



# Immigrant self-employment in turbulent times

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**Abstract** We examine immigrant self-employment in Sweden during the turbulent decade 2011–2021. This is done for different cohorts of immigrants from Africa and Asia and for unincorporated and incorporated firms. Immigrants have lower business earnings and higher exit rates from self-employment than natives, which is in line with previous research. The period in which the immigrants arrived in Sweden and the type of business they are engaged in have important implications for outcomes. In most cases, outcomes are more favorable for those who came to Sweden up to the turn of the millennium, and less so for the latest arrivals. Even so, a closer look at outcomes by organizational form reveals that immigrants who arrived during 2011–2021 suffered less in terms of lower business earnings compared to earlier cohorts if they were in incorporated instead of unincorporated self-employment. Switching organizational form is not associated with catching up on business earnings for immigrant self-employed vis-à-vis Swedish-born.

**Plain English Summary** Self-employed immigrants were hit badly during the turbulent decade—higher exit rates and lower business earnings. We examine immigrant self-employment in Sweden during 2011–2021, a turbulent decade with a large influx of refugees into the country and the outbreak of the global COVID-19 pandemic. Immigrants from Africa and Asia have higher exit rates and lower business earnings from self-employment than natives. Those immigrants who came to Sweden before the turn of the millennium have more favorable outcomes in this regard than more recent immigrants. Even so, a closer look at outcomes by organizational form reveals that immigrants who arrived during 2011–2021 suffered less in terms of lower business earnings compared to earlier cohorts if they were in incorporated instead of unincorporated self-employment. Switching from unincorporated to incorporated firms is, however, not associated with catching up on business earnings for self-employed immigrants vis-à-vis natives. Since self-employment is an important route into the labor market for immigrants, our findings should be of great interest to policymakers. Access to financial capital is crucial both for entry into self-employment and for business survival, which should be taken into account in policies directed toward self-employed immigrants.

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## 1 Introduction

Much attention has been paid to immigrant self-employment in OECD countries during recent decades. It is well known that immigrants have problems entering the labor market as wage-employed, and self-employment has been viewed by, for example, OECD (2023) as a route into the labor market and a way to escape unemployment and avoid potential discrimination in hiring. Immigrant self-employment may also play an important role in job creation, since immigrants who successfully run their businesses may create employment not only for themselves but also for others.

In this paper, we turn our attention to self-employment among immigrants in Sweden and its development during the last decade, from 2011 to 2021. This decade has been turbulent in ways that may have affected immigrants' prospects of succeeding as self-employed. The refugee crisis during 2015 and 2016 affected several European countries and the COVID-19 pandemic struck the entire world in 2020. While our purpose is to examine immigrant self-employment outcomes during the most recent decade, we do not offer causal analyses of the consequences of the refugee crisis, the COVID pandemic, or other specific events. We do, however, briefly discuss the large influx of refugees and the pandemic in order to provide context to the empirical analysis.

Sweden should be a suitable study object in the context of immigrant self-employment in this decade. The country experienced one of the highest numbers of asylum applications per capita in Europe during those years, with refugees coming primarily from Middle Eastern and African countries such as Syria, Iraq, Eritrea, and Somalia. The massive influx of refugees strained Sweden's public resources and led to challenges in providing integration support and housing for the newly arrived immigrants.

While governments around the world implemented various measures such as lockdowns, social distancing, and travel restrictions to minimize the spread of the coronavirus in 2020 and 2021, Sweden chose a fairly non-interventionist approach. Restrictions were used to a lesser extent than in most other countries but nevertheless had differential impacts on sectors of the economy. Retail, hotels, and restaurants faced extraordinary challenges due to decreased consumer spending and despite economic support from the

government firms struggled to survive (Andersen et al., 2022). This made immigrants a particularly vulnerable group since many self-employed immigrants in Sweden work in the retail and other service sectors (Aldén & Hammarstedt, 2017).

COVID-19 lockdown policies that are likely to affect self-employment activities negatively, such as restrictions on public movement, were not only less stringent in Sweden than in many other countries but were also phased out earlier (Our World in Data, 2024). Sweden implemented an extensive range of support measures for business owners during the pandemic (Swedish Agency for Growth Policy Analysis, 2023). In contrast to some other countries, there were no outright bans imposed on business activities. Support schemes included delayed taxes, short-time work, temporarily reduced employers' fees, and adjustment support. Manufacturing, trade, construction, hotels and restaurants, and small businesses received the largest support. Business owners could apply for adjustment support, in order to compensate for loss of sales, in June 2020. However, unincorporated business owners who were not previously eligible to apply for adjustment support could not do so until November of the same year, which could have put them at a disadvantage vis-à-vis self-employed with incorporated firms.

While much research indicates that self-employed individuals were hit relatively hard by the pandemic, there is scant evidence regarding its impact on immigrant self-employment. Nor is there much research available on immigrant self-employment in the wake of the refugee crisis. The large influx of mostly low-skilled immigrants constituted a labor supply shock, with potential repercussions on immigrant self-employment as well as wage employment. It is the combination of an unprecedented supply shock of immigrants and a sharp economic downturn, disproportionately affecting industries in which immigrants are overrepresented, that makes Sweden stand out compared to other countries. This is expected to have affected more recent arrivals of immigrants more negatively than earlier arrivals.

High-quality longitudinal register data from Statistics Sweden enable us to follow different groups of immigrants over the period 2011 to 2021. We focus on four outcome variables related to self-employment: propensity of self-employment, entry into and exit from self-employment, and business earnings.

Furthermore, these outcomes are examined for immigrants by region of birth as well as by the time of immigration—prior to 2001, 2001–2010, and after 2010. Since the most vulnerable refugees in Sweden mainly come from Africa and Asia, we restrict our analysis of self-employment to these groups and compare their outcomes to those for natives, with separate analyses provided for males and females. The most recent cohort arrived during the decade in which the refugee crisis occurred, which may make this cohort especially exposed to difficulties in the labor market. Moreover, we are also able to distinguish between unincorporated and incorporated businesses, with special attention to switchers from the former to the latter.

The rich longitudinal data combined with the fact that we study several outcome variables provide new useful insights regarding the development of immigrant self-employment during the recent, turbulent decade. Since we examine different dimensions of self-employment and self-employment success and also do so for different corporation forms, our study provides a more comprehensive picture of immigrant self-employment than hitherto available.

We find that immigrants originating from countries in Africa and Asia have a lower propensity than natives to enter into self-employment as well as higher exit probabilities. They also have lower self-employment earnings than natives. Further, there are differences between cohorts of immigrants and immigrants who are self-employed in incorporated and unincorporated firms as regards self-employment outcomes. Finally, switching from unincorporated to incorporated firms is not associated with catching up on business earnings for Asian- and African-born relative to self-employed of Swedish origin.

### 1.1 Related literature and contribution

There is a relatively large literature in economics on immigrant self-employment rates, self-employment earnings, and determinants behind the self-employment decision. In a pioneering study, Borjas (1986) found differences in self-employment rates as well as in self-employment earnings between groups of immigrants in the USA.

Later, studies conducted in the USA not only corroborate Borjas' findings but also focus on explanations behind them. Yuengert (1995), Fairlie and

Meyer (1996), Aguilera (2009), and Fischer and Levin (2018) examine to what extent the self-employment decision and self-employment outcomes are affected by factors such as disadvantages in wage employment, traditions from the home country, and the existence of ethnic enclaves.

According to other studies from the USA, such as Fairlie (1999), Fairlie and Robb (2007), and Robb and Fairlie (2009), factors such as family traditions and access to financial resources are important for the decision to start up a business as well as for self-employment success. Lack of access to financial capital as an obstacle to self-employment among certain groups of immigrants is also highlighted by Blanchard et al. (2008) and Asiedu et al. (2012), focusing on differences between ethnic groups in approval rates of loans and their interest rates.

Related European studies include Clark and Drinkwater (2000) and Clark et al. (2017), who conclude that differences in self-employment rates between immigrants and natives in the UK can be explained by difficulties in the wage-employment sector and the existence of ethnic enclaves. For Germany, Constant and Zimmermann (2006) find that the self-employment decision among immigrants is influenced by family traditions and discrimination in the wage-employment sector. Hammarstedt (2001) documents differences in self-employment rates between immigrant groups in Sweden as well as between immigrants with different lengths of stay since arrival. More recent Swedish studies, such as Hammarstedt (2006), Hammarstedt and Shukur (2009), Andersson and Hammarstedt (2010, 2011, 2015), and Andersson et al. (2021), focus on how difficulties in the wage-employment sector, home-country self-employment traditions, family traditions, and the existence of the ethnic enclaves affect the self-employment decision among immigrants, while Aldén and Hammarstedt (2016) examine loan denials and interest rates charged to self-employed immigrants and Hammarstedt and Miao (2020) study who is employed in immigrant-owned firms. Andersson-Joona (2010), Wixe (2020), Andersson (2021), and Aldén et al. (2022) deal with various measures of self-employment performance, such as exit rates and business earnings, among immigrants in Sweden.

There is much recent research on how the COVID-19 pandemic has affected labor markets for the self-employed and immigrants, respectively, but as far as

we know, no study concerning self-employed immigrants.<sup>1</sup> Fairlie (2023) perhaps comes closest, finding that self-employed individuals from ethnic minorities in the US, such as African-Americans and Asians, experienced disproportionate business earnings losses during the pandemic. Nor is there much research available on immigrant self-employment in the wake of the refugee crisis in Europe.

In this paper, we add to the literature in several ways. We examine the self-employment decision for African- and Asian-born individuals and various measures of business performance, relative to outcomes for those of Swedish origin. This is also done separately for males and females. In addition, we are able to distinguish between unincorporated and incorporated businesses and to investigate earnings paths of switchers between corporate forms, which, to the best of our knowledge, has not been done before in research dealing with immigrant self-employment. Our main contribution, though, lies in the combination of high-quality register data, with rich information spanning over the recent, turbulent decade, and the examination of immigrant self-employment along various dimensions.

It takes time to establish a business and immigrants face other obstacles than natives in their self-employment activities. This should make self-employed immigrants, and especially more recent arrivals, vulnerable to unexpected and adverse events, like the supply shock of a large number of newly arrived immigrants competing for jobs and the COVID-19 pandemic. This is underscored by the fact that many self-employed immigrants are active in sectors that were hit relatively hard by the pandemic. For these reasons, we expect self-employed immigrants, especially those who arrived during the recent decade, to have fared worse than their native counterparts during the decade encompassing the refugee crisis and the pandemic. Furthermore, it is conceivable that female self-employed immigrants were hit harder than their male counterparts.<sup>2</sup>

<sup>1</sup> For overviews on consequences for self-employment, see Mindes and Lewin (2021), Belitski et al. (2022), and Sharma et al. (2022). Research on the labor market impact on immigrants is discussed by Cassidy (2022).

<sup>2</sup> Graeber et al. (2021) find that female self-employed were affected more negatively by the pandemic than male self-employed. See also Abubakar et al. (2023).

Unincorporated business owners have lower earnings than those with incorporated firms, as noted by, e.g., Levine and Rubinstein (2017) and Halvarsson et al. (2018), and we expect this to hold also for immigrant self-employed. Pooling the two types of organizational forms may thus mask considerable heterogeneity. In the Swedish tax system, unincorporated firms face less demanding requirements than incorporated businesses regarding administration and accounting but are personally liable for financial commitments. Consequently, the incorporated form is preferable for self-employed who undertake more risky business ventures. In Sweden, there are also tax advantages over non-corporate firms for higher-income individuals (Edmark & Gordon, 2013). Switching from unincorporated to incorporated business could improve the relative position of immigrants in the earnings distribution, to the extent that it improves relative access to capital markets or provides other benefits.

The remainder of the paper is organized as follows: Sect. 2 describes the immigrant population in Sweden. The data are presented in Sect. 3, while Sect. 4 contains the econometric analysis. Section 5 concludes the paper.

## 2 Immigrants in Sweden

### 2.1 Immigration and the immigrant population

Sweden is a country with a relatively long history of immigration. However, the size of the immigration flows as well as the characteristics of the immigration has changed over the years, and the immigrant population has increased markedly since the turn of the millennium.

In the year 2000, about one million individuals, or somewhat more than 10% of Sweden's total population, were born abroad. In 2025, more than two million individuals, or more than 20% of the total population, were foreign-born.

Table 1 shows how the immigrant population in Sweden has changed with respect to the region of birth since the turn of the millennium. Since then, immigration from certain countries in the Middle East (e.g., Syria and Iraq) and Africa (e.g., Somalia) has accounted for most of the migration to Sweden. In 2000, about 22% and roughly 5% of the foreign-born

**Table 1** The foreign-born population in Sweden, by region of birth, percent

Region of birth	2000	2010	2015	2020	2022
Nordics	27.9	19.0	14.7	11.1	10.1
Other Europe	36.9	36.2	34.8	32.7	33.0
Africa	5.4	8.3	10.7	11.6	11.7
Asia	21.9	29.2	33.2	38.5	38.8
Other world	7.9	7.3	6.7	6.2	6.3
Total	100	100	100	100	100

Source: Statistics Sweden

population in Sweden came from Asian and African countries, respectively. In 2022, the corresponding shares increased to almost 39% and nearly 12%. The share of immigrants from European countries has decreased from about 65% in the year 2000 to around 43% in 2022, mainly due to the large reduction of immigrants born in the other Nordic countries, from about 28% in 2000 to approximately 10% in 2022. The share of immigrants from other European countries has remained relatively stable at around 35%.

The inflow of immigrants to Sweden reached historically high levels during the refugee crisis in 2015 and 2016, when refugee immigration mainly from countries in the Middle East (e.g., Syria and Iraq) increased as a result of the civil wars in the region. During the peak of the refugee crisis in 2016, more than 70,000 individuals were granted residence permits as refugees in Sweden, and an additional 40,000 were granted such permits as “tied movers.” Today, Syria is the dominating immigrant country in

Sweden, and nearly 10% of the foreign-born population in Sweden were born there. Furthermore, almost 7% of the foreign-born population were born in Iraq, 4% in Iran, and between 3% and 4% in Somalia. Table 2 reveals how the immigrant population from countries in Africa and Asia has changed with respect to country of origin since the turn of the millennium.

## 2.2 Immigrant self-employment

Several studies have documented that immigrants from European countries are doing relatively well in the Swedish labor market, while low employment rates and high rates of unemployment characterize immigrants born in the Middle East and Africa (see, for instance, Ek et al., 2024). Successful self-employment might help immigrants to escape unemployment and pave the way into the labor market for immigrants.

Self-employment rates have increased among certain groups of immigrants from the 1990s and onwards, not least among those with relatively poor prospects for well-paid wage employment. Self-employment rates are especially high for immigrants from the Middle East, such as Iran, Syria, and Lebanon.

However, with the exception of immigrants from some countries in Southern Europe, such as Greece and Turkey, self-employment rates among other immigrant groups are in general considerably lower. This is the case for immigrants who are relatively well integrated in the Swedish labor market, like those from the Nordics and Western and Eastern

**Table 2** The countries of origin in Africa and Asia with the largest number of immigrants to Sweden

Region of birth	Percent of the total population from the region			Percent of the total immigrant population		
	2000	2010	2022	2000	2010	2022
<i>Africa</i>						
Somalia	24.0	32.8	27.6	1.3	2.7	3.2
Ethiopia	21.8	12.0	9.2	1.2	1.0	1.1
Morocco	8.2			0.4		
Eritrea		8.9	19.5		0.7	2.3
<i>Asia</i>						
Syria			23.7			9.2
Iraq	22.5	30.2	17.6	4.9	8.8	6.8
Iran	23.3	15.4	10.3	5.1	4.5	4.0
Lebanon	9.1			2.0		

Source: Statistics Sweden

Europe, but also for some groups who are relatively poorly integrated, such as African-born immigrants.

Business ownership thus seems to mainly be a way to escape unemployment for some immigrant groups, but not for others. Self-employment requires different kinds of resources, such as financial capital, but also knowledge regarding markets, rules, and regulations. The lack of such resources and knowledge might be an obstacle to successful self-employment among marginalized groups.

Besides the fact that certain groups of non-European immigrants are over-represented in self-employment compared to natives, they also encounter other obstacles than natives in their self-employment activities. Self-employed immigrants born in non-European countries report more often than natives that they experience discrimination from banks, customers, and suppliers, and they also to a higher extent consider access to financial capital as an obstacle to successful self-employment. Furthermore, exit rates from self-employment are higher among non-European immigrants.

Despite the fact that self-employment rates have increased among certain groups of non-European immigrants since the early 1990s, they remain in a vulnerable position due to high exit rates and other obstacles to building a thriving business.

### 3 Data

We use the database LISA (Longitudinal Integrated Database for Health Insurance and Labour Market Studies), compiled by Statistics Sweden, from 2011 to 2021. This database contains longitudinal information on all adults permanently residing in Sweden, on, e.g., labor market status, earnings, occupation, industry, education, age, gender, marital status, region, region of birth, year of immigration, and other demographic characteristics, measured in November each year. We restrict the sample to individuals aged 20–55 since we want to exclude those who exit self-employment due to early retirement.

The variables of primary interest concern the region of birth and outcomes for self-employed individuals. The specific country of birth is not available, except for natives. Our focus will be on individuals born in Africa and Asia and their self-employment outcomes in relation to those of Swedish-born

persons. Consequently, the dataset excludes anyone not born in Africa, Asia, or Sweden (Tables 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15).

A self-employed individual in LISA is defined as such if self-employment is the largest source of annual income and exceeds 1000 SEK (around 89 EUR or 93 USD in February 2024). Hybrid entrepreneurs with earnings from self-employment lower than those from wage employment are defined as employees. Both incorporated and unincorporated firms are included, and we are able to distinguish between the two types of business ownership. An incorporated (unincorporated) firm is defined as such if the main source of income is the incorporated (unincorporated) business. We examine three probabilities related to self-employment: the probability of being self-employed and the probability of transitioning into and from self-employment. In addition, we consider the performance of the self-employed in terms of earnings, which are defined somewhat differently for incorporated and unincorporated firms. For incorporated firms, these earnings may include not only business earnings but also earnings from wage employment during the year (to the extent that the latter are lower than the former). For unincorporated firms, earnings refer solely to business earnings, which are reported net of deductions in the data. This means that earnings may be negative (or zero) for unincorporated firms. Consequently, earnings data are not directly comparable for the two types of firms. To allow transformation to logs of both earnings variables, we have set all values lower than 1000 SEK to this amount for unincorporated firms.

Descriptive statistics are provided in Table 3. The probability of being self-employed is relatively low for African-born individuals for both types of businesses: 1.4% in unincorporated firms, compared to 3.7% and 3.0% for Asian-born and natives, respectively. For incorporated firms, the probability of self-employment is relatively lower for both African- and Asian-born (0.4% and 1.3%, respectively), while it is somewhat higher for natives (3.3%). The fact that unincorporated businesses are easier to start and operate may explain why they are relatively more common among foreign-born self-employed. The lower prevalence of self-employment for persons from Africa is explained both by a lower likelihood to enter self-employment and a higher propensity to leave this state. Asian-born are slightly more prone to enter unincorporated

**Table 3** Descriptive statistics, by region of birth

	Sweden		Africa		Asia	
<i>Dependent variables</i>						
Unincorporated firm	0.030	(0.170)	0.014	(0.116)	0.037	(0.189)
Incorporated firm	0.033	(0.178)	0.004	(0.065)	0.013	(0.115)
Entry, uninc. firm	0.006	(0.077)	0.004	(0.065)	0.009	(0.095)
Entry, inc. firm	0.005	(0.069)	0.001	(0.033)	0.003	(0.058)
Exit, uninc. firm	0.144	(0.351)	0.182	(0.386)	0.159	(0.365)
Exit, inc. firm	0.095	(0.294)	0.146	(0.353)	0.134	(0.340)
Log business earnings (100 SEK), uninc. firm	6.386	(2.177)	6.103	(2.233)	6.056	(2.193)
Log business earnings (100 SEK), inc. firm	8.167	(0.614)	7.959	(0.777)	7.913	(0.769)
<i>Independent variables</i>						
Age	37.5	(10.6)	36.0	(9.4)	36.5	(9.6)
Female	0.487	(0.500)	0.478	(0.500)	0.502	(0.500)
Primary education	0.082	(0.274)	0.313	(0.464)	0.234	(0.424)
Secondary education	0.488	(0.500)	0.354	(0.478)	0.299	(0.458)
Tertiary education	0.423	(0.494)	0.262	(0.440)	0.395	(0.489)
Missing education	0.006	(0.079)	0.071	(0.256)	0.072	(0.259)
Married or cohabiting	0.328	(0.470)	0.482	(0.500)	0.539	(0.498)
Children in household	0.431	(0.495)	0.493	(0.500)	0.500	(0.500)
Metropolitan area	0.184	(0.388)	0.323	(0.468)	0.276	(0.447)
Swedish-born	1.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Immigrated – 2000	0.000	(0.000)	0.207	(0.405)	0.284	(0.451)
Immigrated 2001–2010	0.000	(0.000)	0.370	(0.483)	0.320	(0.467)
Immigrated 2011–2021	0.000	(0.000)	0.424	(0.494)	0.395	(0.489)
Agriculture, forestry and fisheries	0.087	(0.283)	0.005	(0.071)	0.004	(0.059)
Manufacturing and extraction, energy and environment	0.062	(0.240)	0.018	(0.134)	0.020	(0.140)
Construction	0.163	(0.369)	0.039	(0.194)	0.033	(0.178)
Retail	0.121	(0.326)	0.163	(0.369)	0.212	(0.409)
Transport	0.035	(0.183)	0.248	(0.432)	0.086	(0.281)
Hotels and restaurants	0.025	(0.155)	0.082	(0.274)	0.245	(0.430)
Information and communication	0.079	(0.269)	0.040	(0.197)	0.032	(0.177)
Financial activities, business services	0.230	(0.421)	0.187	(0.390)	0.097	(0.296)
Personal and cultural services	0.123	(0.329)	0.100	(0.300)	0.181	(0.385)
Other/no data	0.075	(0.264)	0.117	(0.322)	0.089	(0.285)
No. of observations	39,250,410		1,442,289		4,801,147	

Means of variables, standard deviations in parentheses. The number of observations differs from those given in the table for the dependent variables entry, exit, and log earnings. The industry dummies refer to self-employed only

self-employment than natives, but somewhat less likely to start an incorporated business. Exits are more common for Asian business owners of both types than for natives.<sup>3</sup> Self-employed persons from Africa and

Asia have lower earnings than Swedish-born business owners, but the differences across regions of birth are smaller for unincorporated than incorporated firms. It is also notable that African-born earn somewhat more than those of Asian origin in both types of firms. (As discussed previously, earnings of incorporated and unincorporated firms are not directly comparable.)

On average, persons from Africa and Asia are younger, less educated, and more likely to have

<sup>3</sup> We do not define transitions between types of businesses, i.e., unincorporated and incorporated firms, as entries or exits. Only transitions in and out of self-employment are defined as entries and exits.

**Table 4** Probability of self-employment, unincorporated firm

	(1)	(2)	(3)	(4)
Africa	-0.0163*** (0.0003)			
Asia	0.0071*** (0.0002)			
Africa × Immigrated – 2000		-0.0039*** (0.0007)	-0.0131*** (0.0007)	-0.0135*** (0.0007)
Africa × Immigrated 2001–2010		-0.0154*** (0.0004)	-0.0166*** (0.0004)	-0.0165*** (0.0004)
Africa × Immigrated 2011–2021		-0.0231*** (0.0002)	-0.0207*** (0.0002)	-0.0189*** (0.0002)
Asia × Immigrated – 2000		0.0231*** (0.0005)	0.0180*** (0.0005)	0.0177*** (0.0005)
Asia × Immigrated 2001–2010		0.0152*** (0.0004)	0.0152*** (0.0004)	0.0153*** (0.0004)
Asia × Immigrated 2011–2021		-0.0111*** (0.0002)	-0.0076*** (0.0002)	-0.0056*** (0.0002)
Constant	0.0299*** (0.0001)	0.0299*** (0.0001)	-0.0381*** (0.0007)	-0.0383*** (0.0007)
R <sup>2</sup> (adj.)	0.0005	0.0013	0.0091	0.0094
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

Note: The number of observations is 45,493,846. The mean of the dependent variable is 0.0301. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, and county of residence. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

children under the age of 18 in the household and reside in metropolitan areas than natives. Among the self-employed, African- and Asian-born are engaged in the hotels and restaurants industry, transport, and retail to a greater extent than natives. The table also reveals that a large share of the stock of immigrants from Africa and Asia in Sweden has arrived during the turbulent decade 2011–2021 we examine in this paper: 42.4% and 39.5%, respectively.

Figure 1 shows how self-employment rates have evolved over time. For unincorporated firms, in the upper panel, there is a slight trend decline for both Asian-born and natives over the whole period, while rates are more stable for persons from Africa. Asian-born and natives experienced a modest reduction in the probability of being self-employed during the pandemic, 2020–2021, but no reduction is visible for persons from Africa. The lower panel of Fig. 1 reveals a quite different evolution for incorporated business owners. There is a slight upward

trend for natives and Asian-born, which has continued into the pandemic years. For African-born, there is little change over time in the probability of self-employment.

The decline in the probability of unincorporated self-employment up to 2018 seems to be largely explained by a lower propensity of entry, as illustrated in Fig. 2. All three groups experienced an increase in this type of self-employment in 2019, the year before the pandemic, and a reduction in subsequent years. For incorporated self-employment, there is a continuous increase in entry rates for Asian-born, while the rates for African-born are rather stable over time. Exit rates from unincorporated self-employment did not change much up to 2019, according to Fig. 3, but increased during the pandemic. Incorporated business owners, in contrast, seem hardly affected by the pandemic in terms of exits. Figure 4 shows that log earnings increased for business owners with unincorporated firms up to 2018, took a downturn in 2019

**Table 5** Probability of self-employment, incorporated firm

	(1)	(2)	(3)	(4)
Africa	-0.0283 <sup>***</sup> (0.0001)			
Asia	-0.0192 <sup>***</sup> (0.0001)			
Africa × Immigrated – 2000		-0.0208 <sup>***</sup> (0.0005)	-0.0340 <sup>***</sup> (0.0005)	-0.0337 <sup>***</sup> (0.0005)
Africa × Immigrated 2001–2010		-0.0290 <sup>***</sup> (0.0002)	-0.0313 <sup>***</sup> (0.0002)	-0.0313 <sup>***</sup> (0.0002)
Africa × Immigrated 2011–2021		-0.0314 <sup>***</sup> (0.0001)	-0.0285 <sup>***</sup> (0.0002)	-0.0297 <sup>***</sup> (0.0002)
Asia × Immigrated – 2000		-0.0054 <sup>***</sup> (0.0003)	-0.0127 <sup>***</sup> (0.0004)	-0.0125 <sup>***</sup> (0.0004)
Asia × Immigrated 2001–2010		-0.0206 <sup>***</sup> (0.0002)	-0.0218 <sup>***</sup> (0.0002)	-0.0218 <sup>***</sup> (0.0002)
Asia × Immigrated 2011–2021		-0.0281 <sup>***</sup> (0.0001)	-0.0263 <sup>***</sup> (0.0001)	-0.0275 <sup>***</sup> (0.0001)
Constant	0.0326 <sup>***</sup> (0.0001)	0.0326 <sup>***</sup> (0.0001)	-0.0312 <sup>***</sup> (0.0007)	-0.0311 <sup>***</sup> (0.0007)
R <sup>2</sup> (adj.)	0.0019	0.0023	0.0246	0.0247
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 45,493,846. The mean of the dependent variable is 0.0296. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, and county of residence. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

for all three groups, and remained lower during the pandemic. For incorporated self-employment, there is an increase in log earnings over time, with no visible detrimental development during the pandemic.

To sum up, while entry rates declined, exit rates increased and log earnings were reduced for unincorporated self-employment for all three groups during the pandemic, not much changed in this regard for incorporated business owners, regardless of region of birth.

$$y_{it} = \alpha + \delta_1(\text{Africa} \times \text{Immigrated} - 2000)_i + \delta_2(\text{Africa} \times \text{Immigrated} 2001 - 2010)_i + \delta_3(\text{Africa} \times \text{Immigrated} 2011 - 2021)_i + \delta_4(\text{Asia} \times \text{Immigrated} - 2000)_i + \delta_5(\text{Asia} \times \text{Immigrated} 2001 - 2010)_i + \delta_6(\text{Asia} \times \text{Immigrated} 2011 - 2021)_i + X_{it}\beta + \lambda_t + \varepsilon_{it}. \quad (2)$$

The dependent variable,  $y_{it}$ , is different depending on the outcome investigated: for the probability of unincorporated (incorporated) self-employment, the variable equals 1 if the individual is in unincorporated

## 4 Econometric analysis

### 4.1 Econometric specification

In this section, we examine outcomes for persons of African and Asian origin and natives in a linear regression framework (OLS). We use the following main specifications:

$$y_{it} = \alpha + \gamma_1 \text{Africa}_i + \gamma_2 \text{Asia}_i + \varepsilon_{it} \quad (1)$$

(incorporated) self-employment in year  $t$ , and 0 otherwise; for the probability of entry into unincorporated (incorporated) self-employment, the variable takes the value of 1 if the individual enters unincorporated

**Table 6** Probability of entry into self-employment, unincorporated firm

	(1)	(2)	(3)	(4)
Africa	-0.0018*** (0.0001)			
Asia	0.0031*** (0.0001)			
Africa × Immigrated – 2000		-0.0007*** (0.0002)	-0.0014*** (0.0002)	-0.0015*** (0.0002)
Africa × Immigrated 2001–2010		-0.0011*** (0.0001)	-0.0013*** (0.0001)	-0.0013*** (0.0001)
Africa × Immigrated 2011–2021		-0.0029*** (0.0001)	-0.0026*** (0.0001)	-0.0024*** (0.0001)
Asia × Immigrated – 2000		0.0029*** (0.0001)	0.0025*** (0.0001)	0.0025*** (0.0001)
Asia × Immigrated 2001–2010		0.0055*** (0.0001)	0.0053*** (0.0001)	0.0053*** (0.0001)
Asia × Immigrated 2011–2021		0.0015*** (0.0001)	0.0019*** (0.0001)	0.0022*** (0.0001)
Constant	0.0060*** (0.0000)	0.0060*** (0.0000)	-0.0070*** (0.0002)	-0.0070*** (0.0002)
R <sup>2</sup> (adj.)	0.0002	0.0002	0.0007	0.0007
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 44,401,609. The mean of the dependent variable is 0.0063. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, and county of residence. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

(incorporated) self-employment in year  $t$  and is not in self-employment in year  $t-1$ , and 0 otherwise; for the probability of exit from unincorporated (incorporated) self-employment, the variable equals 1 if the individual exits from unincorporated (incorporated) self-employment in year  $t$  and is in self-employment in year  $t-1$ , and 0 otherwise; and for log earnings, the dependent variable is continuous.

In Eq. (1),  $Africa_i$  and  $Asia_i$  are dummy variables that equal 1 if the individuals were born in Africa and Asia, respectively, and 0 otherwise, with Swedish-born as the reference category.  $\varepsilon_{it}$  is the error term, clustered at the individual level in Eqs. (1) and (2). The interactions ( $Africa \times Immigrated - 2000$ ) <sub>$i$</sub> , ( $Africa \times Immigrated 2001-2010$ ) <sub>$i$</sub> , and ( $Africa \times Immigrated 2011-2021$ ) <sub>$i$</sub>  in Eq. (2) capture different cohorts of African-born, depending on the period of immigration, with corresponding variables for those of Asian origin. The reference category comprises persons born in Sweden. Equation (2) also includes  $X_{it}$ , a vector of

control variables: age, age squared, and dummies for gender, educational attainment, marital status, the presence of children (<18 years old) in the household, county of residence, and, depending on sample, industry. Year fixed effects,  $\lambda_t$ , account for variations in the business climate that affect all individuals in the same way. The parameters of prime interest are  $\delta_I - \delta_6$  in Eq. (2), which shows the percentage-point difference in outcomes between African (Asian) born of different immigration cohorts and individuals of Swedish origin.

While the full sample, used for estimating the probability of self-employment, contains all Swedish-, African- and Asian-born individuals aged 25–55 residing in Sweden, different subsamples are used for the other outcome variables: for entry into self-employment, the sample consists of those who were not self-employed in year  $t-1$ ; for exit from self-employment, it is made up of individuals who were self-employed in year  $t-1$ ; and for log earnings, it contains persons who were self-employed in year  $t$ .

**Table 7** Probability of entry into self-employment, incorporated firm

	(1)	(2)	(3)	(4)
Africa	-0.0037*** (0.0003)			
Asia	-0.0015*** (0.0003)			
Africa × Immigrated – 2000		-0.0021*** (0.0001)	-0.0039*** (0.0001)	-0.0038*** (0.0001)
Africa × Immigrated 2001–2010		-0.0038*** (0.0001)	-0.0044*** (0.0001)	-0.0044*** (0.0001)
Africa × Immigrated 2011–2021		-0.0043*** (0.0000)	-0.0043*** (0.0000)	-0.0044*** (0.0000)
Asia × Immigrated – 2000		0.0007*** (0.0001)	-0.0002*** (0.0001)	-0.0002** (0.0001)
Asia × Immigrated 2001–2010		-0.0015*** (0.0001)	-0.0020*** (0.0001)	-0.0020*** (0.0001)
Asia × Immigrated 2011–2021		-0.0030*** (0.0000)	-0.0031*** (0.0000)	-0.0033*** (0.0000)
Constant	0.0048*** (0.0000)	0.0048*** (0.0000)	-0.0090*** (0.0001)	-0.0090*** (0.0001)
R <sup>2</sup> (adj.)	0.0001	0.0002	0.0026	0.0026
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 44,346,188. The mean of the dependent variable is 0.0045. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, and county of residence. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 4.2 Results

Tables 4 and 5 show the results for the probability of unincorporated and incorporated self-employment, respectively. Column (1) in the tables includes dummies for African- and Asian-born persons, as in Eq. (1). Columns (2) to (4) are variants of Eq. (2), with interactions between the region of origin and period of immigration as well as controls and year fixed effects successively added to the specification. The unconditional regression in Column (1) of Table 4 indicates that African-born are 1.63 percentage points less prone than natives to be in unincorporated self-employment, while those of Asian origin are 0.71 percentage points more likely. In general, the probability to be self-employed, relative to that of natives, decreases the more recently the cohort immigrated to Sweden and this holds for both unincorporated and incorporated businesses. Persons from Africa have a lower probability than Asians to be in both unincorporated and incorporated self-employment for all cohorts.

The coefficients reduce in magnitude as controls are included for the most recent cohorts (2011–2021), but this is not always the case for earlier cohorts (–2000 and 2010–2010).<sup>4</sup> This means that it is mainly the most recent arrivals from Africa and Asia that, on average, have observable characteristics that make them less likely than natives to become self-employed.

According to the final column in Table 4, in which all regressors are included, the estimates for  $(Africa \times Immigrated - 2000)_i$  and  $(Africa \times Immigrated 2011-2021)_i$  are  $-0.0135$  and  $-0.0189$ , respectively, indicating that the probability of an African born in the least (most) recently arrived cohort is in unincorporated self-employment is 1.35 (1.89)

<sup>4</sup> Coefficients of control variables are not shown in the tables but conform to expectations. Thus, the probability of self-employment increases at a decreasing rate with age and is lower for females and higher for married persons and those with children.

**Table 8** Probability of exit from self-employment, unincorporated firm

	(1)	(2)	(3)	(4)
Africa	0.0379 <sup>***</sup> (0.0025)			
Asia	0.0147 <sup>***</sup> (0.0009)			
Africa × Immigrated – 2000		0.0251 <sup>***</sup> (0.0042)	–0.0012 (0.0042)	–0.0011 (0.0042)
Africa × Immigrated 2001–2010		0.0467 <sup>***</sup> (0.0040)	–0.0010 (0.0038)	–0.0011 (0.0040)
Africa × Immigrated 2011–2021		0.0448 <sup>***</sup> (0.0049)	–0.0111 <sup>**</sup> (0.0049)	–0.0126 <sup>***</sup> (0.0049)
Asia × Immigrated – 2000		0.0067 <sup>***</sup> (0.0013)	–0.0037 <sup>**</sup> (0.0015)	–0.0036 <sup>**</sup> (0.0015)
Asia × Immigrated 2001–2010		0.0218 <sup>***</sup> (0.0013)	–0.0012 (0.0014)	–0.0012 (0.0014)
Asia × Immigrated 2011–2021		0.0169 <sup>***</sup> (0.0017)	–0.0037 <sup>**</sup> (0.0017)	–0.0048 <sup>**</sup> (0.0017)
Constant	0.1440 <sup>***</sup> (0.0003)	0.1440 <sup>***</sup> (0.0003)	0.2872 <sup>***</sup> (0.0051)	0.2874 <sup>***</sup> (0.0051)
R <sup>2</sup> (adj.)	0.0003	0.0004	0.1250	0.1255
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 1,606,033. The mean of the dependent variable is 0.1465. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, county of residence, and industry. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

percentage points lower than that of natives. The corresponding coefficients for immigrants from Asia are 0.0177 and –0.0056, suggesting that the earliest arrivals in this group, but not the latest ones, are more likely than natives to be self-employed in an unincorporated business. For incorporated businesses, the final column in Table 5 shows, in contrast to the previous table, that the most recent cohort of African immigrants are not less likely than the earliest one to become self-employed, with a coefficient of –0.0297 compared to –0.0337. The corresponding estimates for Asian-born are –0.0275 and –0.0125.

Tables 6 and 7 repeat the format of the previous two tables, with entry into self-employment as the dependent variable. Without exception, the most recent arrivals of African- and Asian-born are less prone to start up a business than those who immigrated earlier, and African-born are less likely than Asians to enter self-employment, regardless of cohort. Table 6 reveals that persons from Asia are

more likely than natives to enter into unincorporated self-employment and, interestingly, this also holds for the most recent cohort, who came to Sweden during “the turbulent decade”. The relatively high propensity to be in unincorporated self-employment for Asians that we noted in Table 4 is thus partly explained by higher entry rates. However, the probability of setting up an incorporated firm is consistently lower for both African- and Asian-born persons, relative to that of natives, as indicated by Table 7.

What about exits from self-employment? In most cases, African-born are more likely than Asians in the same cohort to exit from self-employment, as shown in Tables 8 and 9. The size of the coefficients typically becomes smaller with all regressors included. Adding controls and year fixed effects in Table 8 results in the probability of exit from unincorporated self-employment for persons of African and Asian origin changing sign and either becoming *smaller* than that of Swedish-born or not

**Table 9** Probability of exit from self-employment, incorporated firm

	(1)	(2)	(3)	(4)
Africa	0.0507*** (0.0041)			
Asia	0.0385*** (0.0012)			
Africa × Immigrated –2000		0.0468*** (0.0055)	0.0073 (0.0059)	0.0075 (0.0059)
Africa × Immigrated 2001–2010		0.0580*** (0.0071)	0.0159* (0.0082)	0.0170** (0.0082)
Africa × Immigrated 2011–2021		0.0501*** (0.0112)	0.0257** (0.0111)	0.0276*** (0.0104)
Asia × Immigrated –2000		0.0362*** (0.0016)	0.0081*** (0.0019)	0.0084*** (0.0019)
Asia × Immigrated 2001–2010		0.0413*** (0.0022)	0.0119*** (0.0024)	0.0130*** (0.0024)
Asia × Immigrated 2011–2021		0.0428*** (0.0031)	0.0190*** (0.0032)	0.0212*** (0.0032)
Constant	0.0952*** (0.0003)	0.0952*** (0.0003)	0.1453*** (0.0063)	0.1472*** (0.0063)
R <sup>2</sup> (adj.)	0.0009	0.0009	0.0421	0.0422
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 1,494,045. The mean of the dependent variable is 0.0974. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, county of residence, and industry. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

significantly different. This is in large part driven by the inclusion of industry dummies (we saw in Table 3 that African- and Asian-born self-employed are distributed quite differently across industries than those of Swedish origin). It is also notable that it is mainly the most recent arrivals that have lower exit rates than Swedish-born when all regressors are included. However, for incorporated businesses in Table 9, it is evident that individuals from Africa and Asia have a higher probability than natives to leave self-employment for all cohorts (except Africans who arrived up to 2000). Moreover, exits increase the more recently the immigrants have arrived in Sweden, which stands in contrast to the findings for unincorporated self-employed and suggests that experience as self-employed and length of stay in Sweden are more important in this respect for incorporated businesses. From Tables 8 and 9, we can conclude that African and Asian immigrants are more prone to be self-employed in industries

with high exit rates, compared to natives, and for unincorporated self-employed, this applies in particular to more recent arrivals.

The regressions in Tables 10 and 11 concern the business earnings of the self-employed. Earnings decrease the more recently Africans and Asians have immigrated to Sweden, and this tendency is stronger for unincorporated self-employed. For example, according to the final column in Table 10, coefficients for Africans who arrived up to 2000 and during 2011–2021 are  $-0.2653$  and  $-1.0631$ , respectively. This translates to decreases of 23.3 and 65.5 percentage points in business earnings, compared to Swedish-born. Corresponding figures for Asians born in unincorporated self-employment are 15.6 and 60.2 percentage points. In most cases, adding controls causes the coefficients to become more negative, implying that, on average, individuals from Africa and Asia have observable characteristics that are associated with financial success in unincorporated

**Table 10** Log business earnings (100 SEK), unincorporated firms

	(1)	(2)	(3)	(4)
Africa	-0.2828*** (0.0295)			
Asia	-0.3301*** (0.0107)			
Africa × Immigrated –2000		0.1382** (0.0464)	-0.2613*** (0.0444)	-0.2653*** (0.0443)
Africa × Immigrated 2001–2010		-0.3209*** (0.0450)	-0.6652*** (0.0412)	-0.6553*** (0.0411)
Africa × Immigrated 2011–2021		-0.9964*** (0.0569)	-1.1079*** (0.0514)	-1.0631*** (0.0515)
Asia × Immigrated –2000		0.0674*** (0.0155)	-0.1677*** (0.0165)	-0.1700*** (0.0164)
Asia × Immigrated 2001–2010		-0.3896*** (0.0163)	-0.4736*** (0.0168)	-0.4742*** (0.0168)
Asia × Immigrated 2011–2021		-1.0195*** (0.0197)	-0.9592*** (0.0203)	-0.9207*** (0.0206)
Constant	6.3861*** (0.0043)	6.3861*** (0.0043)	3.6773*** (0.0577)	3.6966*** (0.0575)
R <sup>2</sup> (adj.)	0.0027	0.0077	0.0876	0.0912
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 1,370,723. The mean of the dependent variable is 6.3393. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, county of residence, and industry. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

self-employment to a *greater* extent than do persons of Swedish origin. This could be due to unobserved characteristics, negatively related to business performance or, for example, discrimination in customer and capital markets. For incorporated self-employed, in the final column of Table 11, Africans who immigrated up to 2000 and during 2011–2021 experienced a decrease in earnings relative to natives of 13.9 and 39.1 percentage points, respectively, with corresponding figures of 12.1 and 38.4 percentage points for Asian-born. It is evident that those who arrived during the turbulent decade 2011–2021 suffered less in terms of lower business earnings, compared to earlier cohorts, if they were in incorporated instead of unincorporated self-employment. While the addition of controls results in estimates becoming more negative for African-born, as we noted in Table 10, they become less negative for persons from Asia.

Given our findings of differences in earnings paths between unincorporated and incorporated business

owners, it is of interest to examine whether *changing* corporate form is associated with different outcomes depending on country of birth. In Table 12, we follow individuals who switched from unincorporated to incorporated business during 2012–2018, from 1 year before the change,  $t-1$ , up until 3 years after it,  $t+3$ .<sup>5</sup> Percentiles refer to business earnings for unincorporated firms in  $t-1$  and for incorporated firms in  $t+1$  to  $t+3$ . Unsurprisingly, it is self-employed with relatively high earnings that switch to incorporation. Those from Africa or Asia are in the 68th income percentile prior to the change, while natives find themselves in the 74th. One year after the switch, the former group is located in percentile 32 and the latter in percentile 40, reflecting the fact that business earnings in incorporated firms are higher on average. However, the climbing up the

<sup>5</sup> Changes in the opposite direction are too few to be considered.

**Table 11** Log business earnings (100 SEK), incorporated firms

	(1)	(2)	(3)	(4)
Africa	-0.2080*** (0.0169)			
Asia	-0.2537*** (0.0053)			
Africa × Immigrated –2000		-0.0946*** (0.0216)	-0.1405*** (0.0208)	-0.1491*** (0.0207)
Africa × Immigrated 2001–2010		-0.3413*** (0.0295)	-0.3534*** (0.0274)	-0.3950*** (0.0272)
Africa × Immigrated 2011–2021		-0.4158*** (0.0519)	-0.4169*** (0.0506)	-0.4962*** (0.0500)
Asia × Immigrated –2000		-0.1519*** (0.0068)	-0.1175*** (0.0067)	-0.1292*** (0.0067)
Asia × Immigrated 2001–2010		-0.3479*** (0.0097)	-0.2664*** (0.0095)	-0.3129*** (0.0094)
Asia × Immigrated 2011–2021		-0.4938*** (0.0126)	-0.3996*** (0.0124)	-0.4841*** (0.0124)
Constant	8.1670*** (0.0011)	8.1670*** (0.0011)	6.6609*** (0.0249)	6.5765*** (0.0247)
R <sup>2</sup> (adj.)	0.0079	0.0101	0.0925	0.1111
Controls	No	No	Yes	Yes
Year FE	No	No	No	Yes

The number of observations is 1,348,564. The mean of the dependent variable is 8.1540. Controls include age, age squared, and dummies for gender, education, marital status, the presence of children in the household, county of residence, and industry. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

income ladder in subsequent years is modest for both African/Asian- and Swedish-born, reaching percentile 33 and 42, respectively, after 3 years, implying that the gap between the two groups remains largely unaffected.

Are there gender differences in the outcomes we have investigated in Tables 4, 5, 6, 7, 8, 9, 10, and 11? Tables 13, 14, and 15 in the Appendix show separate

**Table 12** Percentile of business earnings for switchers of corporate form, by region of birth

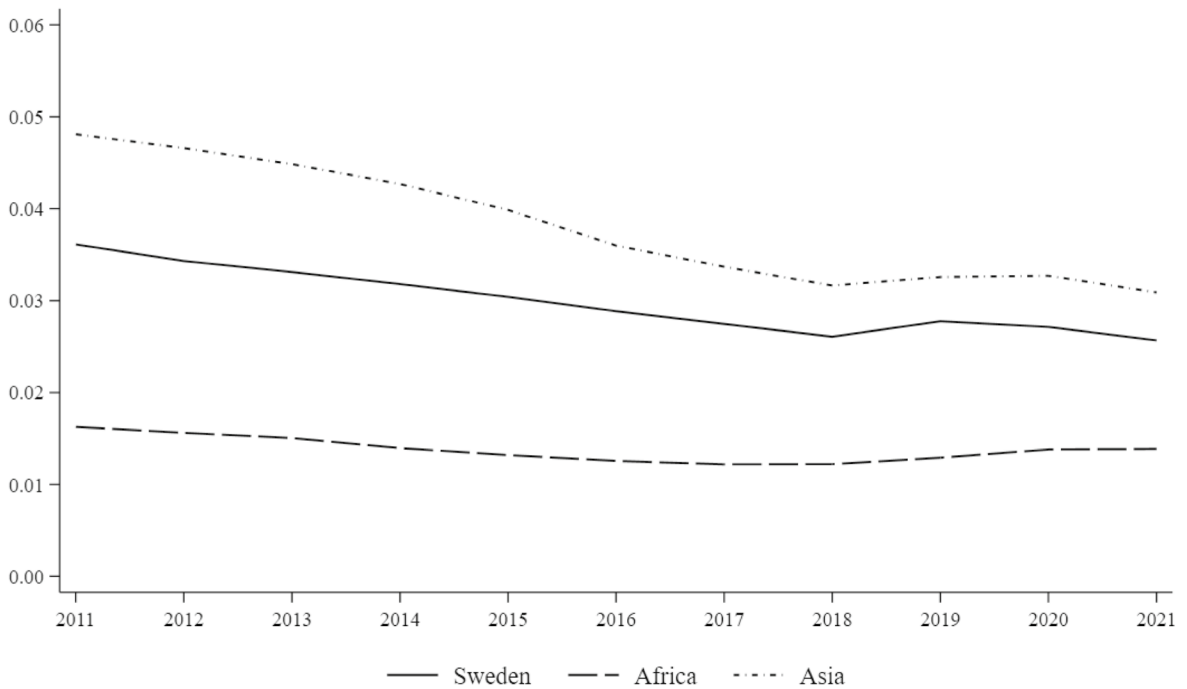
Region of birth	$t-1$	$t+1$	$t+2$	$t+3$
Sweden	74	40	41	42
Africa/Asia	68	32	33	33

The number of observations is 14,744 for Sweden and 1144 for Africa/Asia. Switchers refer to self-employed who changed from unincorporated to incorporated firm in year  $t$  during the period 2012–2018 and who remain in this state up to at least  $t+3$ . Percentiles refer to business earnings for unincorporated firms in  $t-1$  and for incorporated firms in  $t+1$  to  $t+3$

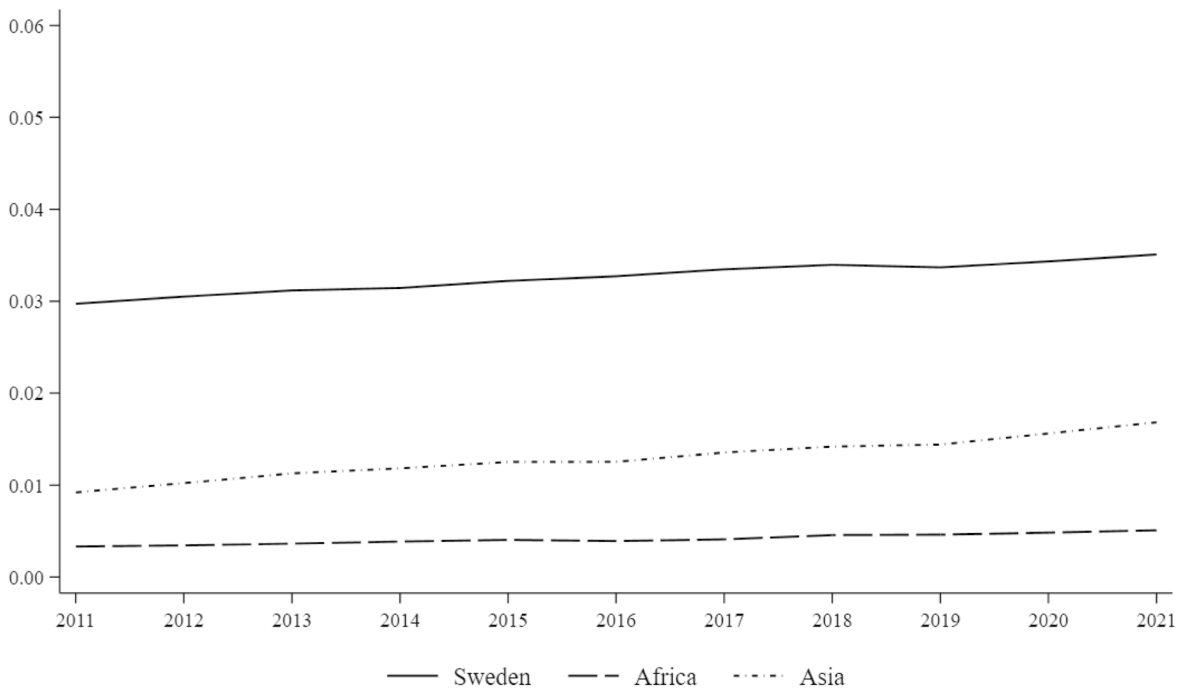
regressions by corporate form and gender for the probability of entry, the probability of exit, and for business earnings. The regressions include controls for demographic characteristics and year fixed effects.

According to the means of the dependent variables reported in Table 13, the probability of entry to self-employment is lower for females than for males, regardless of corporate form, and the estimate is lowest for females of African origin. The probability that an African-born female starts an unincorporated (incorporated) business is 0.26 (0.18) percentage points lower than that for native females. In contrast, females from Asia are relatively more likely than Swedish-born of the same gender to enter unincorporated self-employment (as indicated by the estimate 0.0017). Exits from self-employment are more common for females than for males, as evident from the means of the dependent variables in Table 14. While female African- and Asian-born business owners are more prone than their Swedish-born counterparts to leave self-employment, the estimates are very imprecise

## a) Unincorporated

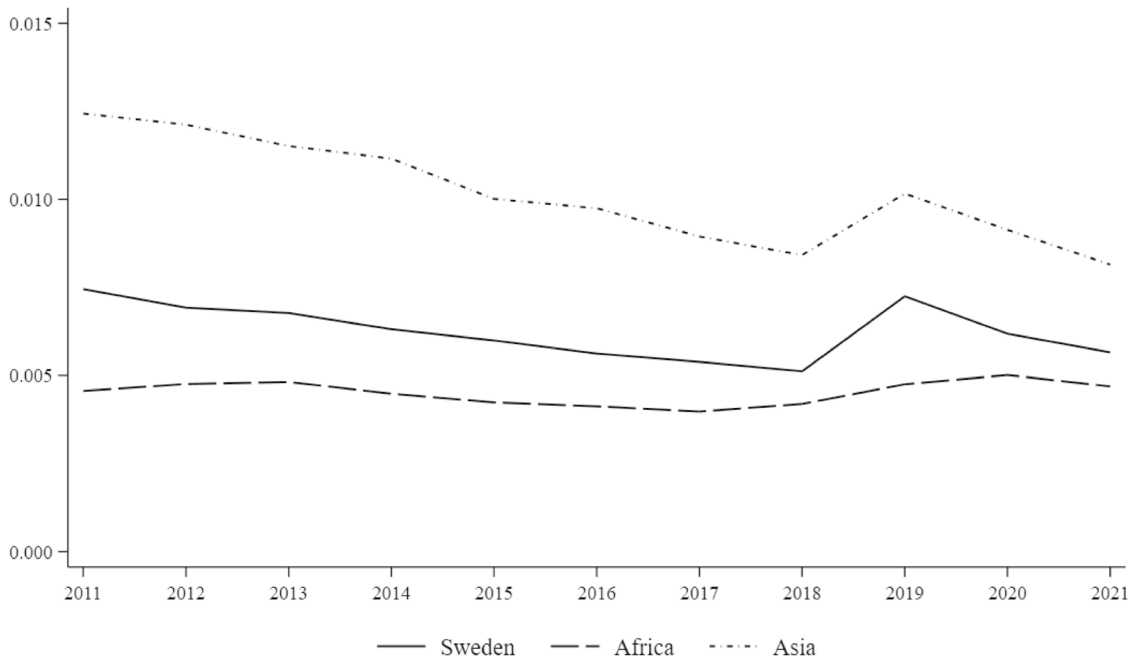


## b) Incorporated



**Fig. 1** Probability of self-employment, by region of birth and type of business

a) Unincorporated



b) Incorporated

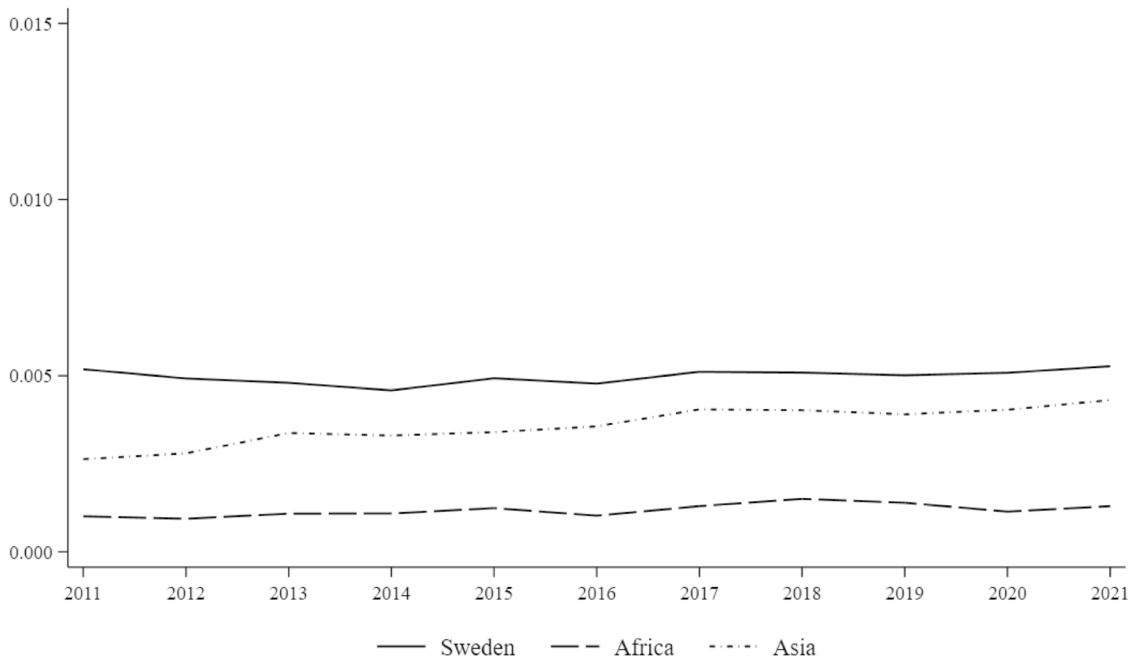
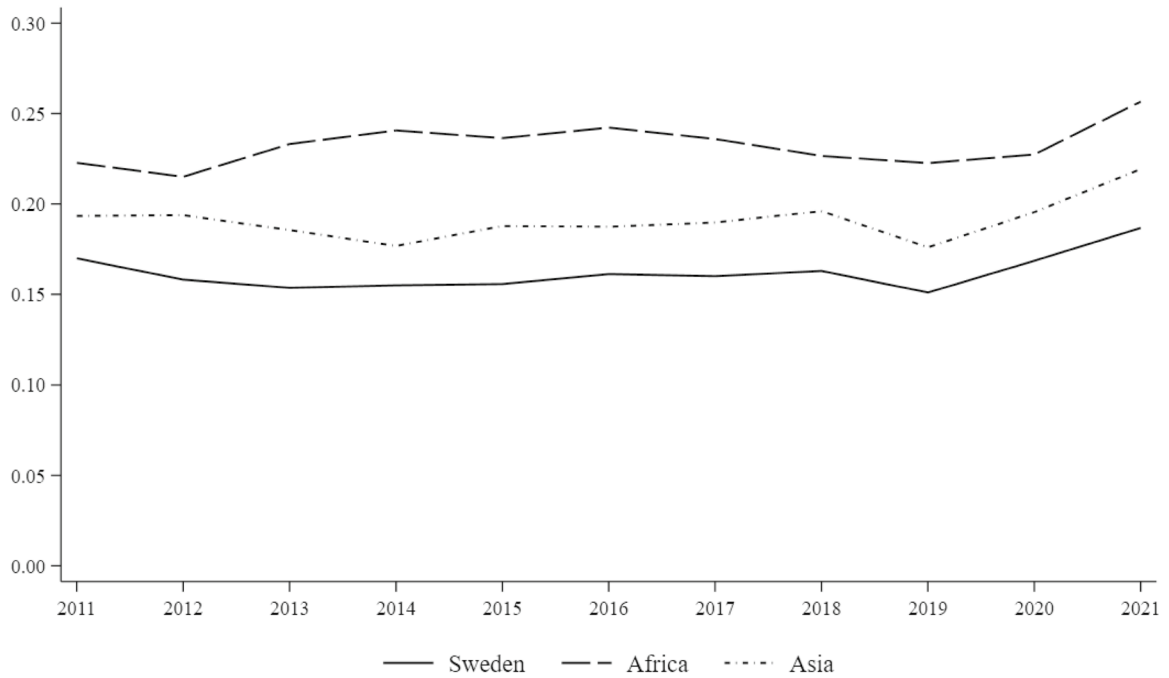
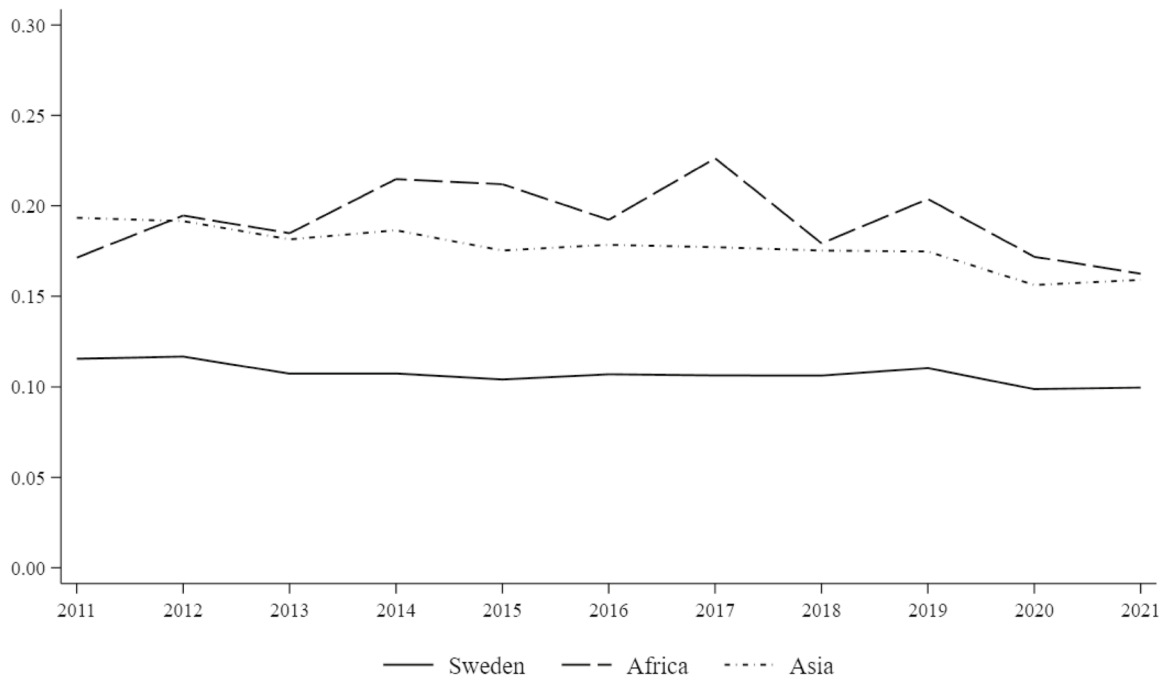


Fig. 2 Probability of entry into self-employment, by region of birth and type of business

## a) Unincorporated

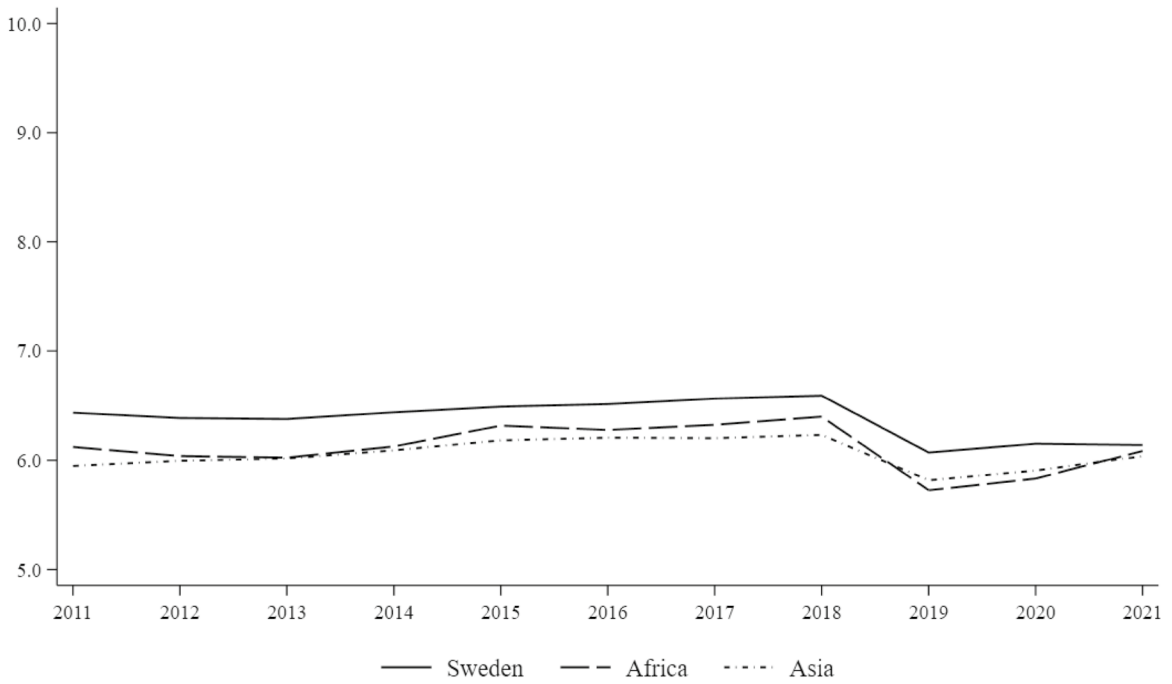


## b) Incorporated

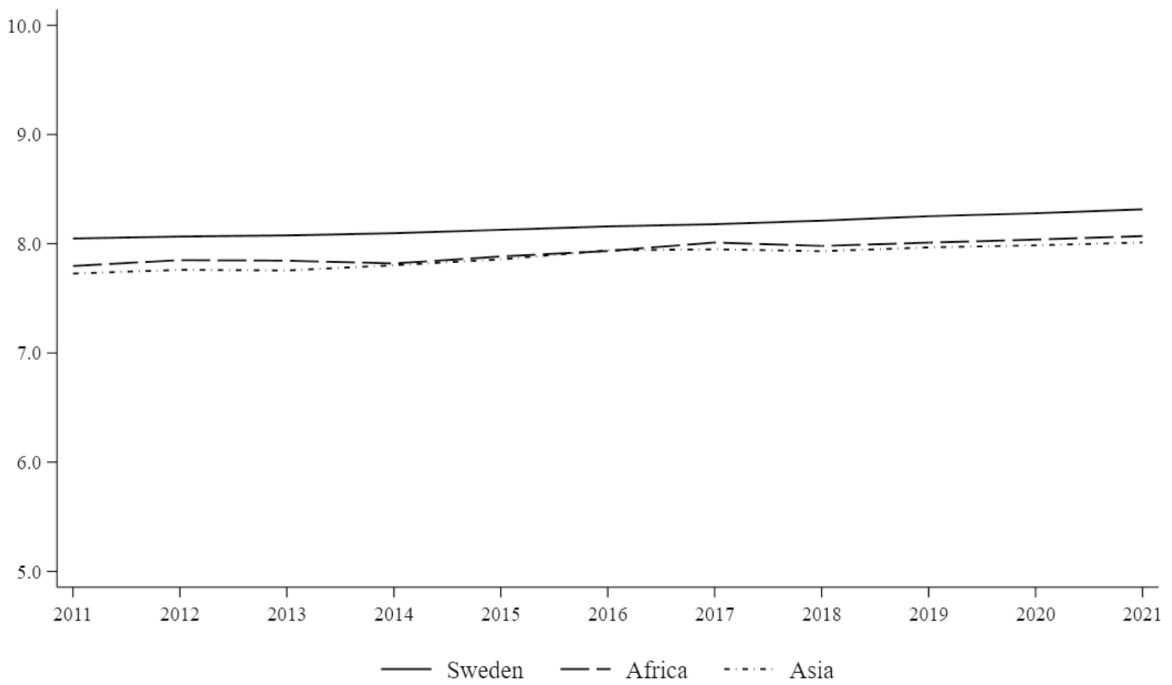


**Fig. 3** Probability of exit from self-employment, by region of birth and type of business

a) Unincorporated



b) Incorporated



**Fig. 4** Business earnings of the self-employed (100 SEK, in logs), by region of birth and type of business

for those from Africa and significant only for Asians with incorporated firms (0.0156). Both females and males of African and Asian origin earn less than native females and males, respectively, as seen in Table 15. For unincorporated business owners, the within-gender earning gap relative to natives for females is substantial, 51% for African-born and 40% for Asian-born, which is also considerably larger than the corresponding gaps for males (35% and 28%, respectively). However, incorporated firms exhibit smaller earnings gaps depending on the region of origin. This is most evident for females, for whom the gap shrinks to 14% for African-born and to 15% for those from Asia. Moreover, these gaps are smaller than the corresponding gaps for males with incorporated firms (24% and 21%, respectively). To summarize, it is mainly in unincorporated firms that female self-employed from Africa and Asia are in a vulnerable position vis-à-vis Swedish-born, in terms of business earnings. Exits are relatively more likely, though, for African- and Asian-born females in incorporated businesses.

## 5 Conclusions

We have examined the probability of self-employment, the probability of entry into and exit from this state, and earnings of the self-employed, for different cohorts of immigrants from Africa and Asia and for different types of businesses, unincorporated and incorporated firms, and by gender. Our finding that immigrants have lower self-employment earnings and higher exit rates from self-employment than natives is in line with previous research. Other studies have documented that immigrants encounter several obstacles in their self-employment activities, such as limited knowledge regarding markets, less access to financial capital than natives have, and discrimination from customers, banks, and suppliers. Financial capital is crucial both for starting up a business and for its survival, which should be taken into account when designing policies intended to improve self-employment prospects for immigrants.

It turns out that the period in which the immigrants arrived in Sweden and the type of business they are engaged in have important implications for outcomes in self-employment. In most cases, outcomes are more favorable for the earliest of the three cohorts we study, those who came to Sweden up to the turn of the millennium, and less so for the latest arrivals during

the turbulent decade 2011–2021, which witnessed a large influx of refugees and a COVID-19 pandemic. This is especially true for business earnings.

An examination of outcomes by organizational form reveals that immigrants in incorporated self-employment who arrived during 2011–2021 fared less badly relative to earlier cohorts in terms of business earnings than their counterparts in unincorporated businesses. The results concerning exits from self-employment in this respect are mixed; while exits were higher among the most recent African and Asian immigrants in incorporated self-employment, relative to those who arrived up to 2000, they were comparatively lower in the corresponding groups of unincorporated business owners. Moreover, a separate analysis of self-employed who change organizational form from unincorporated to incorporated reveals that the switch is not associated with catching up on business earnings for Asian- and African-born relative to self-employed of Swedish origin.

There are a number of limitations associated with our econometric approaches. In the estimations exploring to what extent the period of immigration matters for outcomes, we cannot distinguish between a pure cohort effect and the impact of the specific and rather extreme conditions that characterized the turbulent decade. Adverse labor market conditions during the period of immigration may have long-term consequences, making extrapolations from experiences of earlier cohorts highly uncertain. Another shortcoming is that the choice of corporate form is not random and likely to be influenced by many factors, such as personal motivation and ambitions to expand one's business. This means that we are not able to determine to what extent the observed resilience among the incorporated self-employed is explained by positive selection into this type of self-employment or by incorporation in itself. Even though our results regarding corporate form cannot be interpreted in causal terms, they nevertheless show that *switching* from unincorporated to incorporated form is not associated with catching up on business earnings for immigrant self-employed relative to Swedish-born. This conclusion applies to the short term, up to 3 years after the switch, and the earnings gap could shrink in the longer term. We need to learn more about the mechanisms behind the choice of organizational form among self-employed immigrants. This is left for future research. Finally,

it should be noted that we do not perform event analyses of the refugee supply shock or the COVID-19 pandemic, implying that causal inferences regarding their effects cannot be drawn.

Our findings highlight that self-employed of African and Asian origin are vulnerable groups, with higher exit rates and lower business earnings than their Swedish-born counterparts, although disparities along these dimensions tend to become smaller with time since immigration. Consequently, policies with the purpose of encouraging immigrants to

start up a business are no panacea for the lack of labor market integration. While such measures may remove immigrants from the ranks of the unemployed in the short run, their long-term prospects do not necessarily improve. For instance, it is quite possible that they eventually return to unemployment. Keeping this in mind, it is still important to eliminate undue obstacles to both self-employment and wage employment among immigrants, of which discrimination in capital and labor markets are notable examples.

## Appendix

**Table 13** Probability of entry to self-employment, by corporate form and gender

Controls include age, age squared, and dummies for education, marital status, the presence of children in the household, and county of residence. Robust standard errors, clustered at the individual level, in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ ,  
\*\*\*  $p < 0.001$

	(1) Uninc. female	(2) Uninc. male	(3) Inc. female	(4) Inc. male
Africa	-0.0026*** (0.0001)	-0.0006*** (0.0001)	-0.0018*** (0.0000)	-0.0055*** (0.0001)
Asia	0.0017*** (0.0001)	0.0052*** (0.0001)	-0.0008*** (0.0000)	-0.0024*** (0.0001)
Constant	-0.0095*** (0.0002)	-0.0062*** (0.0002)	-0.0063*** (0.0001)	-0.0191*** (0.0002)
Number of obs	21,800,301	22,601,308	21,965,348	22,380,840
Mean of dep. var	0.0056	0.0069	0.0024	0.0066
$R^2$ (adj.)	0.0004	0.0007	0.0007	0.0017
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Table 14** Probability of exit from self-employment, by corporate form and gender

Controls include age, age squared and dummies for education, marital status, the presence of children in the household, county of residence and industry. Robust standard errors, clustered at the individual level, in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ ,  
\*\*\*  $p < 0.001$

	(1) Uninc. female	(2) Uninc. male	(3) Inc. female	(4) Inc. male
Africa	0.0048 (0.0048)	-0.0049* (0.0029)	0.0101 (0.0088)	0.0155*** (0.0052)
Asia	0.0001 (0.0016)	-0.0027** (0.0014)	0.0156*** (0.0027)	0.0100*** (0.0017)
Constant	0.1417*** (0.0088)	0.1674*** (0.0065)	0.1388*** (0.0145)	0.0792*** (0.0071)
Number of obs	644,042	961,991	343,337	1,150,708
Mean of dep. var	0.1607	0.1370	0.1084	0.0941
$R^2$ (adj.)	0.1186	0.1473	0.0502	0.0405
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Table 15** Log business earnings (100 SEK), by corporate form and gender

	(1) Uninc. female	(2) Uninc. male	(3) Inc. female	(4) Inc. male
Africa	-0.7125*** (0.0600)	-0.4338*** (0.0303)	-0.1509*** (0.0336)	-0.2762*** (0.0182)
Asia	-0.5126*** (0.0194)	-0.3303*** (0.0153)	-0.1621*** (0.0110)	-0.2358*** (0.0061)
Constant	2.1415*** (0.0992)	3.4926*** (0.0731)	5.5224*** (0.0608)	6.4213*** (0.0280)
Number of obs	540,516	830,207	306,107	1,042,457
Mean of dep. var	6.0450	6.5310	8.0104	8.1962
R <sup>2</sup> (adj.)	0.0671	0.1020	0.1092	0.0904
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Controls include age, age squared, and dummies for education, marital status, the presence of children in the household, county of residence, and industry. Robust standard errors, clustered at the individual level, in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ ,

\*\*\*  $p < 0.001$

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**Data availability** We use Swedish register data on firms and workers. The data, including data on individuals, are handled via Statistics Sweden (MONA). The Swedish Secrecy Act, which we have to follow, does not allow us to post the data for everyone to use.

**Declarations**

**Ethical approval** The research in this paper is in accordance with the Swedish Research Council's ethical guidelines. All the data in the project have been approved by the Swedish Ethical Review Board for the Stockholm area.

**Conflict of interest** The authors declare no conflict of interests.

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