seem to matter for the self-employment probability. For the least educated the size of the estimate indicates that the presence of at least one co-ethnic local bank employee is associated with an increase in the self-employment rate of about one fifth of the mean. Similar effects are found for males, while there are no indications of a positive relation for females. The mean self-employment rate among women is 1.7%, and thus much smaller than that of men (5.3%). The variables included in the model also explain a smaller share of the variation in female self-employment rates than it does for men. This indicates that the processes determining male and female self-employment differ and

¹⁸The results are robust to both excluding this control variable, and to defining it by all co-ethnics (except for the own observation, as with the other group municipality level variables). As this control variable controls away for one possible mechanism through which co-ethnic bankers might affect an individuals' self-employment probability, namely through the groups' entrepreneurial activity, the least conservative estimates are attained if not including this control at all. The most conservative estimates are obtained when aggregating self-employment over all local co-ethnics. To avoid that the control variable captures the same thing as the outcome variable, my preferred choice is to include this control variable, but to define it by the individuals from the own group who are not themselves in the main sample.

observed individual and group-municipality level factors are poorer determinants of female self-employment.

For individuals with more than high school education, the estimates are small and insignificant. The substantially smaller effect of local co-ethnic bankers on the self-employment probability for the highly educated can potentially be explained by the fact that this group might have better observable characteristics, and aim to start businesses in less over-crowded sectors. Both of these factors may function as signals of high productivity, and will thereby affect the banks' capital allocation decisions even in absence of the help from co-ethnic bank employees.

But the estimate for the highly educated might also be affected by the fact that bank employees do not only facilitate credit access. They may also offer labor market contacts which are beneficial for entry into the regular labor market, and this would counteract the positive effect on the likelihood of being self-employed. As individuals with higher education are more likely to share labor market with the bankers than less educated individuals are, this labor market referral effect is more likely to influence the estimates for this group.

The last two columns show estimates for the individuals who reside in metropolitan and non-metropolitan regions separately.¹⁹ The relation between co-ethnic bankers and self-employment rate is twice as large in the non-metropolitan region as in the metropolitan region.

¹⁹Actually, for facilitation of comparison with estimates using the initial year exogenous variation, these subsamples are defined by the municipality at time of arrival. Metropolitan regions are here defined as Stockholm county, Västra Götaland country (the region where the second largest city Gothenburg is located) and Scania county (the region where the third largest city Malmö is located).

Table 2: Estimated effects of exposure to co-ethnic banker on self-employment probability: OLS

	(1) All	(1) Less than high school	(2) High school	(3) More than high school	(4) Men	(5) Women	(6) Metro	(7) Non-metro
Co-ethnic banker	0.00580*** (0.00148)	0.00840*** (0.00188)	0.00554*** (0.00185)	0.000160 (0.00253)	0.00912*** (0.00203)	0.000937 (0.00122)	0.00361** (0.00161)	0.00700*** (0.00213)
Mean outcome	0.038	0.036	0.04	0.039	0.053	0.017	0.035	0.04
Observations	800,899	325,430	303,818	171,651	467,226	333,673	390,613	410,286
R-squared	0.053	0.067	0.053	0.049	0.063	0.024	0.056	0.057

Note: The table reports estimated β parameters (standard errors) from equation (1). The outcome variable is a dummy for being self-employed. Robust standard errors are clustered at the level of each municipality country of origin pair. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects for year-, year of immigration-, municipality- and country of origin are included as well as controls for sex, age and education level. A full set of municipal group level covariates are also included, see list in the appendix for overview of these variables and table 14 in the appendix for full regression output (for columns 1 and 2).

6 Analysis based on initial exogenous variation

As discussed earlier the direction of causality of the OLS estimates is not clear, as banks and entrepreneurs act in response to one another. Individuals may also select into municipalities where the group's labor market position is favorable. As the presence of co-ethnic bankers is related to slightly better labor market outcome of the group overall (see table 1), this selective migration may bias the estimates. But it is not clear which way the bias from this selective migration will affect the estimates, as own group individuals in the bank sector may be associated with larger possibilities for employment in the regular labor market as well as facilitated credit access. The bias arising from the fact that banks might act in response to entrepreneurs' demands is most likely affecting the estimates positively.

To get closer at a causal understanding of the exposure to co-ethnic bankers and its' effect on self-employment probability I make use of a refugee dispersal policy, which provides arguably exogenous variation in the exposure to co-ethnic bankers the first year in the country. By studying initial year exposure we can rid the estimates of the potential bias arising from individuals' settlement patterns.

6.1 Placement of refugees: the policy

Between 1985 and 1994 refugees arriving to Sweden were subject to a dispersal policy through which the government was responsible for placing them in municipalities which met certain standards. At first, a smaller share of the municipalities were involved. But due to a substantially increased inflow of refugees the years following 1985, the number of municipalities contracted to receive refugees increased and by 1987 almost all Swedish municipalities were involved (Borevi and Myrberg, 2010; Andersson et al., 2003). The placement was based on agreements made with the local municipalities and was designed to disperse the refugees from the metropolitan areas over a larger number of municipalities in Sweden (Borevi and Myrberg, 2010).

The refugees themselves could ask for a residential location, but due to scarcity of available housing in many municipalities the wishes could most often not be fulfilled. During the years 1987 to 1991 the immigration numbers were large and thus the likelihood of being assigned to the preferred municipality was substantially reduced compared to earlier and later years. A reason for this was that priority was given to shortening the time span between receiving residence permit and moving to the placement municipality, rather than to accommodating to the individuals' preferences (The Immigration Board, 1997).

The officials in charge for placement did not meet with the refugees, but based

the placement on information from the refugee centers (The Immigration Board, 1997). This means that placement was based primarily on observable factors, and thus we can arguably control for the factors which might have affected placement (Åslund and Fredriksson, 2009).

Many researchers have shown that the dispersal policy did indeed change the initial settlement patterns among the refugees (The Committee on Immigration Policy, 1996; Andersson, 1998). Prior to this reform about 7% of the inflow of non-OECD immigrants settled in the six northernmost counties of Sweden, and by the end of the policy period this fraction was 14 % (Åslund et al., 2003). During the same period the fraction of the refugees settling in Stockholm decreased.

After initial placement, there was nothing keeping the immigrants from onward migration to a municipality which they preferred better, and non-trivial mobility rates indicate that many did not settle with the municipality of placement (Andersson et al., 2003). Åslund et al. (2010) find that the immigrants who arrived during this period started out in localities which differed from those of previous immigrants, but over time the characteristics of the localities of residence became more similar. Similarly, Andersson (1998) shows that most secondary migration has been into cities with a larger concentration of the own ethnic group than the reception municipality. Despite these onward migrations rates around 56 percent of the immigrants remained in the municipality of initial placement after 5 years in the country.

The above description indicates that refugees arriving to Sweden between 1987 and 1991 were restricted in their first location of residence. Thus, conditional on observed covariates, the assignment of placement municipality can be treated as exogenous to the outcome.

6.2 Modeling the impact of placement

Due to the possibility of controlling for observable characteristics of the refugees, the policy described above can be used to provide exogenous settlement municipalities for the refugees placed during this period. This means that the exposure to co-ethnic bankers the first year in Sweden is arguably exogenous, conditional on observed characteristics, and we can model self-employment probabilities at later points in time as a function of this initial exposure. This rids the estimates of potential bias from residential sorting. Also, when modeling the self-employment probability as a function of earlier years' exposure to co-ethnic bankers, the potential bias due to reverse causality is reduced.

The estimate from this specification can be interpreted as the effect of initial exposure to own-group bank employees on the self-employment rate, and it should therefore be seen as a long term effect. Standard errors are here clustered at the arrival municipality group level, and the initial characteristics of the group at the local level are controlled for, instead of the contemporary characteristics.²⁰ Also municipality of arrival fixed effects are used instead of fixed effects for the contemporary municipality.

$$\begin{aligned} \text{Self-employed}_{it} = & \beta \text{Co-ethnic banker}_{it_0} + \gamma X_{it} + \mu V_{cmt_0} + \theta_c + \psi_{mt_0} \\ & + \rho_{t_0} + \pi_t + \epsilon_{it} \end{aligned} \quad (2)$$

For this model to causally estimate the impact of initial year exposure on subsequent self-employment probability, the initial placement has to be randomly assigned, and independent of the potential outcome. As a test of this I predict the propensity to become self-employed based on observable individual level covariates and study the correlation between this propensity and *co-ethnic banker* variable in the arrival municipality the arrival year. This correlation is -0.0498, which implies that those with characteristics associated with a higher propensity to become self-employed are not to a larger degree placed in municipalities where co-ethnic bankers are present than where they are not present. This supports the claim that the settlement patterns is exogenous relative to the ethnic composition in the financial sector.

In contrast to the IV-version of equation (1) (described below), specification (2) can be seen as the direct effect of the instrument on the outcome. From here on I will therefore refer to specification (2) as the reduced form model.

6.3 Instrumental variable analysis

Another way to use the exogenous first year variation in exposure to co-ethnic bankers is as an instrument for the endogenous regressor in the OLS regression of equation (1). This means using the *co-ethnic banker* variable in the arrival municipality the arrival year as instrument for the same variable in the municipality of residence the year of interest. Equation (3) shows the first stage regression for

²⁰As a sensitivity test, I test whether the results are affected by defining these variables only by the individuals who were residing in the arrival municipality at the year of arrival. This means that the individuals who arrived the same year as yourself are not included in the aggregate local group level variables. The results are robust to this restriction.

the potentially endogenous variable *co-ethnic banker*. The predicted contemporary co-ethnic banker variable is used as explanatory variable in the second stage.

$$\begin{aligned} \text{Co-ethnic banker}_{it} = & \beta \text{Co-ethnic banker}_{it_0} + \gamma X_{it} + \mu V_{cmt_0} + \theta_c + \psi_{mt_0} \\ & + \rho_{t_0} + \pi_t + \epsilon_{it} \end{aligned} \quad (3)$$

For the co-ethnic banker dummy in the arrival municipality to be a valid instrument, it must be correlated with the same variable in the municipality of residence the year of interest, conditional on the other covariates. This assumption is testable and results are presented in a first stage analysis. As the strength of the instrument decreases with time spent in the country, this assumption will lose its validity the longer the individual has been in the country.

Furthermore, for the instrumental variable analysis to be valid, the exclusion restriction has to be fulfilled. This means that the co-ethnic bank employees in the arrival municipality the arrival year cannot affect the probability of being self-employed in the year of interest in any other way than through the presence of a co-ethnic bank employee in year t . As co-ethnic bankers the arrival year might be related to own-group bank representation in years between the arrival year and year t , this assumption might not be fulfilled. This could affect self-employment probability in year t through the start-up of a business any of the earlier years.

The potential invalidity of the exclusion restriction makes it difficult to interpret the size of the instrumental variable estimate. Despite this, I will present these estimates alongside estimates from specification (2).

6.4 Results based on initial exogenous variation

Table 3 presents results from estimations using the exogenous initial exposure to co-ethnic bankers as explanatory variable. Here the first panel shows the reduced form estimates of the effect of the co-ethnic bankers in the placement municipality on the contemporary self-employment rate. Panel B shows the IV estimate where the co-ethnic banker variable in the arrival municipality year t_0 is used to instrument the same variable in the municipality of residence the observation year. Panel C presents the first stage estimates, which are large and highly significant throughout.

Here results for the whole sample and for the subsamples for which we saw significantly positive OLS estimates are presented. For individuals with less than high school education, males and those placed in a metropolitan region the estimates are in line with earlier OLS estimates. For these groups we see significantly positive point estimates for the reduced form and/or the IV.

For those with high school education and those placed in a non-metropolitan region, the OLS estimates were significantly positive, but IV and reduced form estimates are insignificant. This can be seen as indications of that the OLS estimates are driven by residential sorting, and when taking this into account, there is no clear effect of co-ethnic bankers. The slightly smaller reduced form than OLS estimates for the low educated and for the males might be indications of that residential sorting influences the OLS estimates also for these groups. Results for the other subsamples are found in table 12 in the appendix (for these subsamples we see insignificant reduced form and IV estimates).

The placement of refugees over the Swedish municipalities has been used extensively for evaluating peer effects and effects of local community composition on later labor market outcomes. One general finding of these studies is that sorting between localities matters substantially for the conclusions of how the size of the ethnic community affects subsequent labor market and schooling outcomes (Åslund and Fredriksson, 2009; Åslund et al., 2011, 2003). When not accounting for residential sorting, the estimates generally point towards worse schooling and labor market outcomes as a consequence of a high concentration of the own-group, while when taking this sorting into account, the opposite conclusion is reached.

The results of this study are not directly comparable to the above mentioned studies, as the exposure to a co-ethnic banker is not a direct measure of the quantity of the local group. The concentration of the local group thus seems to be a factor relevant in the residential mobility decision of immigrants, while it is less likely that residential decisions are made on the basis of the presence of an own-group banker. This might be a reason why residential sorting does not seem to affect these results as much as it does affect results from earlier studies using the same placement policy.

As discussed earlier, the size of the IV estimates may be affected by the fact that the exclusion restriction might not be fully valid. There is reason to believe the bank employees in years in between the arrival year and year t has been influential in the decision to become self-employed, something which could possibly influence the IV estimate. The reduced form estimates tell us that, for low educated, males and those placed in metropolitan region (insignificant) there is a long term effect on self-employment probability of the exposure to local co-ethnic bankers at arrival to Sweden. The similar magnitudes of the OLS and reduced form estimates may be interpreted as an indication of that identification does not rely on individual variation over time, but rather on variation in the cross-section.

Table 3: Estimated effects of exposure to co-ethnic banker on self-employment probability: instrumental variable and reduced form

	(1) All	(1) Less than high school	(2) High school	(3) Men	(4) Metro	(5) Non-metro
Panel A. Reduced form						
Co-ethnic banker , year t_0	0.00207 (0.00186)	0.00562* (0.00294)	1.88e-05 (0.00291)	0.00576* (0.00318)	0.00283 (0.00244)	0.000189 (0.00301)
Observations	800,899	325,430	303,818	467,226	390,613	410,286
R-squared	0.047	0.061	0.047	0.055	0.045	0.049
Panel B. IV						
Co-ethnic banker year t	0.00845 (0.00754)	0.0219* (0.0113)	8.27e-05 (0.0128)	0.0246* (0.0135)	0.0225*** (0.00842)	0.000755 (0.0120)
Observations	800,899	325,430	303,818	467,226	390,613	410,286
R-squared	0.046	0.057	0.047	0.052	0.041	0.049
Panel C. First stage						
Co-ethnic banker, year t_0	0.246*** (0.0193)	0.256*** (0.0210)	0.227*** (0.0212)	0.234*** (0.0192)	0.235*** (0.0232)	0.250*** (0.0302)
Observations	800,899	325,430	303,818	467,226	390,613	410,286
R-squared	0.315	0.344	0.297	0.297	0.376	0.186

Note: Panel A reports estimated β parameters (standard errors) from equation (2), while Panel B reports estimates from a version of equation (1) where the endogenous regressor co-ethnic banker $_{it}$ is instrumented by equation (3). Panel C reports estimates from the first stage regression, equation (3). The outcome variable is a dummy for being self-employed in panel A and B, while it is a dummy for the exposure to a co-ethnic banker in year t in panel C. Standard errors are clustered at the level of municipality of arrival and country of origin pairs. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects for year-, year of immigration-, municipality of arrival- and country of origin are included as well as controls for sex, age and education level. A full set of municipal of arrival group level covariates are also included, see list in the appendix for overview of these variables.

6.5 The importance of local group quality

The literature using the dispersal of refugees over Sweden to study effects of community characteristics on labor market outcomes suggest that the characteristics of group in the placement municipality affects long run labor market outcomes for the placed immigrants (see for example Åslund and Fredriksson (2009) and Åslund et al. (2011)). Åslund et al. (2003) show that the quality of the initial placement community, measured by either group annual earnings or group self-employment rates, is an important factor for determining labor market outcomes in the long run, independent on educational background. For this reason it is important to control for a range of municipal-group level characteristics of the initial placement to be sure that the co-ethnic banker dummy is not capturing other dimensions of the group's attachment to the local labor market.

Table 4 describes how the reduced form estimate changes with the inclusion of placement municipality group level covariates. Results are shown for the whole placement data as well as for only those with the lowest educational attainment, since this is one of the groups for which we see the strongest relation. The first column shows estimates when only controlling for individual level characteristics, as well as municipal level-, year-, year of immigration- and country of origin fixed effects. Column 2 adds controls for the municipality size and the share of the local population which the group constitutes, and this reduces the estimate by 0.1 percentage point for the full sample as well as for the low educated. For the full sample the estimate becomes insignificant.

When in the following columns adding controls for the share of the individuals from the own country who are themselves self-employed, and several other group municipality level covariates the estimates are relatively stable. This means that the co-ethnic banker dummy is not highly correlated with other group municipality level covariates related to the labor market position and the quality of the group at the local level. I therefore draw the conclusion that the estimated effect is not driven by characteristics of the group in the initial location.

7 Extensions

7.1 Own-group employees of a similar sector

As a test of whether the explanatory variable of interest captures more than the pure capital access effect we are interested in, I reestimate the baseline model adding a control for own-group employees in a similar sector. The sector that I study is the

Table 4: Estimated effects of exposure to co-ethnic banker on self-employment probability: reduced form with different sets of covariates

	(1)	(2)	(3)	(4)	(5)
Panel A. All					
Co-ethnic banker	0.00314* (0.00186)	0.00221 (0.00189)	0.00208 (0.00187)	0.00216 (0.00186)	0.00207 (0.00186)
Observations	800,899	800,899	800,899	800,899	800,899
R-squared	0.046	0.046	0.047	0.047	0.047
Panel B. Less than high school					
Co-ethnic banker	0.00684** (0.00277)	0.00590** (0.00297)	0.00556* (0.00294)	0.00558* (0.00293)	0.00562* (0.00294)
Observations	325,430	325,430	325,430	325,430	325,430
R-squared	0.060	0.060	0.060	0.061	0.061
Individual controls, fixed effects	Yes	Yes	Yes	Yes	Yes
Share of local population, municipality size		Yes	Yes	Yes	Yes
Share self-employed of local co-ethnics			Yes	Yes	Yes
Local*group labor market covariates				Yes	Yes
Local*group workplace covariates					Yes

Note: The table reports β parameters (standard errors) from equation (2). The outcome variable is a dummy for being self-employed. Standard errors are clustered at the level of municipality of arrival and country of origin pairs.*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Fixed effects for year-, year of immigration-, municipality of arrival- and country of origin are included in all columns, as well as controls for sex, age and education level. Column 2 adds controls for the municipality size and the share of the local population which the group constitute. Column 3 then adds a control for the share of the group at the local level who are self-employed. Column 4 then adds further controls for the earnings and education level of the group at the local level, while column 5 also adds controls for characteristics of the workplaces where the own-group members locally are working. See list in the appendix for overview of these variables.

insurance sector. The two sectors are similar in the sense that they require the same amount and type of education and offer similar wages (see table 11 and figure 1 in the appendix). But the insurance market does not provide credit for entrepreneurs. Although we expect insurance company employees to have partial knowledge of the financial sector and potential contacts within it, and hence also potentially influence the capital access process, we expect the effect of co-ethnic bankers to exceed the effect of own-group insurance company employees. As exposure to own-group employees in these sectors is correlated, we include both variables in the model and study the effect of both simultaneously.²¹

Both banks and insurance companies are sectors in which non-western immigrants earn relatively high incomes and those who are employed have relatively high education.²² Therefore, employment in any of these sectors can be considered a relatively high level of economic integration for a non-western immigrant. As discussed earlier, bank employees might affect the probability to enter self-employment not only through improved credit access but also through affecting the possibilities of employment in the regular labor market. Insurance sector employees from the own country should mainly capture the second of these effects.

Figure 2 in the appendix shows the total number of non-western immigrants employed in the bank and insurance sector during the time period studied. There are much fewer non-western employees in the insurance sector than in the bank sector, mainly because the insurance sector employs much fewer workers overall. The share of employees with a non-western background is similar in the two sectors. In the analysis I focus on a co-ethnic insurance dummy, defined analogously to the co-ethnic banker dummy. The share of individuals who are exposed to at least one own-group insurance employee is 0.31.

Table 5 presents the results from the comparison between the local co-ethnic bank and insurance sector employees, focusing on the whole group and the subsamples for which we found significant results in the previous analysis. I also limit the attention to the OLS and reduced form estimates.

The results show that the patterns from the baseline analysis remains, with positive OLS and reduced form estimates of bank representation on the probability of being self-employed, particularly for low educated and for males. Reassuringly,

²¹Municipality-year observations where there is no workplace identified as insurance company are not included in this analysis.

²²Some non-western bank employees have relatively low income. These may be individuals employed at maintenance positions, such as janitors and cleaners. As we cannot distinguish these individuals, this may lead to an underestimation of the effect of bank employees who are involved in the credit access process.

Table 5: Estimated effects of exposure to co-ethnic bankers and insurance employees on self-employment probability: OLS and reduced form

	(1) OLS	(2) Reduced form
Panel A. All		
Co-ethnic banker	0.00570*** (0.00144)	0.00201 (0.00186)
Co-ethnic insurance employee	0.00144 (0.00172)	-0.00412 (0.00256)
Observations	800,899	800,899
R-squared	0.053	0.047
Panel B. Less than high school		
Co-ethnic banker	0.00832*** (0.00188)	0.00556* (0.00294)
Co-ethnic insurance employee	0.00113 (0.00238)	-0.00714** (0.00328)
Observations	325,430	325,430
R-squared	0.067	0.061
Panel C. Male		
Co-ethnic banker	0.00889*** (0.00197)	0.00557* (0.00319)
Co-ethnic insurance employee	0.00308 (0.00244)	-0.0104** (0.00407)
Observations	467,226	467,226
R-squared	0.063	0.055
Panel D. Metropolitan region		
Co-ethnic banker	0.00361** (0.00158)	0.00249 (0.00242)
Co-ethnic insurance employee	6.26e-05 (0.00192)	-0.00697** (0.00275)
Observations	390,613	390,613
R-squared	0.056	0.045

Note: Column 1 (2) reports β parameters (standard errors) from a version of equation (1) ((2)), where both Co-ethnic bankers and own-group insurance company employees are used as explanatory variables. The outcome variable used is a dummy for being self-employed. Standard errors for column 1 (2) are clustered at the level of municipality (of arrival) and country of origin pairs.*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Fixed effects for year-, year of immigration-, municipality- and country of origin are included, as well as controls for sex, age and education level. In column 1 municipal group level covariates are contemporary, and in column 2 the initial year value is used. In column 2 also municipality of arrival fixed effects are used instead of contemporary municipality fixed effects. See list in appendix for overview over these variables.

we do not find corresponding OLS results for the effect of the co-ethnic insurance dummy. The reduced form estimates are significantly *negative*. For the groups not presented, I generally do not find any significant effects of the insurance sector employees.²³

The negative estimates for the co-ethnic insurance dummy in the reduced form model may indicate that the insurance company employees capture the impact of a well (economically) integrated group. The exposure to such individuals may be positively related to possibilities of regular employment. The fact that the sign is the opposite to the estimate for co-ethnic bankers suggests that the two professions have very different relations to self-employment, despite the similarity in labor market status. In my view, this strengthens the argument that the co-ethnic banker dummy captures access to capital, and not the impact of having co-ethnics in prestigious labor market segments.

7.2 Dynamics of self-employment: entry and exit

The baseline analysis has been focusing on the stock of self-employed individuals at a particular point in time. This section replaces the outcome variable *Being self-employed* with the outcomes *Becoming self-employed* and *Leaving self-employment*. These are both defined from the same self-employment variable as before, and the variable for becoming self-employed takes on the value 1 if the individual was not self-employed in the previous year but is self-employed in year t , and 0 if she does not enter self-employment. The variable for leaving self-employment takes on the value 1 if the individual was self-employed the previous year but is not so this year. Similarly, this is set to 0 if she continues to be self-employed.²⁴

If access to capital is important both in the start-up and expansion phase and for surviving downturns we could expect to see effects along the extensive margins of both entering and exiting self-employment. Andersson Joona (2010) shows that net wealth at business start-up is an important factor in determining the risk of exiting self-employment and entering unemployment. As is clear from table 6, the local co-ethnic bank employees seem to be related to both self-employment entry and exit. The probability of starting a firm is much lower than the probability of

²³For individuals placed outside the metropolitan region we see a significantly positive OLS estimate (significant on the 10 % level).

²⁴For all observations where an individual was self-employed the previous year, the variable for becoming self-employed is set to missing, as you cannot start up a firm if you are already running one. For observations where an individual was not self-employed the previous year the variable for leaving self-employment is set to missing.

leaving self-employment once having started the firm. The large differences between the magnitude of the estimates for starting up a firm and leaving self-employment are related to the different mean probabilities. Both the effect on entry and the effect on exit is about one tenth of the mean probability, with slightly larger estimates for the low educated. This suggests that local co-ethnic bank employees are related to both facilitated entry into, and reduced exit out of, self-employment.²⁵

There are, however, two reasons to be cautious when interpreting these results. As we saw earlier, the effect of initial exposure is almost the same size as the effect of contemporary exposure. This indicates that the effect may materialize with lags, and the transition estimates are identified by contemporary effects. Furthermore, the analysis on the dynamics of self-employment is also performed including insurance sector employees as an explanatory variable. Here we see similar estimates for the insurance sector employees as we do for the bank employees (see table 13 in the appendix).

Table 6: Estimated effect of co-ethnic banker on probability of entering and exiting self-employment: OLS

	All		Less than high school	
	(1) Entry	(2) Exit	(3) Entry	(4) Exit
Co-ethnic banker	0.00146** (0.000642)	-0.0180* (0.00948)	0.00190** (0.000754)	-0.0335* (0.0189)
Mean outcome	.013	.228	.012	.234
Observations	774,251	26,495	315,157	10,192
R-squared	0.013	0.041	0.018	0.059

Note: The table reports β parameters (standard errors) from equation (1). The outcome variable used in column 1 and 3 (2 and 4) is a dummy for becoming self-employed (exiting self-employment). Standard errors are clustered at the level of municipality and country of origin pairs.*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Fixed effects for year-, year of immigration-, municipality- and country of origin are included, as well as controls for sex, age and education level. Municipal group level covariates are contemporary, see list in appendix for overview over these variables.

²⁵IV estimates are in line with these OLS estimates but standard errors are large so they are not significant.

8 Sensitivity

Table 7 shows OLS estimates for a wide range of sensitivity checks of the baseline results. Only results for the whole group and for those who arrived with low education are presented.

As noted earlier the local co-ethnic bank employees can be defined based on their municipality of residence or municipality of work. The co-ethnic banker dummy variables based on either of these definitions are highly correlated. As a sensitivity analysis I perform an analysis defining the local co-ethnic bank variable by banker's municipality of work. OLS estimates are presented in column 1 of table 7 and these estimates are very similar in magnitude to the estimates in the baseline analysis.²⁶

The second column shows estimates using a variable defined as the *Share of local co-ethnics employed in bank*. The size of these estimates suggest that self-employment probability increases by 0.43 percentage points if the share of the local own-group members who work in a bank increases with one percentage point.

In column 3 I study the full sample of grown up non-western immigrants arriving after 1986. The positive OLS estimate is robust to using this data, which tells us that the individuals in the placement data and the individuals who arrived as tied movers do not differ substantially from each other in this regard. The estimates here are slightly smaller, something which could be due to the larger share of women in this data set.

Column 4 shows estimates when using logit instead of OLS and results are robust to this as well. The log odds of being self-employed, versus not being self-employed, for low educated, increase by a factor of 0.2 if exposed to a co-ethnic banker. This can be translated into that being exposed to a co-ethnic banker increases the odds of being self-employed by 22 %.

²⁶Using this definition of local co-ethnic employees OLS estimates are more similar for bank employees and insurance company employees. But the estimates for the insurance company employees generally turn significantly negative in the IV and reduced form estimations, as in table 5. This definition is not used as baseline as it is not completely clear what it captures. Using this definition, exposure is mainly taking place in the larger cities, even though it might be the case that residents of commuting municipalities around the cities are also turning to these in-city bankers when applying for loans. This definition of the explanatory variable does not distinguish the effect of bank employees from the effect of employees in similar sectors, and thus it seems to capture the effect of the group's local labor market position rather than the effect of local exposure to co-ethnic bankers.

Table 7: Estimated effect of own-group bank employee on self-employment probability: robustness checks

Panel A. All							
	(1) Banker dummy by municipality of work	(2) Share	(3) Full data	(4) Logit	(5) Contemporary Education	(6) Sole traders	(7) Firm level code
Co-ethnic banker	0.00527*** (0.00190)		0.00212** (0.000871)	0.0992*** (0.0384)	0.00591*** (0.00149)	0.00602*** (0.00148)	0.00520*** (0.00145)
Share of own-group members		0.439*** (0.111)					
Observations	800,899	800,899	2,536,065	798,654	791,278	801,126	800,899
R-squared	0.053	0.049	0.042		0.053	0.050	0.053
Panel B. Less than high school							
Co-ethnic banker	0.00710*** (0.00201)		0.00329*** (0.00123)	0.196*** (0.0560)	0.00914*** (0.00193)	0.00857*** (0.00193)	0.00756*** (0.00182)
Share of own-group members		0.389** (0.175)					
Observations	325,430	325,430	825,282	320,677	287,731	325,550	325,430
R-squared	0.067	0.067	0.058		0.072	0.065	0.067

Note: The table reports estimated β parameters (standard errors) from equation (1). The outcome variable is a dummy for being self-employed. Column 1 uses an explanatory variable based on bankers' municipality of work, and column 2 uses the share of the own group at the local level who are employed in a bank. Column 3 performs the baseline OLS estimation on a sample which is not restricted to those immigrating between 1987-1991. This data also includes tied movers. Column 4 estimates equation (1) as a logistic regression. Column 5 use the contemporary education level instead of the education level at time of arrival, and column 6 use a self-employment definition which only includes sole traders. Column 7 uses explanatory variables where banks are defined by industry code at the firm level instead of at the workplace level. Robust standard errors are clustered at the level of each municipality-country of origin pair. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects for year-, year of immigration-, municipality- and country of origin are included as well as controls for sex, age and education level. A full set of municipal group level covariates are also included, see list in the appendix for overview of these variables.

So far the analysis has relied on the education level at time of arrival to Sweden, but in column 5, I study how the results change when using contemporary education levels, in column 6 I use a self-employment definition only including sole traders, but not limited liability companies.²⁷ Lastly, column 7 checks to see if the results are robust to using firm level industry codes instead of the workplace level industry codes, which have been used in the baseline analysis. OLS estimates are robust to all these alterations.

Overall, these robustness checks suggest that the baseline results for the full group and for the low educated are robust to a wide range of alterations of how the variables are defined and the way the model is specified.²⁸

9 Concluding remarks

By studying how the self-employment rate of immigrants is related to exposure to co-ethnic bankers, we derive knowledge about whether shared background can help to overcome the information asymmetries which are associated with capital access for small firms. OLS estimates suggest that exposure to co-ethnic bank employees is positively related to the self-employment probability amongst immigrants, but also that this relationship differs between groups. We see a strong relation for low educated and for males, while we see no indications of positive effects for the highly educated and for women.

The differences between the groups becomes even clearer when employing a placement policy as a source of exogenous settlement to get closer at a causal understanding of the relation. By using this policy we rid the estimates of potential bias from selective residential sorting and reverse causality. The reduced form estimates for low educated, for males and for those placed in a metropolitan regions are in line with the earlier OLS estimates, indicating that there is a positive relation even after controlling for residential sorting. For high school educated and those placed in a non-metropolitan region, reduced form estimates are insignificant while the OLS estimates are significantly positive. This can be understood as signs of sorting into municipalities with own-group bank representation as well as beneficial business

²⁷Figure 3 in the appendix show the development of the number of individuals in the data who are self-employed over time, using these two different definitions.

²⁸Some of these estimations are also performed in the reduced form model (results not presented here). For columns 1 and 5 reduced form estimates are significantly positive for the low educated, and for column 2 they are significant also for the full sample. For the remaining tests for the full sample, and for column 6 and 7 for the low educated, reduced form results are found to be positive but insignificant.

opportunities.

The low educated consistently shows larger positive effects of bank representation than the more highly educated do. This indicates that with the lack of formal education, capital access is greatly facilitated by co-ethnic bank contacts. The size of the OLS estimate means that exposure to at least one local co-ethnic bank employee increases self-employment probability by around 20 %. This could be due to the improved knowledge, or relatively favorable behavior, at the local bank where immigrants apply for loans. But it could also be an effect of the increased knowledge of the local financial system. This study cannot distinguish between these different mechanisms.

A wide range of sensitivity analyses have been performed, on the full sample and on the low educated, to make sure that the baseline analysis captures the relation between self-employment rate and co-ethnic bankers. The results are robust to changes in the definition of the explanatory variable and the outcome variable, as well as to changes in the model specification. This gives strong indications that the results are not driven by the specification and that the relation I estimate is stable. The model is also estimated studying both employees of the bank and the insurance sector, as these sectors are similar in many dimensions but differ in terms of supplying credit. The baseline results are robust to this, as they show much less of a relation between insurance company employees and self-employment than between bank employees and self-employment. Overall, this comparison suggests that the effect of co-ethnic bank employees differs from the generic effect on labor market outcomes of co-ethnics in well integrated sectors.

The results reported in this essay measure the effect of co-ethnic bankers on the self-employment probability. Without a measure of the actual capital accessed by the entrepreneurs, these measures serve as a proxy for the impact of shared background on capital access. Interesting avenues for future research would be to directly analyze the relationship between co-ethnic bankers and sources of finances. Due to data limitations, this has not been possible within the scope of this essay.

This essay has shown that the origin of bankers matters for the probability of immigrants from non-western countries to start up and run small businesses. It does not address the question of whether the facilitated capital access for immigrants is improving efficiency in the credit market. But future studies on survival rates, and characteristics of firms started, could add to the understanding of the ethnic component in the credit market, highlighted by the analyses presented above.

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10 Appendix

10.1 Variable description

Bank Bank contains all firms defined as banks, but not other financial service companies.

Industry coding is available from 1989 and onwards, so for the years 1987 and 1988 firms are given the industry coding it has 1989. This yields a possibility that firms that closed down before 1989 are not captured. Industry coding is also available at both firm and workplace level. Here I use workplace level industry coding in the baseline analysis but employ firm level industry coding in a sensitivity analysis.

Insurance sector This includes insurance companies mainly focusing on injury insurances. The industry coding that it builds on is the same as the bank sector above.

Self-employed Before 1993 only sole traders were counted as self-employed, and after 1993 also limited liability companies are included in this definition. For the baseline analysis I use a variable which uses the first definition the years before 1993 and after that the second definition. I furthermore only include self-employed with a positive annual income, and individuals for which self-employment income is the main income.

Countries/regions of origin Some countries have a code of its own, as for example for Iran, while the whole of Latin America is categorized into 2 different codes. I use the 17 different countries/regions listed below.

Table 8: Countries of origin

-Bosnia and Herzegovina
-Former Yugoslavia, Croatia, Macedonia, Slovenia (Balkan States)
-Poland, Eastern Germany
-Estonia, Lithuania, Latvia (Baltic states)
-Romania, Former USSR, Bulgaria, Albania, Armenia, Azerbaijan, Georgia, Kazakhstan, Kirghizia, Moldova, Russia, Tadzhikistan's, Turkmenistan, Ukraine, Uzbekistan, Belarus (Eastern Europe)
-Former Czechoslovakia, Hungary
-Mexico, El Salvador, Other countries in the region (Central America)
-Chile
-Peru, Brazil, Columbia, Argentina, Uruguay, Other countries in the region (Latin America)
-Ethiopia, Eritrea, Somalia, Sudan, Djibouti (Eastern Africa)
-Lebanon, Syria, Morocco, Tunisia, Egypt, Algeria, Israel, Palestine, Jordan, Other countries in the region (Middle East)
-Gambia, Uganda, Zaire, Ghana, Other countries in the region (Africa South of Sahara)
-Iran
-Iraq
-Turkey
-Phillipines, Indonesia, Malaysia, Singapore, Thailand, Vietnam, Other countries in the region (Southeast Asia)
-Afghanistan, Bangladesh, Bhutan, India, Mongolia, Pakistan, Other countries in the region (East Asia)

Table 9: Country of origin distribution 1996

	All	Own-group banker=1	Own-group banker=0
Bosnia & Hercegovina	0.0007	0.000	0.001
Balkan States	0.0409	0.055	0.029
Poland	0.0338	0.042	0.027
Baltic states	0.0031	0.005	0.001
Eastern Europe	0.0681	0.068	0.069
Former Czechoslovakia	0.0224	0.025	0.020
Central America	0.0139	0.005	0.022
Chile	0.1036	0.111	0.097
Latin America	0.0237	0.032	0.017
Eastern Africa	0.1011	0.128	0.078
Middle East	0.1496	0.102	0.191
Africa South of Sahara	0.0207	0.021	0.020
Iran	0.2480	0.272	0.228
Iraq	0.0644	0.026	0.097
Turkey	0.0343	0.038	0.031
Southeast Asia	0.0457	0.032	0.057
East Asia	0.0259	0.037	0.016
N	53,518	24,683	28,835

10.1.1 List of municipal group level covariates

Variables defined by those individuals from the own country who share the individual's municipality of residence

- Employment rate
- Share self-employed
- Share that group constitutes of local population
- Mean earnings
- Share with earnings above the median (defined by year)
- Share with university education
- Mean years since migration
- Share working in high income workplaces (defined as a workplace with median income above the yearly mean income)

Variables defined by mean values of workplaces where the local own-group members work (WP):

- Mean earnings at co-ethnics' workplaces
- Share with university education at co-ethnics' workplaces

Variables defined by co-ethnics' municipality of work (W):

- Mean earnings
- Share with earnings above the median (defined by year)
- Share with university education
- Share working in high income workplaces (defined as a workplace with median income above the yearly mean income)
- Mean earnings at co-ethnics' workplaces
- Share with university education at co-ethnics' workplaces

Table 10: Mean values of remaining municipality group level covariates, 1996

	All	Co-ethnic banker=1	Co-ethnic banker=0
Share above median income (W)	0.2898	0.2982	0.2826
Mean earnings (1,000 SEK)(W)	41.4301	42.6855	40.3554
Share with university educ(W)	0.2858	0.2998	0.2737
Share working on high income workplaces	0.3364	0.3378	0.3351
Share working on high income workplaces(W)	0.3382	0.3390	0.3376
Mean income (1,000 SEK) (WP)	51.1261	52.8198	49.6762
Mean income (1,000 SEK)(W) (WP)	51.3051	52.9991	49.8550
Share with university educ(WP)	0.2665	0.2973	0.2401
Share with university educ(W) (WP)	0.2675	0.2991	0.2404
N	53,518	24,683	28,835

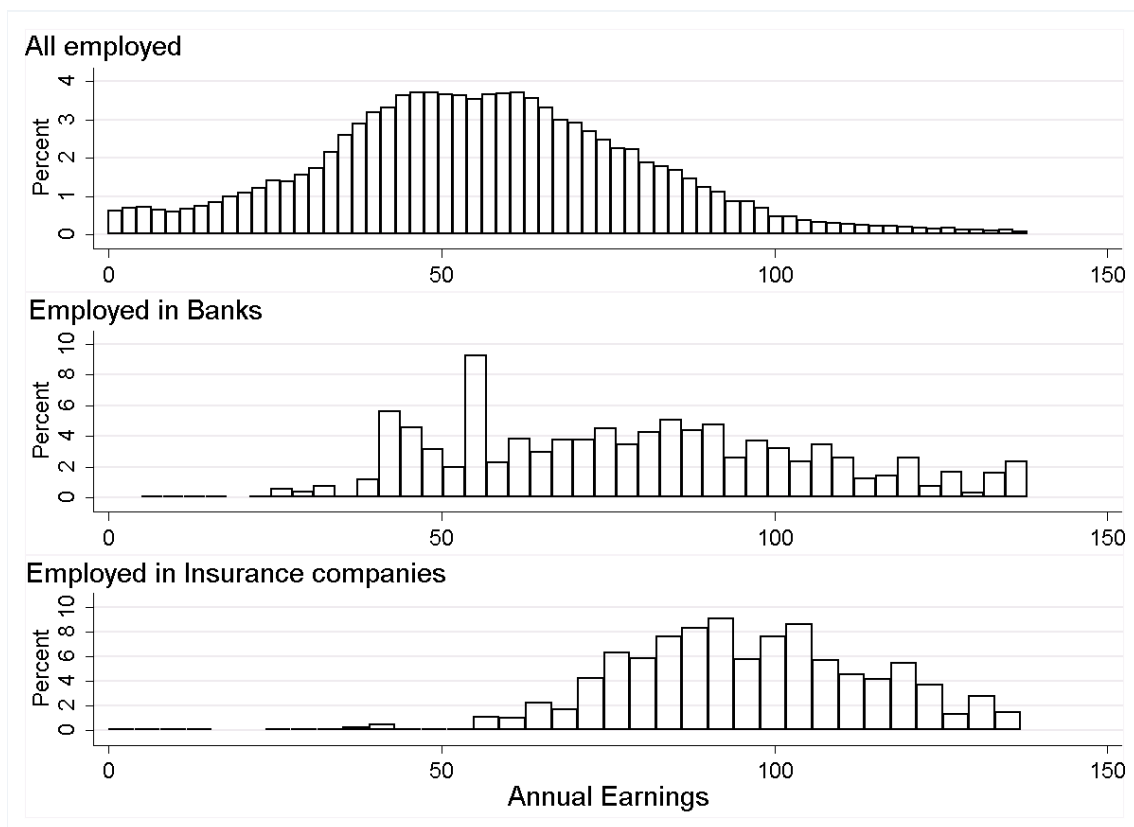
Note: (W) Variable defined by individuals who work in the municipality where one lives. (WP) Variable defined by the colleagues of an individuals' local co-ethnics.

10.2 Description; bank, insurance and self-employment

Table 11: Educational distribution among non-western employees in the bank and insurance sector

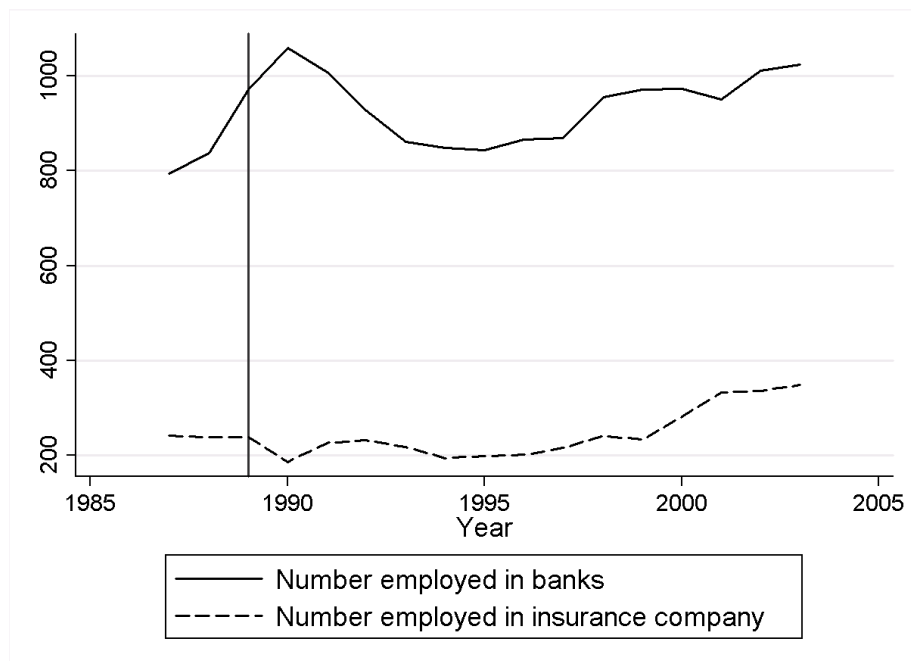
Education level	Full labor market	Bank sector	Insurance sector
Less than 9 years schooling	15.50	2.77	3.52
9 years schooling	17.85	7.28	7.42
High school, at most 2 years	22.91	25.87	20.48
High school, 3 years	19.62	24.28	26.85
University, at most 2 years	11.31	18.55	19.28
University, at least 3 years	11.72	20.90	21.93
PhD	1.08	0.34	0.52
Total	100.00	100.00	100.00

Figure 1: Income distribution- non western employees



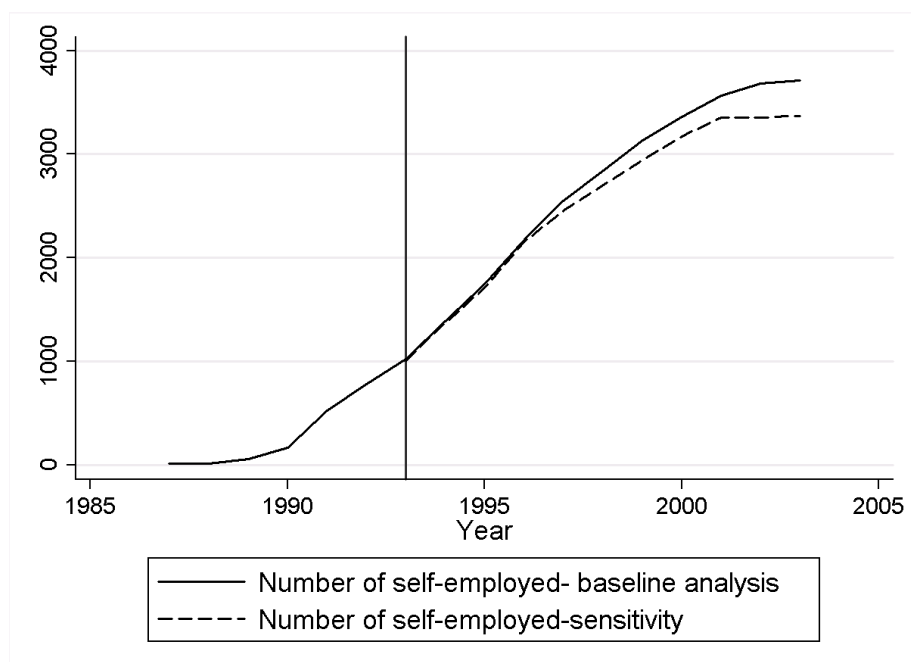
Note: Income in 1,000 SEK. Deflated to 1980 years values.

Figure 2: Number of non-western employees in bank sector- over time



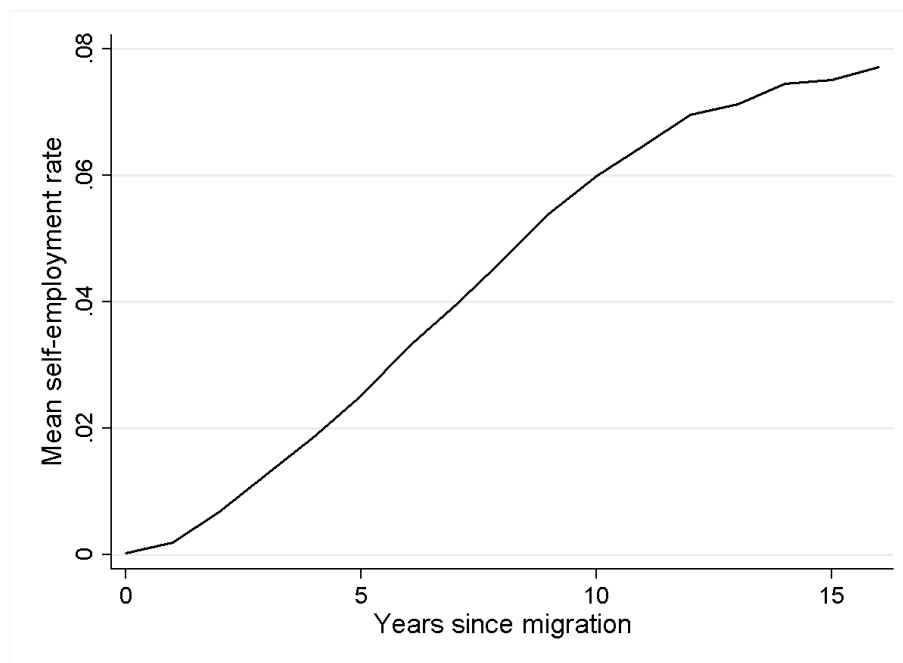
Note: Industry codes before 1989 are imputed from 1989 years values.

Figure 3: Number of self-employed non-western immigrants



Note: Before 1993 self-employment only includes sole traders, and from 1993 also limited liability companies are included

Figure 4: Share self-employed over years since migration



10.3 Further regression results

Table 12: Estimated effects of exposure to co-ethnic banker on self-employment probability: instrumental variable and reduced form, further subsamples

	(1) More than high school	(2) Female
Panel A. Reduced form		
Co-ethnic banker, year t_0	0.000617 (0.00352)	-0.00181 (0.00154)
Observations	171,651	333,673
R-squared	0.044	0.022
Panel B. IV		
Co-ethnic banker, year t	0.00249 (0.0142)	-0.00699 (0.00599)
Observations	171,651	333,673
R-squared	0.044	0.021
Panel C. First stage		
Co-ethnic banker, year t_0	0.248*** (0.0202)	0.259*** (0.0203)
Observations	171,651	333,673
R-squared	0.318	0.344

Note: Panel A reports estimated β parameters (standard errors) from equation (2), while Panel B reports estimated β parameters (standard errors) from a version of equation (1) where the endogenous regressor Co-ethnic banker $_{it}$ is instrumented by equation (3). Panel C reports estimated β parameters (standard errors) from the first stage regression, equation (3). The outcome variable is a dummy for being self-employed in panel A and B, while it is a dummy for the exposure to a co-ethnic banker in year t in panel C. Standard errors are clustered at the level of municipality of arrival and country of origin pairs.*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Fixed effects for year-, year of immigration-, municipality of arrival- and country of origin are included as well as controls for sex, age and education level. A full set of municipality of arrival group level covariates are also included, see list in the appendix for overview of these variables.

Table 13: Effects of co-ethnic bankers and insurance company employees on probability of start-up and self-employment exit: OLS

	All		Less than high school	
	(1)	(2)	(3)	(4)
	Entry	Exit	Entry	Exit
Co-ethnic banker	0.00134* (0.000713)	-0.0159 (0.0106)	0.00136* (0.000814)	-0.0306 (0.0207)
Co-ethnic insurance employee	0.00121* (0.000664)	-0.0175 (0.0114)	0.00146* (0.000887)	-0.0225 (0.0198)
Observations	652,370	22,246	263,923	8,607
R-squared	0.013	0.039	0.018	0.054

Note: The table reports β parameters (standard errors) from a version of equation (1), where both Co-ethnic bankers and own-group insurance company employees are used as explanatory variables. The outcome variable used in column 1 and 3 (2 and 4) is a dummy for becoming self-employed (exiting self-employment). Standard errors are clustered at the level of municipality and country of origin pairs.*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Fixed effects for year-, year of immigration-, municipality- and country of origin are included, as well as controls for sex, age and education level. Municipal group level covariates are contemporary, see list in appendix for overview over these variables.

Table 14: Detailed regression results of column 1 and 2 in table 2: OLS

	(1) All	(2) Less than high school
Co-ethnic banker	0.00580*** (0.00148)	0.00840*** (0.00188)
Employment rate	0.0347*** (0.00610)	0.0397*** (0.00809)
Mean earnings	1.44e-05 (1.60e-05)	3.34e-05 (2.22e-05)
Share with above median income	0.00849 (0.0118)	-0.00837 (0.0166)
Share of local population	0.00962 (0.127)	-0.169 (0.131)
Mean years in country	-0.000741** (0.000330)	-0.000737 (0.000477)
Share with above median income (W)	0.00172 (0.00869)	0.00440 (0.0126)
Mean earnings (W)	2.76e-06 (1.22e-05)	9.77e-06 (1.76e-05)
Share self-employed	0.353*** (0.0268)	0.337*** (0.0336)
Municipality size	-8.48e-08 (6.52e-08)	-1.27e-07 (7.98e-08)
Share with university education (W)	0.00231 (0.00626)	0.00205 (0.00880)
Share with university education	0.00618 (0.0101)	0.00697 (0.0139)
Share with university educ (W) (WP)	0.0416*** (0.0153)	0.0496** (0.0227)
Mean income (W) (WP)	-9.20e-05*** (1.84e-05)	-9.36e-05*** (2.55e-05)
Share working in high income workplaces (W)	0.0109 (0.00726)	0.00891 (0.00991)
Mean income (WP)	-9.50e-05*** (1.89e-05)	-0.000102*** (2.67e-05)
Share with university educ(WP)	0.00102 (0.0156)	-0.0330 (0.0211)
Share working in high income workplaces	0.0195** (0.00830)	0.0123 (0.0106)
Observations	800,899	325,430
R-squared	0.053	0.067

Note: The table reports estimated β parameters (standard errors) from equation (1). The outcome variable is a dummy for being self-employed. Robust standard errors are clustered at the level of each municipality country of origin pair. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Fixed effects for year-, year of immigration-, municipality- and country of origin are included as well as controls for sex, age and education level. (W) Variable defined by individuals who work in the municipality where one lives. (WP) Variable defined by the colleagues of an individuals' own-group members.

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