The Long-Term Persistence of Gender Gaps in Regional Entrepreneurship: The case of Poland

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Abstract

In this paper, we study determinants of gender differences in regional entrepreneurial activities. Our particular focus is on the historical level of female and male entrepreneurship in a region and its role in explaining the contemporary gender gaps in regional entrepreneurship. We combine both literatures on gender differences in entrepreneurship and on long-term persistence of regional entrepreneurship to explain the contemporary gender differences in regional entrepreneurship activities. Our empirical analysis is based on data from Poland that offers a unique case for our analysis due to the fact that in the past regions constituting contemporary Poland were under the rule of the Austro-Hungarian, German, and Russian powers. Poland was also one of the first European countries to allow women to vote and to work in public administration, making it possible to observe historical female employment rates. The results show that the gaps for the self-employed with and without employees change dramatically over time. We confirmed the existence of very interesting patterns, including following male patterns of employers and solo patterns of women, which may have influenced women's transition from solo self-employment to hiring employees. We argue that policy measures to promote gender equality in entrepreneurship should have a regional focus and consider specific historical contingencies of a region.

Keywords: entrepreneurship, regions, gender, gender gap, persistence, Poland

JEL classification: J16, N94, L26

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1. Introduction

Entrepreneurship is widely recognized as a vital contributor to economic growth, job creation, and innovation (Acs et al., 2009; Fritsch, 2011; Acs et al., 2012). Women entrepreneurs make a significant contribution to this development (Brush et al., 2006), but gender gaps in entrepreneurship worldwide are still very pronounced (GEM 2022), particularly for growth-oriented entrepreneurship (Guzman and Kacperczyk, 2019). Women still face numerous barriers to entrepreneurship, including a lack of financial capital, insufficient skills and experiences that are relevant for setting up a business venture, limited social capital, as women seem to rely more on strong rather than on weak social ties (Koellinger et al., 2013; Klyver and Grant, 2010), and lack of female role models of entrepreneurship (Markussen and Roed, 2017). In addition, differences in motivations for becoming self-employed (Verheul et al., 2012) and personality characteristics (Caliendo et al., 2014) may explain the pronounced gender gap in entrepreneurship.

In this paper, we aim at filling in an important research gap in entrepreneurship literature that primarily focused on individual-level determinants of gender gaps in entrepreneurship while largely ignoring the contextual factors (de Bruin et al., 2007). This bias is reflected in policy measures aimed at promoting female entrepreneurship that are often region-blind and do not consider the role of local contextual factors in the observed gender gaps in entrepreneurship. For instance, a systematic literature review of women's entrepreneurship policy research by Foss et al. (2019) has revealed that policy implications from this research are 'mostly vague, conservative, and center on identifying skills gaps in women entrepreneurs.' Evidence on the role of regional context in gender gaps in entrepreneurship is rather scarce, and the focus is often put on cross-country differences that can be attributed, for instance, to the level of economic development (e.g., van der Zwan et al., 2012) or culture (Mueller, 2004). This represents a clear research gap considering recent developments in entrepreneurship literature that has highlighted the crucial role of regional factors within a country in promoting entrepreneurial activities (Fritsch and Storey, 2014). These factors may include, for instance, geographical location, regional socio-economic conditions, regional industrial structure, but also the so-called regional entrepreneurship culture, broadly defined as the pro-entrepreneurial mindset of

local population, and specific historical contingencies that may lead to long-term persistence of regional entrepreneurship (Fritsch and Wyrwich, 2023; Fritsch et al., 2019).

More specifically, we aim at providing answers to the following research questions: Are gender differences in different types of entrepreneurship (with and without paid employees) region-specific? What are the determinants of gender differences in regional levels of entrepreneurship? Do gender differences in regional entrepreneurial activities persist over time and why?

Our contributions to the literature on entrepreneurship are as follows. First, we contribute to vast literature on gender differences in entrepreneurship that has mainly focused on the individual-level characteristics (de Bruin et al., 2007) by enriching it with insights from the emerging literature on entrepreneurial ecosystems that highlights also the importance of various regional aspects for fostering productive entrepreneurship (e.g., Stam and van de Ven, 2021). By applying an ecosystems perspective to study gender differences in entrepreneurship, we shed more light on the important role of contextual factors for promoting female entrepreneurship. Second, we contribute to recent literature on long-term persistence of regional entrepreneurial activities (see Fritsch and Wyrwich, 2023, for an overview) that shows that regions with a historically high level of entrepreneurship are more likely to exhibit higher levels of entrepreneurship nowadays, even after a series of shock-like effects including war destructions and institutional change. We contribute to this literature by exploring the long-term persistence of different types of entrepreneurship by males and females, with and without employees.

In the empirical analysis, our focus is on Poland, a country with a distinctive historical legacy of being ruled by Austro-Hungarian, German, and Russian powers, which has left a distinctive imprint on the corresponding regions that nowadays constitute contemporary Poland. Another characteristic that makes the case of Poland particularly well-suited for our analysis is the fact that Poland was among the first European nations to grant electoral rights to women in 1918, followed by the possibility of employment in public occupations. Thus, we can use historical, gender-disaggregated employment data, allowing for a relatively long period under analysis. We draw upon historical employment data disaggregated by gender from 1921 and 1931 and combine it with the contemporary

data from 2011, providing an extensive period for analysis. By utilizing this historical dataset, we are able to gain insights into the long-term persistence of gender differences in entrepreneurship in Poland, providing a more comprehensive understanding of the determinants of regional entrepreneurship over time. The focus on Poland is advantageous also because literature on female entrepreneurship is dominated by geographical focus on the 'big three' regions, i.e. North America, UK and Australia (Henry et al., 2016). Poland is a post-socialist economy that has experienced decades of entrepreneurship-hostile socialist regime, while female employment was actively promoted by the state, which makes it a particularly interesting case for the study of persistence of gender differences in entrepreneurship.

Our findings suggest that the gaps for the self-employed with and without employees change dramatically over time. We confirmed the existence of very interesting patterns, including following male patterns of employers and solo patterns of women, which may have influenced women's transition from solo self-employment to hiring employees. We also confirmed that higher levels of education in the past are associated with a larger gender gap in 2011.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and the case of Poland. Section 3 introduces data sources and econometric methods. Section 4 discusses the results of empirical analysis. Section 5 discusses implications of results, limitations of the analysis, and concludes.

2. Theory and previous research

2.1. The role of the regional context in gender differences in entrepreneurship

Literature on the role of regional context in the level of regional entrepreneurial activities highlights several factors that help explain cross-regional differences in entrepreneurship rates (see Parker, 2018, 231, for an overview of empirical studies). For instance, entrepreneurship rates tend to be higher in urban rather than rural regions, which may be explained by a closer proximity to customers and suppliers. Regions with higher shares of highly educated population tend to have higher entrepreneurship rates, which could be explained, on the one hand, by higher demand for products and services offered by start-

ups, and, on the other hand, by a high supply of highly qualified workforce that is demanded by (productive) start-ups. Regional industry structure appears to be correlated with regional start-up activity, which is likely to due to differences in entry barriers. Regions with a high share of small firms are also more likely to have a high entrepreneurship rate. An interesting and striking finding is that regional differences in entrepreneurship rates cannot be entirely explained by differences in regional conditions. Several studies found out that the unexplained variance in regional entrepreneurship rates is at least partly due to the regional entrepreneurship culture that is broadly defined as pro-entrepreneurial mindset of local population. In empirical studies, entrepreneurship culture was measured, for instance, by means of the Big Five dimensions of personality aggregated at the level of regions or pro-entrepreneurial attitudes of local population or using the regional start-up rate as a catch-all indicator of entrepreneurship culture. Entrepreneurship culture has often been mentioned as one of the main drivers of long-term persistence of regional entrepreneurship.

Why should one expect regional factors to differentially impact the level of male and female entrepreneurship? First, there might be pronounced gender differences in the level of formal education. For instance, regions with a significantly higher share of highly educated male population might have higher levels of male, but not female entrepreneurship. Second, industry structure may differentially affect male and female entrepreneurship if there is a pronounced gender gap in industry-specific employment rates. For instance, if less women than men choose to work in the manufacturing sector, they will be less likely to accumulate industry-specific human capital necessary to set up a business in this sector. In addition, women have been found to be more risk averse than men, which may make them less likely to start businesses in regions where industry-specific entry barriers are relatively high, and endogenously created entrepreneurial opportunities involve high levels of risk and uncertainty. Third, gendered social norms and values may vary significantly across regions, which may prevent women in certain regions where such institutions are not gender-neutral but rather conservative from starting their own businesses. If the above-mentioned factors potentially affecting gender differences in regional entrepreneurship tend to persist over time (Wyrwich, 2018), we should observe also persistent gender gaps in regional entrepreneurship.

In the next section, we present the case of Poland, which provides a unique empirical setting for the analysis of our research questions.

2.2. The case of Poland

The case of Poland is interesting for the analysis of women's entrepreneurship because of three aspects. Firstly, in the 123 years before World War I, Poland was under the rule of three empires: Austria-Hungary, Prussia and Russia. Each of these powers had its own attitudes towards the social status of women and their participation in the labour market. This was reflected in different proportions of self-employed women, especially with employers in the former Prussian partition (see Figure 1). This legal and cultural legacy may therefore have left its mark on the gap between the proportions of entrepreneurship among men and women.

Secondly, after regaining independence in 1918, the Polish authorities struggled to make the four legal systems coherent (there was also the Polish system of the Kingdom of Poland) and to eliminate discriminatory legal provisions against women. All the systems deprived women of political rights, the possibility to take up positions in the state administration and legal capacity. Formal equality of rights between men and women had already been achieved in 1918, but in practice inequalities persisted. These included the poor education of girls resulting from impeded access to education, which prevented them from holding public positions. Although women and men had equal rights in the conduct of commercial activities, discrimination against married women through unfavourable inheritance laws and liability for company debts resulted in significant restrictions on their business activities. In addition, women's wages were still half those of men, despite Poland's ratification of the Treaty of Versailles in 1919.

Thirdly, after the Second World War and the communist takeover, there was a significant economic activation of women (Fidelis, 2004, despite the family and maternal roles of women being pushed at the end of this period, see Fidelis, 2010; pp. 240-245). Between 1950 and 1989, employment increased by 252%, which meant that while women only made up 30% of the workforce in 1950, by 1989 they already made up over 45% (Fidelis, 2010, p. 239). It is symptomatic that this level was maintained until at least 2011.

3. Data and Methods

3.1. Data Sources

We use two data sources for historical regional data, which include the first two censuses of dwellings, population and occupation conducted on September 30, 1921, and on December 9th, 1931, respectively. Both censuses covered the entire Polish territory of that time, which included contemporary parts of Lithuania, Belarus and Ukraine but excluded the western part of contemporary Poland. This is the reason why we were unable to include all contemporary Polish regions in the analysis. Our contemporary data for 2011 come from the census conducted from the 1st of April to 30th of June 2011.

Both historical and contemporary censuses are available on the county and industry level, albeit in different industry classification and spatial borders of counties. Thus, the comparison between 1931 and 2011 is possible after meticulous adjustment of particular industries and sectors of the economy, as well as boundaries of counties and regions that have significantly changed over time. All historical data has been adjusted to contemporary data.

All censuses provide gender-disaggregated information on the number of employers, solo self-employed, white and blue collars and helping family members. Respective data on population density, the proportion of agriculture, unemployment rates, religious affiliation of the regional population, literacy, education levels are also provided for both genders separately. Thus, we were able to construct our main dependent variables that include contemporary (as observed in 2011) male and female self-employment rates (with and without employees) as well as the gender gap in self-employment rates (with and without employees). Our main explanatory variables are the historical regional self-employment rates (with and without employees) that we measure separately for both genders as well as the gender gap in regional self-employment rates (with and without employees). The gender gap is measured as the ratio between the percentage of self-employed women and men (with and without employees) expressed as a percentage.

In addition, we use a wide set of contemporary control variables that might affect the current levels of regional entrepreneurship activity (see Table in the Appendix for overview of variables used in the empirical analysis), e.g., economic activity, household characteristics, marital status, level of education, main source of livelihood by gender.

3.2. Empirical Methods

For now, we have used the Ordinal Least Squares method in the regressions. Ultimately, we will test and use spatial models. Following Elhorst (2014), we can focus on three specifications according to their fit: (1) Spatial Durbin Model (SDM):

$$\mathbf{y} = \mathbf{X}\beta + \mathbf{W}\mathbf{X}\gamma + \rho\mathbf{W}\mathbf{y} + \varepsilon$$

(2) Spatial Durbin Error Model (SDEM):

$$\mathbf{y} = \mathbf{X}\beta + \mathbf{W}\mathbf{X}\gamma + \mathbf{u}, \qquad \mathbf{u} = \lambda\mathbf{M}\mathbf{u}$$

(3) General Nested Specification (GNS):

$$\mathbf{y} = \mathbf{X}\beta + \mathbf{W}\mathbf{X}\gamma + \rho\mathbf{W}\mathbf{y} + \mathbf{u}, \qquad \mathbf{u} = \lambda\mathbf{M}\mathbf{u}$$

where $\mathbf{y}$ is the vector of response variable, i.e., self-employment rates in 2011 for women and men separately, and gender gap in self-employment rates (with and without employees), $\mathbf{X}$ is a vector of predictors covering both historical and contemporary specification, and $\mathbf{W}$ is the queen contiguity matrix of counties.

4. Results

4.1. Gender differences in regional entrepreneurial activities

Figure 1 shows the percentage of self-employment in 1931 by gender and with employees. It can clearly be seen that in the former Austro-Hungarian partition the rates are rather the lowest in all specifications (women and men, with and without employees). In the former Prussian partition, on the other hand, the indicators are the highest, especially for employers. We should also note that the sub-Warsaw counties show the highest rates of self-employment without employees. Also, the highest rates of self-employment are concentrated in cities (except perhaps for solo self-employed men).

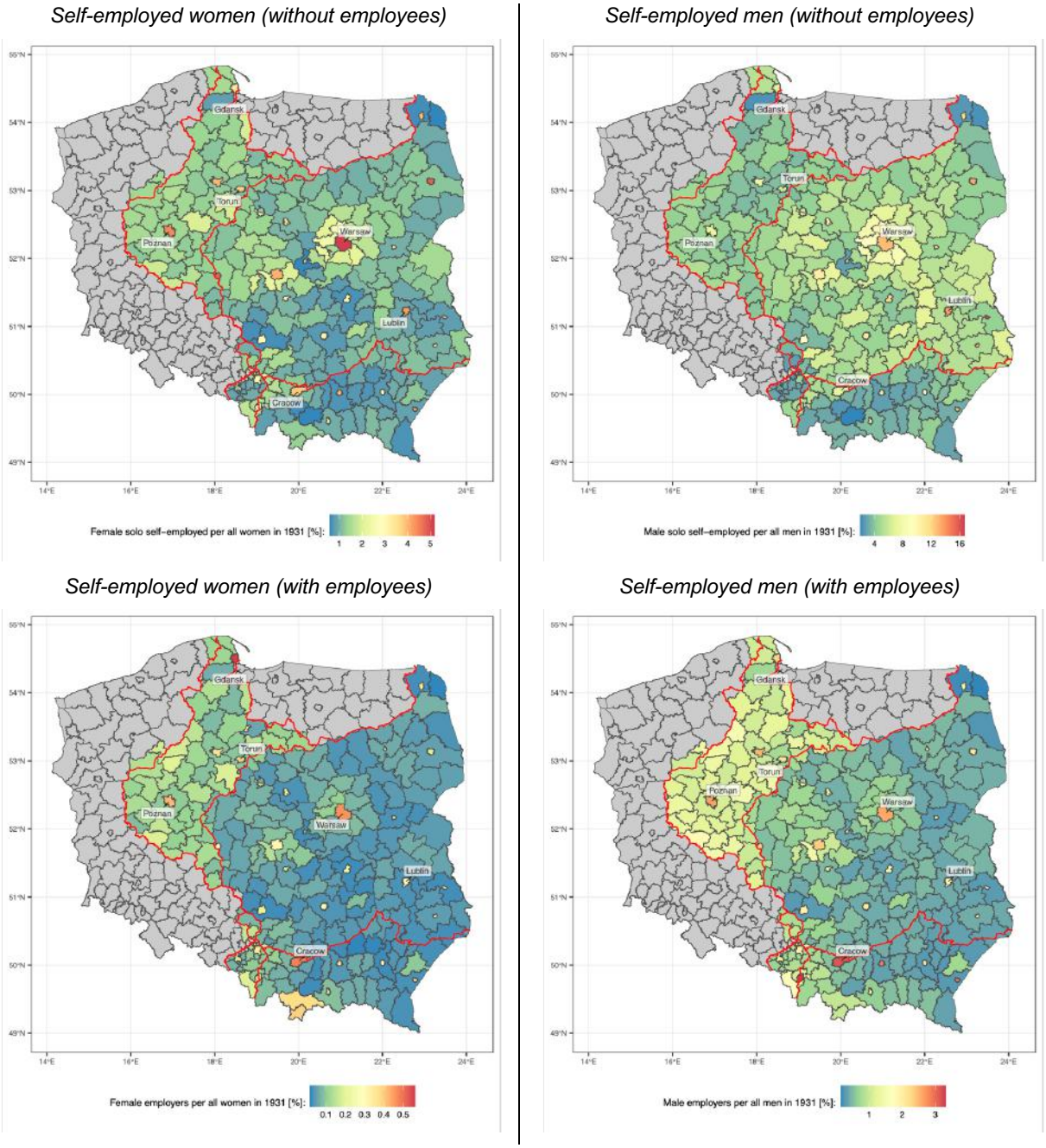


Figure 1: The proportion of self-employment women and men (with and without employees) in 1931

Notes: Dark grey areas indicate missing values. The red lines mark the partitions of Poland before the First World War.

Figure 2 shows the same specifications as Figure 1, albeit for the year 2011 (which also includes the part of Poland recovered after World War II). No clear pattern of partition heritage can be seen here, however, we can note that the former Russian partition might indicate higher rates of self-employment without employees and lower for employers.

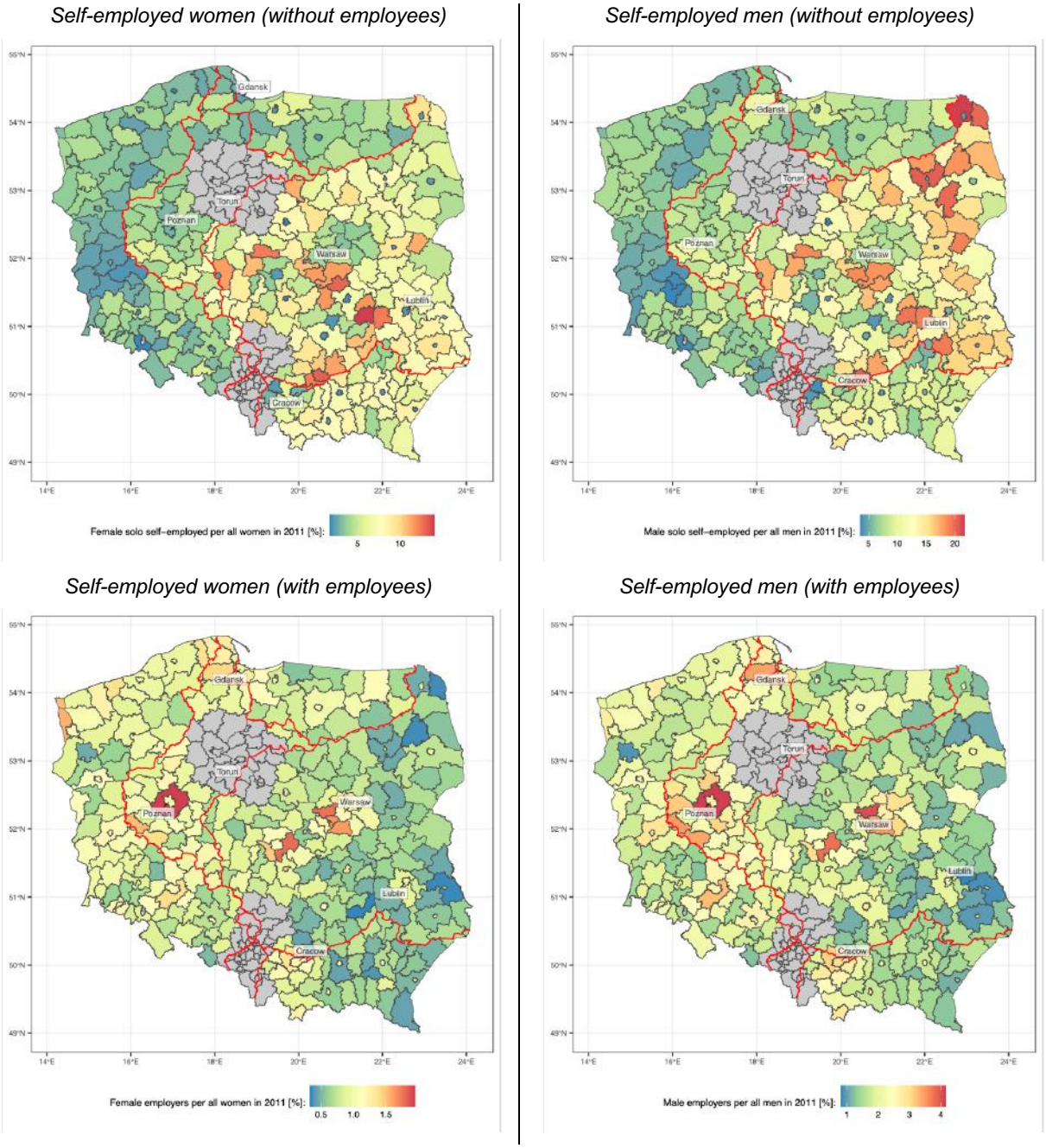


Figure 2: The proportion of self-employment women and men (with and without employees) in 2011

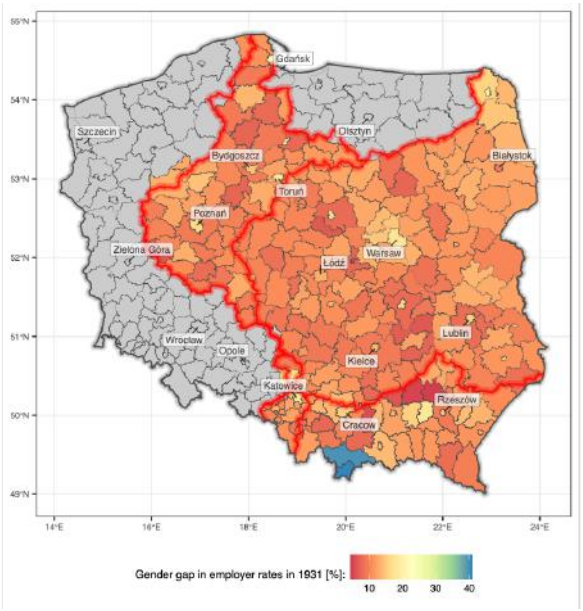
Notes: Dark grey areas indicate missing values. The red lines mark the partitions of Poland before the First World War.

4.2. Gender gap in regional entrepreneurial activities

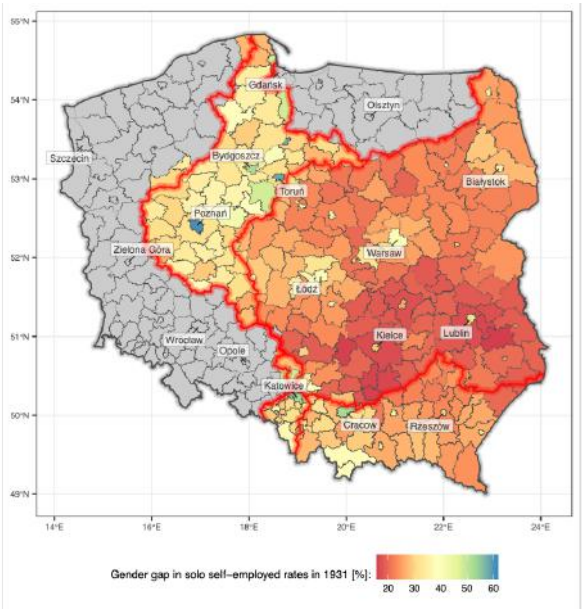
Figure 3 shows the gender gap in regional entrepreneurship (the ratio of female to male regional entrepreneurship rates) in different periods (1931 and 2011). We can easily see the massive gender gap in 1931 for both employers and the self-employed. In the case of

employers in many counties, the gap is even less than 10 per cent, meaning that the male employer rate can be ten times higher than the female rate. In the Tatra Mountains (two blue counties in the south), the gap is the smallest (around 40%). For the self-employed without employees, the former Prussian partition shows the smallest gap (about 40%), and in Poznan it is as high as 80%. The same is true for the Silesian Voivodeship (in the south). This pattern clearly indicates the cultural heritage of the German tradition.

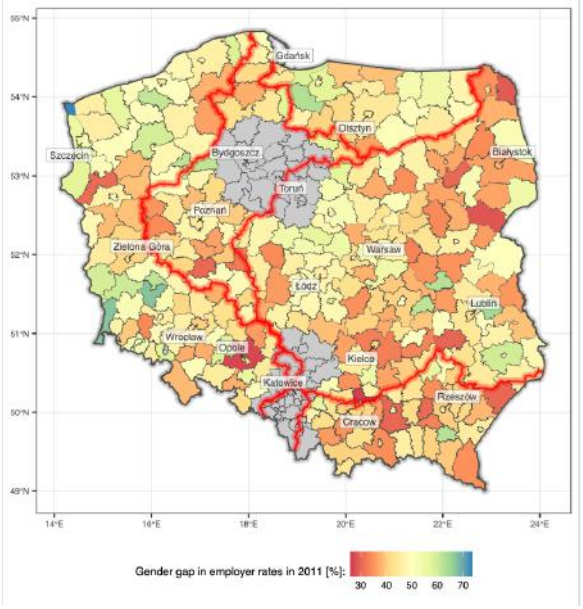
1931 Employer rates



1931 Solo self-employed rates



2011 Employer rates



2011 Solo self-employed rates

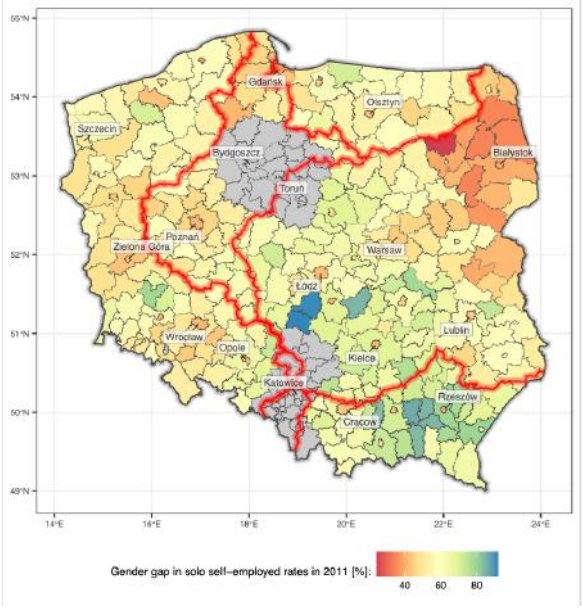


Figure 3: Gender gaps in regional self-employment rates (with and without employees) in 1931 and 2011

Notes: Dark grey areas indicate missing values. The red lines mark the partitions of Poland before the First World War.

In 2011, the patterns inherited from the Prussian partition are disappearing, as we observe that the gender gap has narrowed significantly across the country, especially for the self-employed without employees (however, there is still a massive gender gap in the north-eastern part of Poland (Białystok area). The lowest gender gap can currently be observed in central Poland and in the south of the country (former Austrian partition). Interestingly, the gender gap among employers does not show a regular pattern.

To observe potential patterns, we should use bivariate choropleth maps (see Figure 4), which can combine the two gaps in solo self-employment and employers into a single map. As the observations on both axes are assigned according to quantiles, we may observe how large the relative gender gaps in solo self-employment (x-axis) and employers (y-axis) are in each county.

Figure 4 clearly shows the patterns of gender gaps in 1931 and 2011. The largest gaps in both types of entrepreneurship were in 1931 in central Poland and around Lublin (dark purple areas). Interestingly, these areas became the least unequal in 2011 in both types of entrepreneurship (light grey areas) or at least in terms of solo self-employment (light pink or pink areas). In 1931, the north-eastern part of Poland in the Russian partition had the smallest gap in employer indicators (green areas), perhaps because the share of employers of both sexes was relatively lowest there (see Figure 1). Spectacularly, in 2011 these areas obtained the largest gap in both types of entrepreneurship (dark purple areas).

We may indicate some interesting patterns that changed over time: while in 1931 former German partition exhibited relatively lower gap in solo self-employment, central Poland had the largest gaps in both types of entrepreneurship, while eastern part indicated lower gap in employer rates, in 2011 western part had lower gap in employer rates, central and southern part had lower gap in solo self-employment or both, and eastern part had the largest gaps in both types. While in 1931 cities had the lowest gaps in both types of entrepreneurship (except for Białystok), in 2011 all of them (except for Szczecin) had the

largest gaps in solo self-employment and middle size gaps in employer rates (except for Białystok and Wrocław that exhibited the largest gaps in both types).

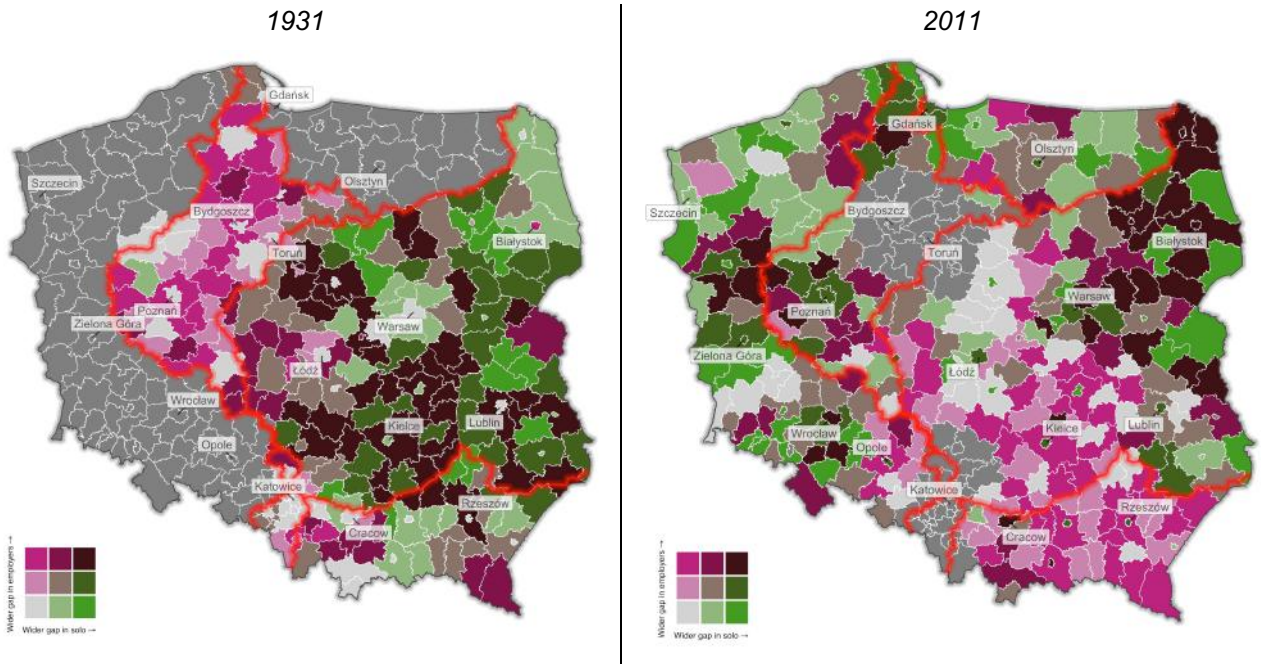


Figure 4: Bivariate choropleth maps of gender gaps in regional self-employment rates in 1931 and 2011

Notes: Dark grey areas indicate missing values. The red lines mark the partitions of Poland before the First World War.

4.3. What explains gender differences in regional entrepreneurship rates?

To explain gender differences in regional entrepreneurship rates, we should apply different regression models. Table 1 shows the regression models explaining the gaps in solo self-employment in 2011. Interestingly, the gap in 2011 is wider (the rate is lower) when there is a larger share of women in solo self-employment (model 1) and women employers in 1931 (model 3). This is difficult to explain, as entrepreneurial women should be role models for other women, unless solo self-employed women have developed businesses and become employers thanks to these models. While men's self-employment is not relevant, other characteristics of men such as labour force participation rates and manufacturing employment are important. While higher male labour force participation rates induce a wider gap in 2011, male industrial participation coincides with a lower

contemporary gap. Could it be the patterns of men in manufacturing that influence women to be more entrepreneurial? Or is it the more industrialised male-dominated areas that create an entrepreneurial culture for both sexes?

The control variables are not significant in any model except for the level of higher education in the population, which the higher it is, the wider the gender gap.

Table 1: Gap in solo self-employment rate in 2011 regressed on the predictors of solo female (1), solo male (2), employer female (3) and employer male (4) characteristics of 1931 using the OLS method.

	Dependent variable: GAP_SOLO_2011			
	(1)	(2)	(3)	(4)
SOLO_F_1931	–4.704**			
	(1.826)			
SOLO_M_1931		–0.677		
		(0.522)		
EMPLOYER_F_1931			–35.108*	
			(19.245)	
EMPLOYER_M_1931				–3.798
				(3.719)
PRUS1918	–1.730	4.444	–0.626	6.948*
	(3.615)	(3.654)	(3.653)	(3.738)
AUS1918	11.217***	15.967***	11.707***	16.833***
	(2.980)	(2.676)	(3.011)	(2.477)
ACTIV_RATE_F_1931	0.138		0.391	
	(0.251)		(0.267)	
MAN_SHARE_F_1931	–0.024		–0.078	
	(0.107)		(0.106)	
ACTIV_RATE_M_1931		–0.868**		–0.665*
		(0.407)		(0.400)
MAN_SHARE_M_1931		0.360***		0.393***
		(0.110)		(0.112)
LITERACY_1931	–0.043	–0.117	–0.061	–0.107
	(0.087)	(0.084)	(0.087)	(0.086)
HIGH_EDU_SHARE_1921	–6.323**	–5.297**	–6.266**	–4.081
	(2.496)	(2.280)	(2.819)	(2.958)
POP_DENS_1931	0.008*	0.005	0.005	0.004
	(0.005)	(0.005)	(0.004)	(0.004)
PERS_PER_FLAT_1931	–0.259	–0.022	–0.248	0.005
	(0.396)	(0.391)	(0.421)	(0.405)
WOMEN_PER_MEN_1931	–0.124	–0.026	–0.349	0.001
	(0.332)	(0.307)	(0.326)	(0.318)
ALLOWANCES_PC_1931	0.264	0.213	0.276	0.235
	(0.296)	(0.300)	(0.299)	(0.300)
Constant	78.871**	100.386**	96.465***	81.349*
	(36.074)	(38.951)	(35.481)	(42.159)
Observations	197	197	197	197
R2	0.352	0.376	0.341	0.374
Adjusted R2	0.313	0.339	0.301	0.336
Residual Std. Error (df = 185)	10.067	9.881	10.155	9.898
F Statistic (df = 11; 185)	9.133***	10.122***	8.686***	10.029***

Note: *p**p***p<0.01

Table 2 shows the same specification of predictors, but for the employer rate gap in 2011. Indeed, a very weak pattern is evident here (very small R^2). Interestingly, the employer rates for men in 1931 diminish the contemporary gap, and even more interestingly, both indicators of solo self-employment (for men and women) also diminish the gap. This is therefore an explanation for the negative correlation of female self-employment rates and the self-employment gap seen in Table 1. Clearly female solo self-employment has been a model for all women who have started their own businesses and even started employing people over decades.

Table 2: Gap in employer rate in 2011 regressed on the predictors of solo female (1), solo male (2), employer female (3) and employer male (4) characteristics of 1931 using the OLS method.

	Dependent variable: GAP_EMPLOYER_2011			
	(1)	(2)	(3)	(4)
EMPLOYER_F_1931	23.151			
	(14.027)			
EMPLOYER_M_1931		7.696***		
		(2.733)		
SOLO_F_1931			2.912**	
			(1.335)	
SOLO_M_1931				0.916**
				(0.387)
PRUS1918	2.017	0.741	2.723	4.974*
	(2.663)	(2.747)	(2.644)	(2.706)
AUS1918	0.484	1.649	0.733	2.270
	(2.194)	(1.820)	(2.179)	(1.982)
ACTIV_RATE_F_1931	-0.087		0.075	
	(0.194)		(0.184)	
MAN_SHARE_F_1931	0.065		0.032	
	(0.077)		(0.078)	
ACTIV_RATE_M_1931		-0.464		-0.142
		(0.294)		(0.301)
MAN_SHARE_M_1931		0.062		0.119
		(0.082)		(0.082)
LITERACY_1931	-0.036	-0.060	-0.046	-0.031
	(0.064)	(0.064)	(0.064)	(0.062)
HIGH_EDU_SHARE_1921	-0.789	-2.159	-0.623	0.849
	(2.055)	(2.174)	(1.826)	(1.689)
POP_DENS_1931	0.001	0.0002	-0.001	0.0004
	(0.003)	(0.003)	(0.003)	(0.003)
PERS_PER_FLAT_1931	-0.421	-0.369	-0.401	-0.240
	(0.307)	(0.298)	(0.289)	(0.290)
WOMEN_PER_MEN_1931	-0.340	-0.531**	-0.481**	-0.426*
	(0.237)	(0.234)	(0.243)	(0.227)
ALLOWANCES_PC_1931	0.067	0.136	0.072	0.113

	(0.218)	(0.221)	(0.216)	(0.222)
Constant	81.625***	123.491***	92.372***	86.665***
	(25.861)	(30.980)	(26.380)	(28.846)
Observations	197	197	197	197
R2	0.051	0.084	0.061	0.073
Adjusted R2	-0.005	0.029	0.006	0.018
Residual Std. Error (df = 185)	7.401	7.273	7.362	7.317
F Statistic (df = 11; 185)	0.907	1.538	1.099	1.317
Note:		*p**p***p<0.01		

4.4. Persistence in gender differences in regional entrepreneurship rates over time

To be elaborated

5. Discussion and conclusions

To be elaborated

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Appendix

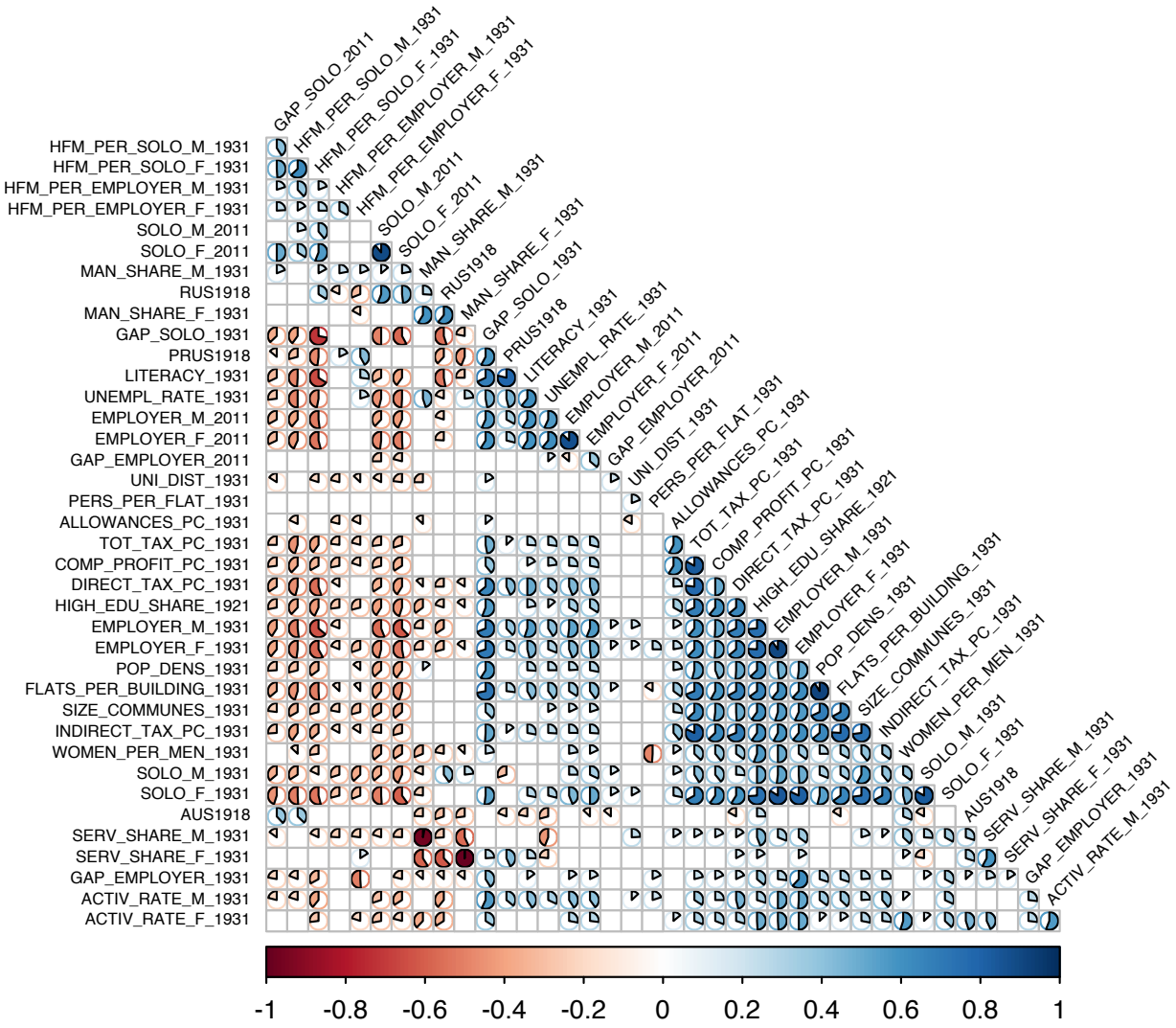

Figure 4: Correlation matrix