The Determinants of Entrepreneurship Gender Gaps: A Cross-Country Analysis [*]

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This paper uses aggregate data from the International Labor Organization and microeconomic data from the European Values Study to quantify gender gaps in entrepreneurship distinguishing between gender gaps in employership and in self-employment and study their main empirical determinants. Our sample of 40 countries consists of European countries but varies broadly in terms of institutional background since it includes several ex-Communist countries. In the aggregate data we observe a gender gap in employers of 59% and a gender gap in self-employment of 36%. These gaps have remained roughly constant in the 2000-2017 period, although there are wide differences in both their levels and evolution over time and across countries. Using the microeconomic data, we find that the incidence of entrepreneurship, employership, and self-employment among men is much larger than among women, consistent with the gaps estimated using aggregate data. Our regressions show that these gaps are still sizable even after controlling for a large set of control variables that include marital status, age, education, number of children, wealth, the participation of parents and spouse in entrepreneurship, values towards women, social capital, and prior unemployment. Our results indicate that social networks, in the form of parental and partner entrepreneurship, has the strongest positive correlation of selecting into entrepreneurial activity, relative to wage employment. However, men and women benefit from these networks in different ways in high income and ex-communist countries. The benefits of parental entrepreneurship only accrue to men in high-income countries, whereas in Ex-Communist countries, it is mostly women who were influenced by their parent's occupation. Educational attainment matters primarily for women in Ex-Communist countries but not in high-income countries. Lastly, respect for women's values only affects the incidence of entrepreneurship on women in high-income countries.

JEL classification: E2, J21, J24, O40
Keywords: gender gaps, entrepreneurship

1. Introduction

Most of the existing empirical work on the determinants of gender gaps in the labor market has focused on gaps in labor force participation. However, as pointed out in Cuberes and Teignier (2016), gender gaps in entrepreneurship are quite large, vary

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significantly across countries, and are associated with large output losses at the macroeconomic level.

In this paper we examine the main correlates of gender gaps in entrepreneurship, distinguishing between gaps in employers and self-employed, for a large set of countries. We do so using aggregate data from the International Labor Organization (ILO henceforth) and microeconomic data from the European Values Study Survey (EVS henceforth), a microeconomic survey that contains relevant information on different aspects of entrepreneurship and their potential determinants, among many other things. Throughout the paper we present results for our sample of 19 high-income and 21 Ex-Communist countries. As we explain below, this set of countries is markedly different than the rest of the sample in terms of income per capita, their type of institutions, and their view on women's rights. In some occasions we also present results for the richest countries in our sample.

We use the macro evidence to present differences in these gaps across countries and their evolution over time. However, since it is hard to use macro data to explain these patterns, in all the analysis that follows we focus on the microeconomic data. Our empirical model using micro data accounts for several factors that affect female entrepreneurship including individual characteristics (family background, education, income, among others) and individual's views on different socioeconomic variables (trust in their society, values towards women, among others). We choose these variables to explain gender gaps following the predictions of economic theory and of related empirical studies. We acknowledge the fact that many of these variables are endogenous and that it is a daunting task to find appropriate instrumental variables for them. Therefore, it is important to emphasize that, throughout the paper, our results should be interpreted as correlation but not causation. While this is an obvious drawback of the study, we believe that using microeconomic data to explain cross-country differences in entrepreneurship and some of their main correlates is an important step towards shedding light on understanding why entrepreneurship is a much less common occupation among women than men.

The rest of the paper is organized as follows. In Section 2 we take a first look at the aggregate data on gender gaps in entrepreneurship in our sample of countries and the sample of Ex-Communist countries. Section 3 reviews the literature on the determinants of entrepreneurship with special emphasis on papers that analyze differences between men and women. The empirical strategy of the paper is outlined in Section 4 while the micro data we use is described in Section 5. The empirical results of the study are discussed in Section 6. Finally, Section 7 concludes the paper.

2. A first look at the aggregate data

As in Cuberes and Teignier (2016), in this section we use labor market data from the ILO (KILM, 2016) to show some stylized facts about gender gaps in entrepreneurship in our sample of countries. We proxy the number of employers with the variable *employers*, and the number of self-employed with the variable *own account workers*. We then collect data on these two variables by gender and calculate the following gender gaps:

$$GG_{Emp} = 1 - \frac{\frac{Emp^f}{L^f}}{\frac{Emp^m}{L^f}}$$

and

$$GG_{Self} = 1 - \frac{\frac{Self^f}{L^f}}{\frac{Self^m}{L^f}}$$

where *Emp* is the number of employers, *Self* is the number of self-employed and *L* is the labor force participation. The superscripts *f* and *m* denote females and males, respectively. Naturally, in both cases, if the number of females and males in a given occupation (normalized by their labor force participation) is the same, the gender gap is zero and if there are no women in a given occupation, the gap is equal to one.[1]

We begin by calculating the average gender gaps in employership and self-employment in our pooled data for our sample of 40 countries during the period 2000-2017.[2,3] Table 1 shows that, on average, for every hundred male employers, there are only 41 female employers (an employers gender gap of 59%). The gap is much lower when one considers self-employment, where there are 64 self-employed women for every hundred self-employed men. Gaps in employership oscillate a lot, with minimum values of -10% and maximum as high as 90%. The variation is even larger for self-employment gaps, going from -40% to 74%.

[1] Normalizing by the labor force participation of men and female is a standard practice in the literature. See, for example, Cuberes and Teignier (2016).

[2] The countries are Albania, Armenia, Austria, Belarus, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, and Ukraine.

[3] Northern Ireland and Northern Cyprus is included in the EVS but we omit them here since they are not a country.

The second panel of Table 1 presents the corresponding figures for the 21 Ex-Communist countries in our sample,[4] which differ from the rest of the countries we analyze in three fundamental ways. First, their average level of development, as measured by their GDP per capita ($18,214) is significantly below that of the rest of countries in our sample ($41,331). Second, most of these countries belonged to the Soviet bloc for a long period of time and so it seems reasonable to assume that some of their institutions are still substantially different than those of the rest of the countries in our sample. We hypothesize that some of these institutions may still affect the role of women in the labor market. Third, variables related to women's rights typically display lower values in these countries than in the rest of the sample. Using data from the World Values Survey[5], we find that on a scale 1 to 3 (with 1 representing agreement with the statement and 3 representing disagreement with the statement), citizens of Ex-Communist countries significantly agree more on statements like *"If jobs are scarce, men should have more right to work than women."* or *"Men make better business executives than women."* The figures from Table 1 show that gender gaps in employership and self-employment in Ex-Communist countries are smaller than in high-income countries.

[4] These include: Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic Estonia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovakia, Slovenia, and Ukraine.
[5] http://www.worldvaluessurvey.org/wvs.jsp

Table 1: Summary Statistics of Macro Gender Gaps

	Mean	Standard Deviation	Minimum	Maximum
Panel A: Full sample				
Gaps in employership	58.58	13.28	-10.13	89.61
Gaps in self employment	35.82	20.22	-39.94	76.08
Panel B: Ex-Communist countries				
Gaps in employership	54.29	15.24	-10.13	87.92
Gaps in self employment	34.05	20.92	-39.94	75
Panel C: High-income countries				
Gaps in employership	63.32	8.51	10.33	89.61
Gaps in self employment	37.78	19.26	-39.13	76.08

Notes: Data source: ILO, All the figures are in percentages

One natural question to ask is to what extent these gaps correlate with a country's level of development. After all, economic theory (Becker and Lewis, 1973) tells us that gender gaps in female labor force participation tend to fall as countries become richer and this prediction has been confirmed in a number of studies.[6] Gender gaps in entrepreneurship (either employers or self-employed) may well behave differently than gender gaps in labor force participation, but it is interesting to explore how they correlate with economic development. We begin by classifying high-income countries in our sample using the World Bank Income Classification, which gives us a subsample of 19 countries.[7] The last

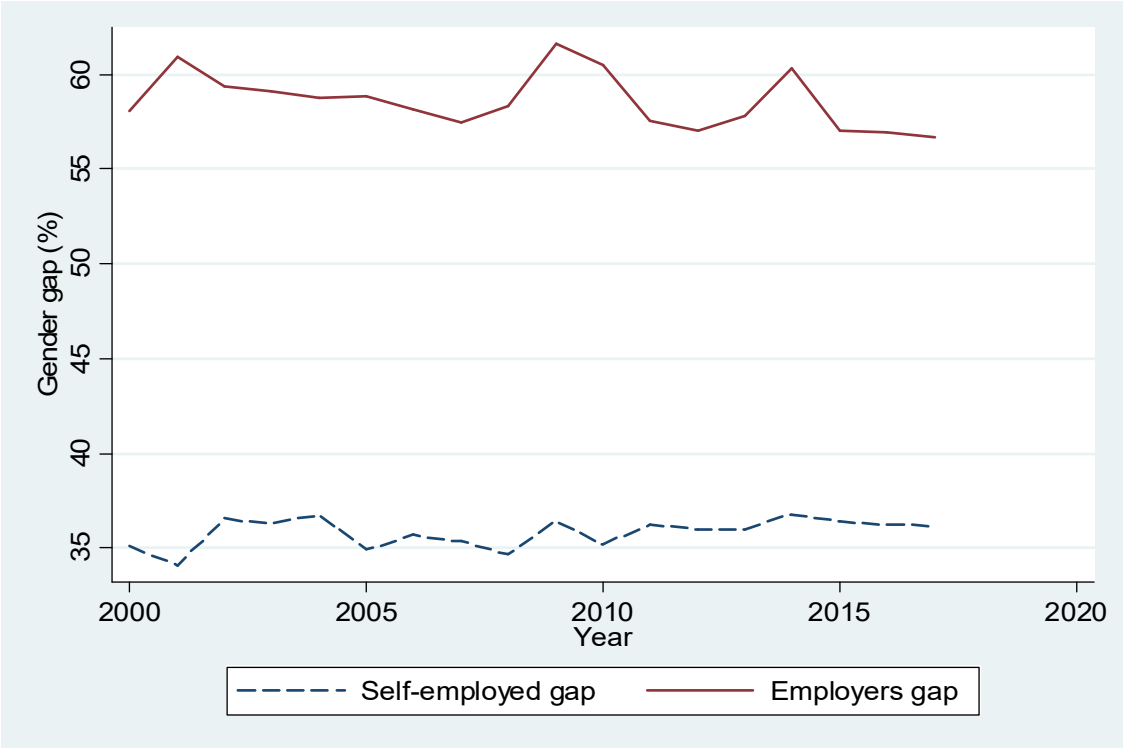
[6] See Cuberes and Teignier (2014) for a recent review of this literature.

[7] The World Bank classifies countries as high-income if they had a GNI per capita of $12,236 or more in 2008. The list of high-income countries in our sample are then Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland. We exclude from this group eight countries that are rich but are also Ex-Communist: Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia, and Slovenia. We choose to exclude these countries from the rich group to make the comparison between rich and Ex-Communist countries cleaner. None of our results are fundamentally affected by this choice. Also note that, as a result of this criterion, Turkey is excluded from the analysis since it is the only non-high-income country that is not Ex-Communist.

panel of Table 1 shows the average gender gaps for this group. Gender gaps in employers are substantially larger for the richer countries than for the Ex-communist group.[8] One possible explanation for this seemingly surprising result is that in lower income countries it is not uncommon for people to turn into entrepreneurship only when no other occupations are available. The literature has labeled these individuals *out-of-necessity* entrepreneurs and, although not much is known about gender differences within this group, the data show that the incidence of women among them is significantly higher in non-OECD countries (Poschke, 2013).[9]

Returning to our full sample of 40 countries, Figure 1 shows that neither the average employer gender gap nor the self-employed gender gap have changed much over time, and the former has dominated the latter by about 30 percentage points in this period.

Figure 1: Evolution of gender gaps over time

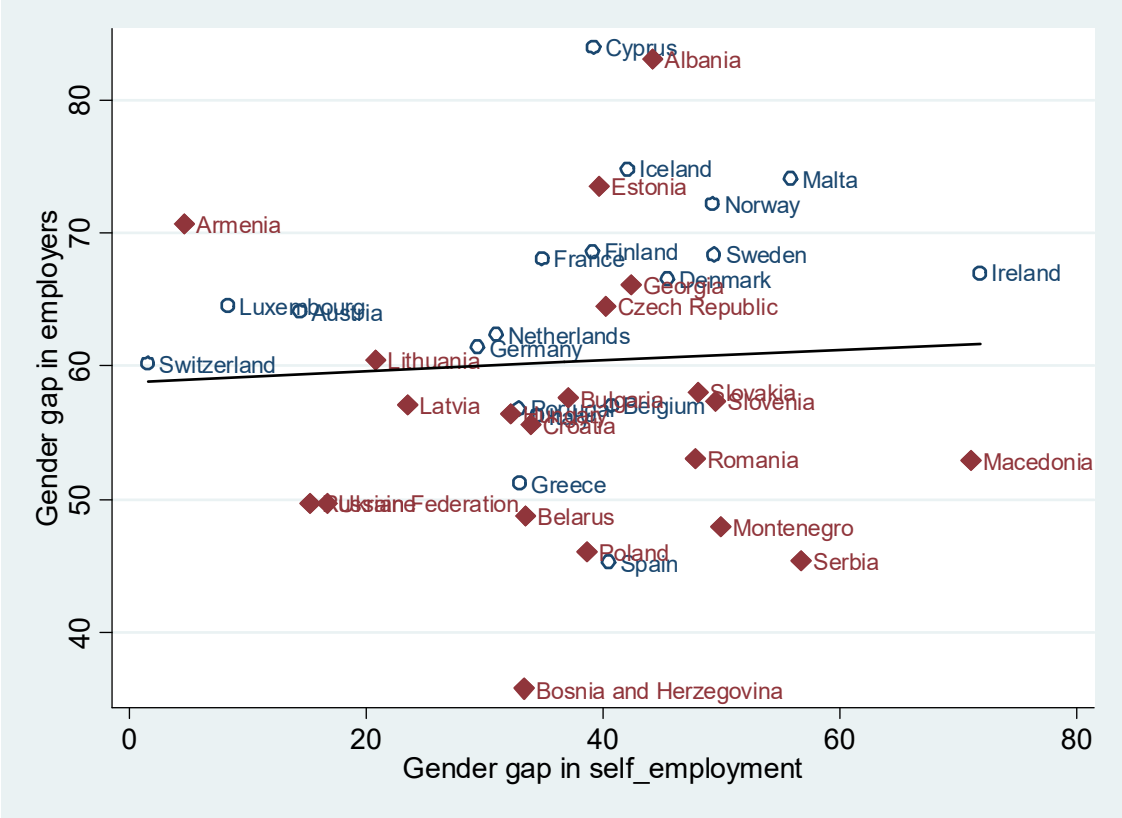


Notes: Data source: ILO.

[8] This difference is statistically significant at the 1% level. Gender gaps in self-employment are also larger in rich countries than in Ex-Communist ones, although the difference is only significant at the 5% level.
[9] While some of the countries in our sample of Ex-Communist countries are rich, almost all of them are substantially poorer than the average country we consider here and so this explanation may have some merit.

The correlation between the two gaps in the latest available year, 2014, is positive, although not very strong, as Figure 2 shows.[10]

Figure 2: Correlation between gender gaps in employers and in self-employment in 2014



Notes: Data source: ILO. Ex-Communist countries in full red diamonds.

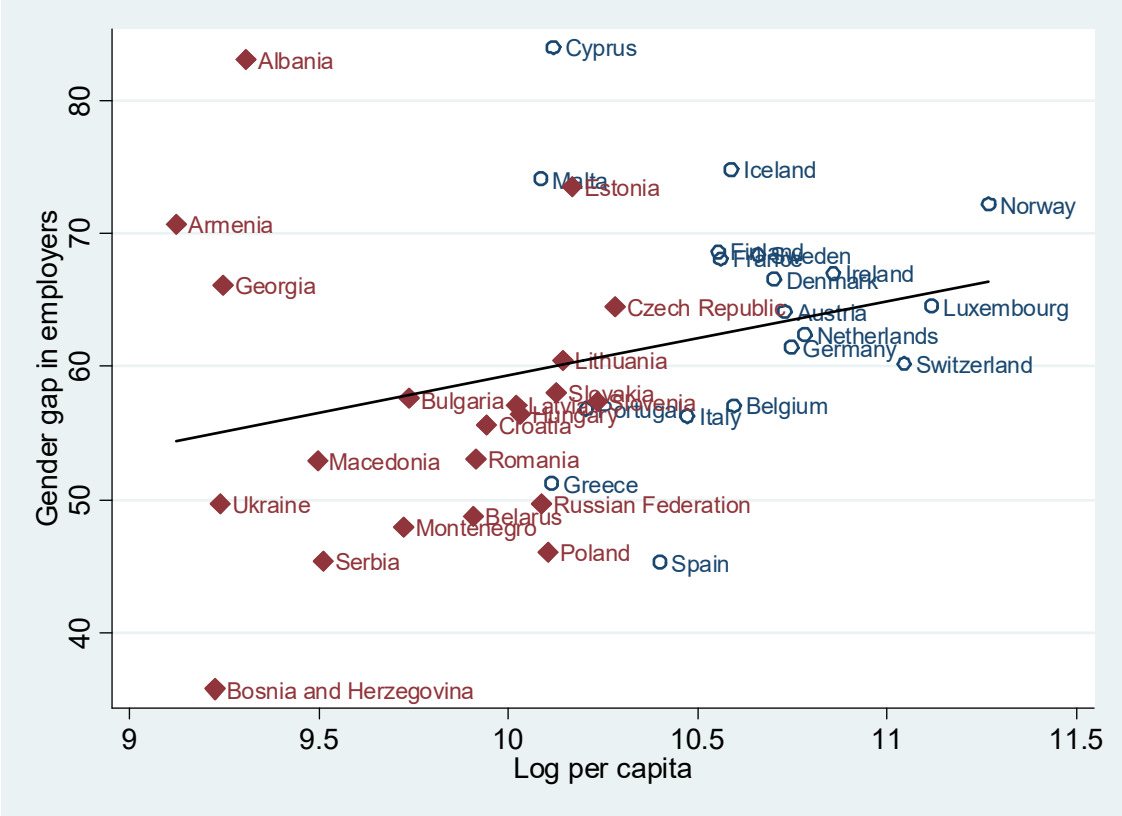
As can be seen in Table 1A in the Appendix, the average gaps displayed in Table 1 hide important differences across countries. The country with the largest average gender employer gap is Cyprus (80.6%), followed by Armenia (79.9%). The lowest gaps in this category correspond to Ukraine (24.4%) and Bosnia and Herzegovina (33.2%). With regards to the gender gap in self-employment, Ireland displays the largest figure (73.5%), followed by Macedonia (66.9%). The lowest average gender gaps in self-employment are indeed negative and correspond to Ukraine (-14.5%) and Armenia (-6.7%).[11]

[10] We choose 2014 since it is the most recent year with data on all the countries from the EVS dataset and on GDP per capita from the Penn World Table.
[11] Note that the maxima and minima are different than those of Table 1 because in that table we pooled the data across all countries and years.

In the Appendix we also plot the evolution of these countries over time during the 2000-2017 period and, again, there are important differences in the patterns. The gender gap in employership has a clear decreasing pattern in countries like Georgia or Serbia, and displays a marked increase in Montenegro and Ukraine. Many countries display significant decreases in the self-employment gender gap (Czech Republic, Denmark, Iceland, Norway, Slovenia, or Switzerland), whereas in a few of them this gap increases rapidly (Poland, Portugal, or Ukraine).

The next two figures explore the correlation between a country's level of development and its two gender gaps. Figure 3 shows that a scatter plot of gender gaps in employers with real GDP per capita in 2014 results in a mild positive correlation. Figure 4 shows that the correlation is also very weak in the case of gender gaps in self-employment.[12]

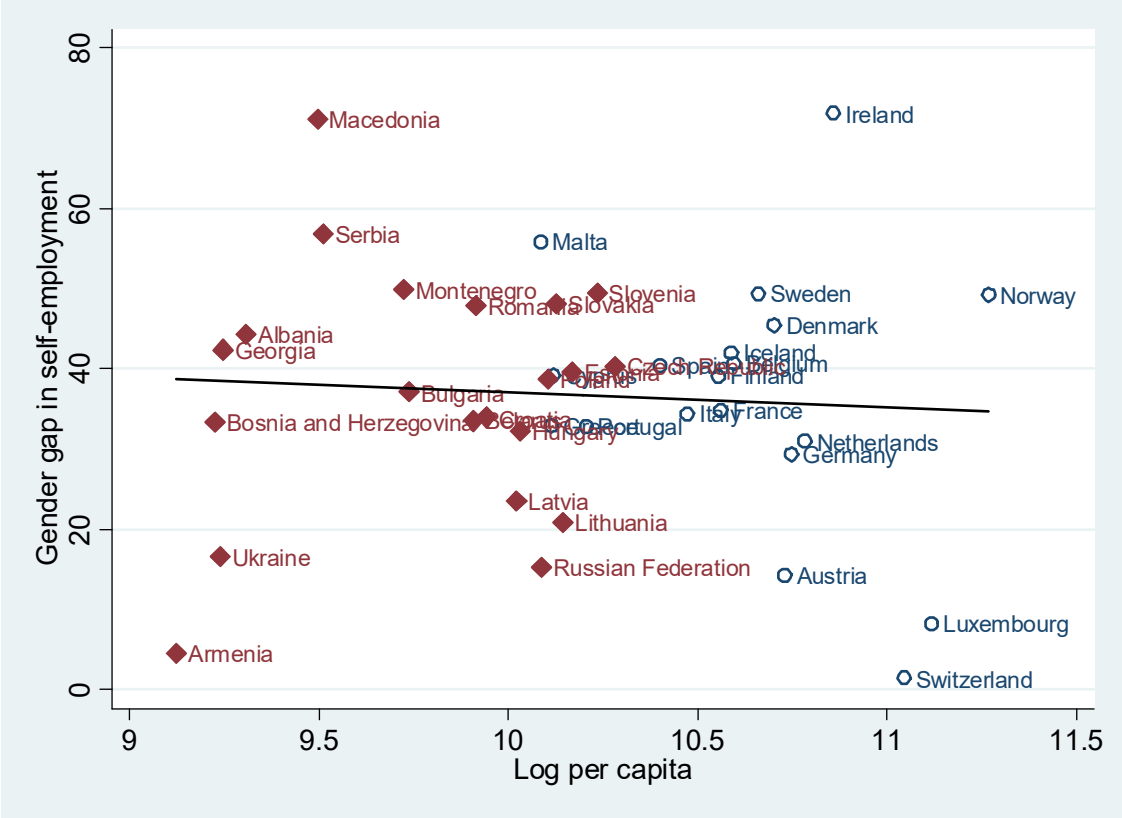
Figure 3: Gender gaps in employers and GDP per capita in the full sample



Notes: Data source: ILO. Ex-Communist countries in full red diamonds.

[12] Consistent with this result, Cuberes and Teignier (2016) use a much larger sample of countries and find that there is no clear correlation between per capita GDP and gender gaps in entrepreneurship.

Figure 4: Gender gaps in self-employment and GDP per capita in the full sample



Notes: Data source: ILO. Ex-Communist countries in full red diamonds.

The main goal of our paper is to identify the main causes behind these cross-country differences in entrepreneurship gender gaps. In results not shown here, we show that, attempting to do so using country-level aggregate data is not very informative. The reason is that, both in the time series and in the cross-section, very few aggregate variables seem to correlate with these gaps. This may be in part due to the fact that our sample of countries is not large enough to estimate this type of regressions with any degree of precision or perhaps due to the fact that, in order to understand entrepreneurship, one really needs to use information disaggregated at the individual level. For this reason, the rest of the paper focuses on analyzing micro data that dramatically expands our number of observations and allows us to estimate more precisely the determinants of cross-country gender differences in entrepreneurship.

3. Related Literature

Entrepreneurship in developing countries

The literature discussing entrepreneurship in developing countries is very extensive[13] However, the gender dimension of entrepreneurship is often neglected, probably due to the lack of accurate data. John Sutton's *Enterprise Map Project* is an ongoing ambitious project that represents a great step forward towards providing a detailed profile of industries and of leading industrial companies in developing countries.[14] His focus so far is on sub-Saharan Africa, where he has collected very valuable information for Ethiopia, Ghana, Mozambique, Tanzania and Zambia. The data allows researchers to answer important questions about how entrepreneurship differs in these economies, although, to our knowledge, the gender dimension of these activities has not been considered in the questionnaires.

McMillan and Woodruff (2002) and Estrin et al (2005) review the several studies that focus on Transition Economies, but the role played by the entrepreneur's gender is not discussed in either paper. McMillan and Woodruff (2002) study the cases of Russia, China, Poland, and Vietnam and analyze to what extent governments have facilitated informal contracts and market support infrastructure. Estrin et al (2005) argue that the institutional environment in Transition Economies has created numerous barriers to entry, some conventional and others unique to these group of countries. In a later paper, Estrin and Mickiewicz (2010) show that entrepreneurship rates are lower in Transition Economies than in developed and developing economies and argue that this is especially true for countries that were part of the former Soviet Union. Persistence in institutions may explain why, many years after the fall of Communism, entrepreneurship rates are still very low in ex-Soviet countries. Although gender is not their main object of analysis, in their regressions the authors control for whether firms' managers are men or women and show that women are indeed less likely to become entrepreneurs. Welter et al. (2003) analyze the behavior of firms in Ukraine, Moldova, Belarus and the Russian Federation from an institutional perspective. In particular, they study how firms in these Transition Economies adapt to the existing formal and informal institutions. One of their key findings is that informal rules from the socialist period, where social capital in the form of personal trust played an important role in securing resources, assist in explaining the role of networking in contemporary conditions. Two other studies that consider Transition Economies are Djankov et al (2006a, b) analyze entrepreneurship in China and Russia but do not address specific differences between firms led by men or women.

[13] Acs and Virgill (2010) review some relevant papers on this topic.
[14] See Sutton and Kellow (2010), Sutton and Kpentey (2012a), Sutton and Olomi (2012b), Sutton and Langmead (2013), and Sutton (2014).

Gender is a control variable in their regressions, their papers do not focus on explaining differences in entrepreneurs' gender.

Entrepreneurship and gender in developing countries

The World Development Report (2012), WDR henceforth, offers a state-of-the-art of the existing literature on gender gaps in entrepreneurship in developing countries.[15] This report documents that, in these countries, the large majority of micro, small, and medium enterprises are managed by women, and that the percentage of female ownership declines with firm size (Bruhn, 2009; Sabarwal et al. 2009; Hallward-Driemeier 2011a; Costa and Rijkers, 2011.) Moreover, female-headed enterprises are more likely than male-headed ones to be home-based and operate within the household (Mead and Liedholm, 1998; Bruhn, 2009, World Bank 2010). On the other hand, the WDR also discusses how, as countries develop, their productive structure changes and the opportunity cost for women to stay out of the labor force increases. Naturally, this implies that economic growth tends to go hand-in-hand with increases in female labor force participation and this process is also often accompanied by women taking jobs that are traditionally done by men. The data show that, at low levels of development, it is frequently the case that women are more likely to transition from unpaid work to wage work and men are more likely to transition from self-employment to wage employment. However, the relationship between economic development and the female rate of entrepreneurship is unclear. Indeed, as countries move from low to medium per capita GDP, the share of women in self-employment and entrepreneurship falls.[16]

Our reading of the relatively scarce literature on gender gaps in entrepreneurial activities in developing countries is that, while it is not clear that women are always underrepresented in entrepreneurship (the opposite is the case in Sub-Saharan Africa), there is strong evidence that female-led business are less productive than men's.[17] The WDR reports that value added per worker in firms managed by women is lower than in

[15] Miniti (2009) provides an alternative review of this literature drawing on the point of view of economics, sociology and anthropology.

[16] The report also provides some data on the presence of women in the boardroom, although this refers to developed countries in most cases. The share of female directors is the highest in Norway (40 percent) and Sweden (21 percent). The lowest figures (less than 2 percent) correspond to Bahrain, Japan, Jordan, the Republic of Korea, Qatar, Saudi Arabia, and the United Arab Emirates. These percentages are higher if one considers the fraction of companies with at least one female director. Flabbi et al. (2017) provide figures for Latin America and the Caribbean and show that women are as under-represented in Latin America as in the United States, but much less so in the Caribbean.

[17] Allen et al. (2008) also document hat that women in developing countries are more likely to be "necessity" entrepreneurs, i.e. they choose entrepreneurship as their last option, although their importance tends to decline with economic development. Poschke (2013) defines the concept of "out-of-necessity" entrepreneurs and estimates their importance in a large sample of countries. Cuberes and Teignier (2016) calibrate an occupational model that allows for the existence of these type of entrepreneurs.

firms managed by men in Europe and Central Asia (34 percent lower), Latin America (35 percent), and Sub-Saharan Africa (6-8 percent). Other countries (Bangladesh, Ethiopia, Indonesia, and Sri Lanka) display similar differences. In the following paragraphs, we review a few studies that attempt to identify the main factors that may explain these productivity differences.[18] These factors can be broadly classified in two groups: the institutional environment that discriminates women, and firm and female characteristics. As we discuss below, the latter often lead women to self-select into less productive sectors (Croson and Gneezy, 2009).

Mead and Liedholm (1998) focus on micro and small enterprises (MSEs) and show that in Africa and in some Caribbean countries, the majority of these firms are owned and operated by women and that firms headed by women tend to be concentrated in a narrow range of activities (beer brewing, knitting, dressmaking, crocheting, cane work, and retail trading). Another finding of their paper is that MSE's headed by women are more likely than their male counterparts to operate from the home and that, since these are usually not accounted for in most datasets, this may explain the apparent low number of female entrepreneurs. The authors also report that female-headed MSEs are less likely to survive, all other factors constant, compared to their male-headed counterparts. However, they warn the reader that a relatively high percentage of the closings of female-headed firms are indeed due to personal and other non-business-related characteristics. While we don't study firm survival, one could argue that, if potential female entrepreneurs anticipate a high failure rate, it is less likely that they choose to start their own business. Nichter and Goldmark (2009) offer a recent review of what is known about MSEs in developing countries. In particular, their study identifies four factors that explain small firm growth: individual entrepreneur characteristics, firm characteristics, relational factors including social networks or value chains, and contextual factors such as the business environment.

One of the regions that has received more attention in the study of gender and entrepreneurship is Africa, perhaps because the entrepreneurship rate of women in this region is very high.[19] McPherson (1996) analyze data on small firms in southern African countries (Swaziland, Zimbabwe, Lesotho, Botswana and South Africa) and find that the proprietor gender, among other variables, is an important determinant of firm's growth.

Aterido and Hallward-Driemeier (2009) study six countries in Sub-Saharan Africa (Ghana, Mali, Mozambique, Senegal, and Zambia) and find that women benefit as much as men from education and management skills. A novel finding of their study is that family background is a relevant variable to explain success in entrepreneurship, although

[18] See Bardasi et al. (2007) for a more detailed review of studies carried out in Africa.
[19] Cuberes and Teignier (2016) show that gender gaps in entrepreneurship and their associated loss of income per capita are much lower in Sub-Saharan Africa than in most other world regions.

results differ significantly by gender. In particular, sons rather than daughters benefit from having a father that was an entrepreneur or from joining a family enterprise. Hallward-Driemeier (2011b) analyzes household and enterprise data from 41 countries in Sub-Saharan Africa, and formulates policy recommendations to increase the efficiency of female-led firms. Her study shows that most women in this region work as self-employed rather than becoming employers. Moreover, their firms are smaller, more informal, and have lower value-added than the corresponding ones for men. Finally, in a recent study, Brixiová and Kangoye (2015) use data from a survey of entrepreneurs in Swaziland to study the relationship between entrepreneurial productivity, start-up capital, and managerial skills. Their results show that women entrepreneurs have smaller start-up capital and are less likely to fund it from the formal sector than their men counterparts. Interestingly, they also find that business training is positively associated with sales performance of men entrepreneurs but has no effect on women.

A few other papers have analyzed gender gaps in entrepreneurship in countries outside of Africa. For example, Costa and Rijkers (2011) study female entrepreneurship in the non-agricultural rural areas of Ethiopia but they also include an analysis of Bangladesh, Indonesia and Sri Lanka. The authors show that in these countries women are less likely than men to become nonfarm entrepreneurs, with the exception of Ethiopia. Women's nonfarm entrepreneurship is especially prevalent amongst women who are the head of their household. Consistent with other studies, they find that female-led firms are much smaller and less productive on average, though gender differences in productivity vary dramatically across countries. While Indonesia displays very small productivity gaps, mean differences in log output per worker reveal that male firms are roughly 10 times as productive as female firms in Bangladesh, three times as those in Ethiopia and twice as those in Sri Lanka. According to the authors, the main determinant of these gender differences in efficiency is sorting by sector and size. Khalife and Chalouhi (2013) use data from a small sample of Lebanese firms and find that female-led firms generate lower gross revenues than do their male counterparts. This difference, the authors argue, can be explained by factors related to the owner’s level of education, the firm’s age and size and, to some extent, the owner’s business experience.

To our knowledge, there are very few studies that focus on female entrepreneurship in Transition Economies. One exception is Aidis et al. (2007) who compare the experiences of Lithuania and Ukraine. The authors show that, while women entrepreneurs in these two countries share many common features and problems, there are important differences between them. Therefore, a word of caution is in order when designing policies to tackle the situation of female entrepreneurs, since they are likely to reflect different inheritances

from their Soviet past, as well as differences in the pace of change during their transition to market economies.[20]

4. Microeconomic Data

We use data from EVS, which contains longitudinal information on individuals for the period 1981-2008 in 47 countries/regions in four waves. In results not shown here we show that, for our purposes, exploiting the panel dimension of the data does not offer many useful insights.[21] Therefore, in all the sections that follow, we restrict ourselves to using the cross-section of the fourth wave, EVS 2008, for the 40 countries discussed in Section 3.

The EVS is one of the most comprehensive research projects on human values in Europe. It is a large-scale, cross-national and longitudinal survey research program on how individuals think about family, work, religion, politics, and society. Repeated every nine years in an increasing number of countries, the survey provides insights into the ideas, beliefs, preferences, attitudes, values, and opinions of citizens all over Europe. The 2008 cross-section has data for 47 countries, with all of them, except Turkey, located in Europe. Of these countries, we only include those analyzed in Table 1A. In order to establish a more meaningful comparison between our aggregate analysis and the microeconomic one, we omit Kosovo, and Moldova, for which we do not have aggregate data on all the entrepreneurship categories. We drop Great Britain because the ILO only provides data for the United Kingdom. Turkey is not included because it is neither a high-income country, nor an Ex-Communist one. Finally, we omit Northern Ireland and Northern Cyprus since they do not have the status of a country[22].

In order to adjust for characteristics such as gender and age in the sample and make it representative of the entire population distribution, the EVS provides post-stratification weights.[23] Table 2A in the Appendix shows the number of observations for each country before and after applying these weights. In all our analysis, we follow the recommendation of EVS and use only the weighted data in the regressions.

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[20] All the papers discussed in this section are based on cross-country analyses. De Mel et al. (2009) instead draw evidence from a field experiment in Sri Lanka providing random grants to microenterprise owners. Their results show that grants generate large profit increases for male owners but not for female owners. The paper discusses related studies using similar experiments.

[21] These results are available from the authors upon request.

[22] Azerbaijan was surveyed but not included in the current version of the EVS 2008 due to concerns about the data quality.

[23] More details on these weights can be found in https://dbk.gesis.org/dbksearch/sdesc2.asp?no=4800&db=e&doi=10.4232/1.12458

Our main variable of interest is entrepreneurship and the two categories of employers and self-employed. Therefore, we create a dummy variable that equals 1 if a person is an entrepreneur, and 0 if he/she is an employee. Similarly, our employer dummy equals 1 if a person is an entrepreneur who employs at least one employee, and 0 if the person is an employee. Finally, self-employment is measured with a dummy variable that equals 1 if a person is an entrepreneur who is the sole proprietor of his or her business with no other employees, and 0 if the person is an employee. We use employees as the reference group since we are interested in identifying the determinants of entrepreneurship as an occupation choice relative to wage employment, conditional on being in the labor market.

In our sample, 53% of the individuals are women. Table 2 tabulates the occupational dummies defined above for men and women. The incidence of men in entrepreneurship (14%) is much larger than that of women (8%). For employers the figures are 8% for men and 4% for women, and for self-employed the corresponding figures are 11% for men and 8% for women. This shows an important result from our paper: in all entrepreneurship categories, women are underrepresented and the role of gender is statistically significant, as shown by the p-values of the corresponding t-tests in the last column.

Table 2: Entrepreneurship by gender

	Men	Women	p-value
Fraction of entrepreneurs	0.145 (0.352)	0.078 (0.268)	0.000
Fraction of employers	0.081 (0.113)	0.04 (0.195)	0.000
Fraction of self-employed	0.113 (0.316)	0.084 (0.277)	0.000

Notes: Data source: EVS. Standard deviations in parentheses.

Table 3A in the appendix shows these fractions in each of our 40 countries. It is apparent that differences in the ratios of male and female entrepreneurs vary substantially among the 40 countries in the sample, although they are not always statistically significant. This difference is as low as 2 percentage points in Germany and the Russian Federation, but it reaches 15 percentage points in Italy. For employership, the difference between men and women participation ranges between 2 percentage points in countries like Belarus, Finland, Hungary, Latvia, Luxembourg, or Ukraine to 17 percentage points in Greece. For self-employed individuals the difference is smallest in Lithuania (1 percentage point) and largest in Ireland (8 percentage points).

Apart from the gender dummy, in our regressions we control for several variables at the individual level: age, educational attainment, marital status, number of children, family background, social capital, and unemployment. Table 3 lists each of these variables and the proxy we use to measure them:[24]

Table 3: Variables used in the model and their proxies

Variable	**Proxy**
Marital status	Dummy variable that equals 1 if married, and 0 otherwise.
Age	Variable that measures the age of respondents.
Education	Dummy variables for completion of different levels of education (university, secondary, elementary, and vocational).[25]
Number of children	Variable that captures how many children the respondent has (deceased children not included).
Financial resources and household wealth	Three dummy variables that indicate whether a household income level is low, medium or high.[26]
Intergenerational entrepreneurship	Dummy variable that equals 1 if father and/or mother were entrepreneurs when respondent was 14 years of age, and 0 if they worked as employees.
Partner entrepreneur	Dummy variable that equals 1 if partner is an entrepreneur, and 0 if partner is an employee.
Values towards women	Respondents are asked whether they agree/disagree with the statement "if jobs are scarce, men should have more right to a job than women." Dummy variable equals 1 if respondent agrees and 0 if he/she disagrees.
Social capital	Dummy variables for: • Trust in other individuals (=1 if respondent says most people can be trusted, and =0 if respondent says he/she can't be too careful). • Belong to a professional association (=1 if belongs, =0 otherwise).
Unemployment	Dummy variable for whether the respondent has experienced any period of unemployment for longer than 3 months during the last five years (=1 if yes, =0 if no).

[24] One variable that would be useful to control for is the individual's level of managerial skills, which are not necessarily related to the individual's educational attainment. However, we are not aware of any comprehensive dataset that measures this for a sufficiently large number of countries.

[25] Vocational education refers to educational programs where students learn specific trades.

[26] In order to alleviate potential endogeneity issues, some papers use capital gains from housing and inheritances to measure household wealth. Unfortunately, EVS does not include information on these variables.

Table 4 shows descriptive statistics for all our control variables for the pooled data (columns 1 and 2), for men (columns 3 and 4), and for women (columns 5 and 6). Column 7 displays the p-value of the two-sided t-test of the gender difference for each variable. In our sample the probability that an individual is an entrepreneur is 11%, whereas the probabilities that he/she is an employer or a self-employed are 6% and 10%, respectively.[27] The breakdown of these figures by gender was already discussed above (Table 2), so we comment here on the remaining variables. While overall 54% of the sample is married, this proportion is higher at 56% in the sub-sample for men and lower for sub-sample of women at 52%. The average age of women in the sample is slightly higher compared to men by approximately two years. While men and women have similar education attainment at the university level, a higher proportion of men complete secondary and especially vocational education, and women have higher elementary completion rates. The female sub-sample has a 10% higher proportion of individuals with children. A higher proportion of women are concentrated in low-income households (38% compared to 30% for men). Conversely, there are a higher proportion of men in high-income households than women (33% versus 27%) as well as in middle-income households (37% vs. 34%). The fraction of men with parents that are entrepreneurs is only slightly higher than for women but the fraction of women with an entrepreneur partner is about eight percentage points higher (15%) than the fraction of men with a partner who is an entrepreneur (7%).[28] Men tend to significantly agree more than women with the statement, "if jobs are scarce, men should have more right to a job than women". On the other hand, men show more trust in people and a larger number of them belong to a professional association. Finally, men have a slightly lower probability of being unemployed.

[27] Note that the sum of the probability of becoming an employer and that of becoming a self-employed is not equal to the probability of becoming an entrepreneur. This is the due to the fact that we define our dummy variables using workers as the reference category.

[28] One potential explanation for this could be the higher incidence of entrepreneurship among men than among women.

Table 4: Descriptive statistics

Variables	Full Sample		Male		Female		Gender difference
	Mean	SD	Mean	SD	Mean	SD	p-values
Entrepreneur	0.115	0.319	0.145	0.352	0.078	0.268	0.0000
Employer	0.062	0.242	0.081	0.273	0.040	0.195	0.0000
Self employed	0.099	0.299	0.113	0.316	0.084	0.277	0.0000
Female	0.519	0.499					
Married	0.540	0.498	0.564	0.496	0.517	0.499	0.0000
Age	45.70	17.74	44.45	17.11	46.85	18.23	0.0000
University	0.172	0.377	0.174	0.379	0.171	0.376	0.7891
Secondary	0.477	0.499	0.472	0.499	0.481	0.499	0.0000
Vocational	0.180	0.384	0.206	0.405	0.155	0.362	0.0000
Elementary	0.172	0.377	0.149	0.356	0.194	0.395	0.0000
Children	0.698	0.459	0.647	0.478	0.745	0.436	0.0000
Low HH Wealth	0.342	0.474	0.296	0.457	0.384	0.486	0.0000
Mid HH Wealth	0.358	0.479	0.371	0.483	0.345	0.475	0.0000
High HH Wealth	0.301	0.459	0.333	0.471	0.271	0.444	0.0000
Parents entrepreneur	0.182	0.385	0.183	0.387	0.180	0.384	0.0003
Partner entrepreneur	0.115	0.319	0.073	0.261	0.146	0.353	0.000
Values towards women	0.258	0.438	0.293	0.455	0.227	0.419	0.0000
Trust in people	0.303	0.460	0.308	0.462	0.298	0.458	0.0001
Association	0.049	0.215	0.059	0.235	0.039	0.195	0.0000
Unemployment	0.261	0.439	0.256	0.436	0.266	0.442	0.0023

Notes: Data source: EVS.

5. Methodology

In this section, we examine some microeconomic correlates of entrepreneurship with a focus on factors that differentially affect men and women's choices. Our empirical strategy is to estimate the probability that an individual works as an entrepreneur (and also an employer or a self-employed) as a function of several individual characteristics. More specifically, we estimate three different probit regressions of the following form:[29]

[29] Estimating a logit model gives us qualitatively similar results.

$$p_{ij} = \alpha + \gamma_j + \beta' X_{ij} + \varepsilon_{ij} \qquad (1)$$

where p_{ij} is the probability that individual i in country j is an entrepreneur, an employer, or a self-employed, depending on the regression. The vector X_{ij} contains the set of explanatory variables discussed above that may correlate with this probability, γ_j is a country fixed-effect and, finally, ε_{ij} is a standard error term clustered at the country level, which is assumed to follow a normal distribution. Our key variable of interest included in vector X is *female*, a dummy variable that takes a value of 1 if the individual is a woman and 0 if he is a man.

When we estimate (1) using the entire sample of observations, the coefficient on gender tells us whether women are more or less likely to become entrepreneurs than men. However, this model does not allow us to test how each of the variables in X affects the likelihood of becoming an entrepreneur differently for men and women. One way to address this would be to interact each of these regressors with our gender dummy, hence using the entire dataset in the estimation. Given that the number of observations in our regressions is very large, we prefer to split the sample for men and women and estimate (1) for each subsample. The advantage of this model versus a model with all the interactions with the dummy variable *female* is that it is much easier to interpret.

6. Empirical results

We estimate (1) for the sample of Ex-communist countries and compare the results with those of high-income countries. The results are shown in Tables 6 and 7, respectively. Consistent with the aggregate results of Section 2, for the two groups of countries we find significant gender gaps in entrepreneurship (see Table 5). The gender gaps are lower in ex-communist countries (when we exclude high-income countries only), which is consistent with what we find in the aggregate ILO data. One explanation for gender gaps is that female-led firms have lower survival rates than men-led firms, although the literature generally does not find much evidence in support of this (Minniti et al., 2011, Minniti and Naude, 2010). Another possible explanation can be that fewer women select into entrepreneurship. And, naturally, the existence of barriers against women in entrepreneurship may also explain these gaps.

To facilitate the discussion of each regressor, we proceed to analyze the results for Ex-Communist countries (Table 7) and for high-income ones (Table 8) separately. It is important to note that these estimates do not represent causal effects since the regressors are in most cases clearly endogenous. Nevertheless, we believe they highlight important

differences in determinants of the gender gap in countries with very different institutional environments.[30]

Table 5: Gender gaps in entrepreneurship

	Entrepreneurs	Employers	Self-Employed
Full sample	-0.0518***	-0.0402***	-0.0213***
	(0.00975)	(0.00659)	(0.00810)
Ex-communist countries	-0.0514***	-0.0390***	-0.0157**
	(0.00992)	(0.00864)	(0.00752)
Ex-communist (excluding high-income)	-0.0361***	-0.0261**	-0.00714
	(0.0118)	(0.0107)	(0.00962)
High-income countries	-0.0488**	-0.0382***	-0.0233
	(0.0183)	(0.0115)	(0.0150)

Notes: Clustered standard errors in parenthesis. The coefficient reported is the marginal effect of the variable female estimated using the probit regression (1) and includes the full set of controls.

Ex-Communist Countries

The effect of university-level education (and in some cases secondary and vocational education too) on the likelihood of being an entrepreneur, an employer, or a self-employed is significant, although negative in some cases. Human capital acquired through education appears to be important for women to be employers but not men. This is somewhat consistent with McPherson (1996), who finds evidence that human capital of firms' proprietors has a positive effect on firm growth in five southern African countries, as they are able to better respond to changing business conditions. He finds effect of secondary schooling on firm growth that ranges from 0.067 to 0.095, which is similar in magnitude to our estimates. Having children increases the incidence of self-employment in women, perhaps because in these countries self-employment jobs are very informal and offer a great degree of flexibility.

The positive role of parental entrepreneurship is only limited to women for becoming an entrepreneur and self-employed. Having a partner who is an entrepreneur has the largest magnitude of influence on the likelihood of selecting into entrepreneurship in our model and it affects men and women similarly.[31] This is consistent with a review by Minniti and

[30] Given the large number of coefficients, we mostly comment on those that are significant at the 5% or 1% level.

[31] The effect of having a partner who is an entrepreneur has a larger magnitude of effect on women selecting into entrepreneurship relative to wage employment in ex-communist countries when high-income countries are excluded from the ex-communist countries sample. All the other findings remain the same.

Naude (2010) on female entrepreneurship that finds that social networks can be particularly important in weak institutional environments and that women are more likely to rely on extended families for business networks. Men of older age are much more likely to become self-employed and, belonging to professional associations makes them less likely to choose this occupation. Another surprising result is that an individual's wealth tends to have a negative –although weak- effect on some categories of entrepreneurship.

Table 7 displays the results for high-income countries. Men's age is positively associated with the likelihood of becoming an employer or a self-employed. The number of children is positively associated with entrepreneurship in the case of men and with employership for both men and women. As it was the case in ex-communist countries, the relationship of the wealth dummies is always negative, although in this case it affects only men. Having parents that were entrepreneurs strongly increases the likelihood of being an entrepreneur or an employer in the case of men, and having a partner that is also an entrepreneur has a positive effect for both men and women in all categories. Women values reduce the likelihood of women being entrepreneurs or employers. Finally, unemployment reduces the chances of men becoming entrepreneurs or employers.

Comparing Tables 6 and 7 we highlight several important differences between Ex-Communist countries and high-income ones. First, educational attainment is no longer a significant determinant for any entrepreneurial activity for either men or women in high-income countries. Second, the benefits of parental entrepreneurship only accrue to men in high-income countries, whereas in Ex-Communist countries, it is mostly women who are influenced by their parent's occupation. Lastly, a greater proportion of respondents in ex-communist countries agreed with the statement "*if jobs are scarce, men have more right to work than women."* This variable only affects high-income countries, where it has a strong negative effect on the probability of women selecting into entrepreneurship, especially into employership.

Table 6: Marginal Effects of Ex-Communist Countries by Gender

	Entrepreneur		Employer		Self Employed	
VARIABLES	M	F	M	F	M	F
Married	-0.0315	-0.000212	-0.0257	0.00137	-0.0217	-0.00130
	(0.0316)	(0.0217)	(0.0311)	(0.0183)	(0.0178)	(0.0210)
Age	0.00190*	-0.000604	0.000184	-0.000200	0.00259***	-8.49e-05
	(0.00108)	(0.000495)	(0.000786)	(0.000500)	(0.000793)	(0.000491)
University	-0.0543	-0.0603*	0.0280	0.0980**	-0.0834**	-0.0617*
	(0.0545)	(0.0315)	(0.0445)	(0.0381)	(0.0336)	(0.0319)
Secondary	-0.0374	-0.0333	0.0449	0.0858***	-0.0962	-0.0220
	(0.0671)	(0.0371)	(0.0402)	(0.0250)	(0.0620)	(0.0413)
Vocational	-0.0372	-0.0278	0.00412	0.0997*	-0.0544	-0.0265
	(0.0629)	(0.0275)	(0.0459)	(0.0580)	(0.0455)	(0.0288)
Children	-0.00233	0.0184	0.0280*	0.00620	-0.0456*	0.0298**
	(0.0303)	(0.0129)	(0.0152)	(0.0126)	(0.0266)	(0.0131)
Mid HH Wealth	-0.0464*	-0.0381*	-0.0288	-0.0156	-0.0176	-0.0336**
	(0.0281)	(0.0223)	(0.0240)	(0.0225)	(0.0236)	(0.0145)
High HH Wealth	-0.0209	-0.0154	0.0250	0.00186	-0.0428*	-0.0206
	(0.0329)	(0.0248)	(0.0309)	(0.0239)	(0.0221)	(0.0135)
Parents entrepreneur	0.0734	0.0933**	0.0380	0.0419	0.0160	0.118**
	(0.0714)	(0.0466)	(0.0427)	(0.0286)	(0.0500)	(0.0545)
Partner entrepreneur	0.399***	0.312***	0.197***	0.137***	0.272***	0.264***
	(0.0487)	(0.0222)	(0.0473)	(0.0247)	(0.0509)	(0.0298)
Values towards women	0.0123	0.0103	-0.00108	-0.00459	0.000127	0.0175
	(0.0146)	(0.0164)	(0.0137)	(0.0115)	(0.0139)	(0.0164)
Trust in people	0.0442*	0.0145	0.0287*	0.0158	0.0135	-0.00351
	(0.0240)	(0.0189)	(0.0159)	(0.0140)	(0.0176)	(0.0160)
Association	-0.0286	-0.0139	0.00632	0.0126	-0.0569***	-0.0206
	(0.0309)	(0.0312)	(0.0319)	(0.0276)	(0.0120)	(0.0343)
Unemployment	0.0321	0.000410	0.0366	-0.0113	0.0147	0.0309*
	(0.0316)	(0.0178)	(0.0256)	(0.0107)	(0.0196)	(0.0185)
Pseudo R square	0.1798	0.2957	0.1724	0.2450	0.2120	0.3494
Log Likelihood	-437	-281	-275	-139	-247	-190
Observations	1,249	1,607	1,140	1,234	1,096	1,391
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level. Significance level *** p<0.01, ** p<0.05, * p<0.10

Table 7: Marginal Effects of High-Income Countries by Gender

	Entrepreneur		Employer		Self Employed	
VARIABLES	M	F	M	F	M	F
Married	-0.0324	-0.00679	0.000252	-0.0286	-0.0383	0.0295
	(0.0210)	(0.0178)	(0.0210)	(0.0189)	(0.0262)	(0.0180)
Age	0.000703	0.00130	0.00195***	0.000525	0.00102*	0.00118
	(0.000758)	(0.000871)	(0.000662)	(0.000525)	(0.000583)	(0.000885)
University	-0.0261	0.0178	-0.00326	-0.0251	-0.0427	0.0161
	(0.0737)	(0.0468)	(0.0534)	(0.0205)	(0.0342)	(0.0367)
Secondary	0.0222	0.0364	0.0190	0.00793	0.00486	-0.00191
	(0.0617)	(0.0424)	(0.0486)	(0.0238)	(0.0278)	(0.0298)
Vocational	-0.0221	0.0585	-0.0172	-0.0141	-0.0211	0.0558
	(0.0534)	(0.0609)	(0.0411)	(0.0215)	(0.0244)	(0.0500)
Children	0.0439**	0.0194	0.0404**	0.0255*	0.00551	-0.00279
	(0.0193)	(0.0263)	(0.0171)	(0.0145)	(0.0149)	(0.0214)
Mid HH Wealth	-0.120***	-0.0430	-0.0727***	0.00454	-0.0983***	-0.0425
	(0.0380)	(0.0310)	(0.0191)	(0.0171)	(0.0305)	(0.0307)
High HH Wealth	-0.153***	-0.0223	-0.0928***	0.0260	-0.157***	-0.0470
	(0.0474)	(0.0332)	(0.0286)	(0.0187)	(0.0433)	(0.0327)
Parents entrepreneur	0.0590***	0.0132	0.0330**	0.0179	0.0325	0.0282
	(0.0202)	(0.0165)	(0.0141)	(0.0142)	(0.0216)	(0.0174)
Partner entrepreneur	0.283***	0.262***	0.166***	0.126***	0.215***	0.208***
	(0.0496)	(0.0436)	(0.0588)	(0.0363)	(0.0524)	(0.0338)
Values towards women	0.0136	-0.0267**	0.0215	-0.0231**	0.00772	-0.00761
	(0.0326)	(0.0123)	(0.0252)	(0.0106)	(0.0229)	(0.0188)
Trust in people	0.0165	-0.00757	0.0283	-0.0128	0.000771	0.00240
	(0.0200)	(0.0257)	(0.0219)	(0.00943)	(0.0181)	(0.0253)
Association	0.0320	0.0457	0.0256	0.0232	0.0198	0.0323
	(0.0280)	(0.0390)	(0.0247)	(0.0264)	(0.0161)	(0.0358)
Unemployment	-0.0749**	0.00675	-0.0472**	-0.00642	-0.0389	0.0219
	(0.0297)	(0.0255)	(0.0212)	(0.0157)	(0.0253)	(0.0208)
Pseudo R square	0.1954	0.1763	0.2053	0.1856	0.2190	0.1874
Log Likelihood	-400	-307	-237	-133	-278	-248
Observations	1,192	1,199	1,032	1,027	1,140	1,116
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level. Significance Level *** p<0.01, ** p<0.05, * p<0

7. Conclusions

In this paper we use aggregate data and microeconomic data to explore the determinants of gender gaps in entrepreneurship in a large sample of countries, most of them in Europe. We find that these gaps are sizeable and they vary significantly over countries but not much over time during the period 2000-2017. Using microeconomic data from the EVS, we also find strong evidence of these gaps. Controlling for individual characteristics matters, but the gaps persist even after doing so. Our results highlight some interesting differences between ex-communist countries and high-income countries, which probably reflect the legacy of very different institutions in the two groups of countries.

Our results show that the strongest correlate of selecting into entrepreneurship as an occupation choice for women are social networks. We find that personal networks derived through parental and partner's entrepreneurial activity but not involvement in professional associations is positively correlated with selecting into entrepreneurship. It would be important for future work to shed light on how gender gaps are impacted through intergenerational and spousal entrepreneurship in countries with different levels of income and institutional environment.

Our results are informative in that they offer plausible correlates of the determinants of entrepreneurship, employership and self-employment. However, in order to formulate policies that reduce gender gaps in these occupations, we believe that more work needs to be done on finding causal relationships and separating supply and demand determinants of entrepreneurship. In particular, it is important to notice that, without more nuanced estimates, our results cannot definitively identify the existence of discrimination against women.

Appendix

Table 1A: Average gender gaps by country using aggregate data from ILO

Country	Gender gaps in employers	Gender gaps in self-employment
Albania	76.3	43.8
Armenia	79.9	-6.7
Austria	60.4	16.3
Belarus	49.4	31.6
Belgium	62.8	37.6
Bosnia and Herzegovina	33.2	25.1
Bulgaria	57.9	36.3
Croatia	55.0	22.7
Cyprus	80.6	44.8
Czech Republic	61.5	44.4
Denmark	70.6	52.8
Estonia	66.1	42.5
Finland	64.5	41.9
France	65.4	42.9
Georgia	59.9	39.7
Germany	62.2	32.6
Greece	58.3	31.8
Hungary	54.8	34.9
Iceland	65.9	50.0
Ireland	68.4	73.5
Italy	53.9	36.4
Latvia	54.2	23.8
Lithuania	59.7	32.6
Luxembourg	55.8	6.8
Macedonia	52.9	66.9
Malta	72.7	59.5
Montenegro	41.8	42.4
Netherlands	62.7	26.9
Norway	60.9	55.5
Poland	46.4	32.1
Portugal	57.7	11.8
Romania	56.8	48.2
Russian Federation	43.6	9.1
Serbia	50.1	53.4

Slovakia	56.5	54.4
Slovenia	59.7	52.3
Spain	50.9	35.3
Sweden	71.3	53.3
Switzerland	58.2	8.1
Ukraine	24.4	-14.5

Table 2A: Country observations un-weighted and weighted

Country	Un-weighted	Weighted
Albania	1534	1534.28
Armenia	1500	1477.26
Austria	1510	1510.27
Belarus	1500	1500.27
Belgium	1509	1507.27
Bosnia and Herzegovina	1512	1512.27
Bulgaria	1500	1500.27
Croatia	1525	1498.27
Cyprus	1000	999.18
Czech Republic	1821	1793.32
Denmark	1507	1507.27
Estonia	1518	1518.27
Finland	1134	1134.20
France	1501	1501.27
Georgia	1500	1498.27
Germany	2075	2038.65
Greece	1500	1498.27
Hungary	1513	1513.28
Iceland	808	808.15
Ireland	1013	982.18
Italy	1519	1519.27
Latvia	1506	1506.27
Lithuania	1500	1499.27
Luxembourg	1610	1609.29
Macedonia	1500	1493.27
Malta	1500	1497.27
Montenegro	1516	1516.27
Netherlands	1554	1552.28
Norway	1090	1090.20
Poland	1510	1479.27
Portugal	1553	1553.28
Romania	1489	1489.27
Russian Federation	1504	1490.27
Serbia	1512	1512.27
Slovakia	1509	1509.27
Slovenia	1366	1366.25
Spain	1500	1497.27
Sweden	1187	1174.21
Switzerland	1272	1271.23

Ukraine	1507	1507.27	

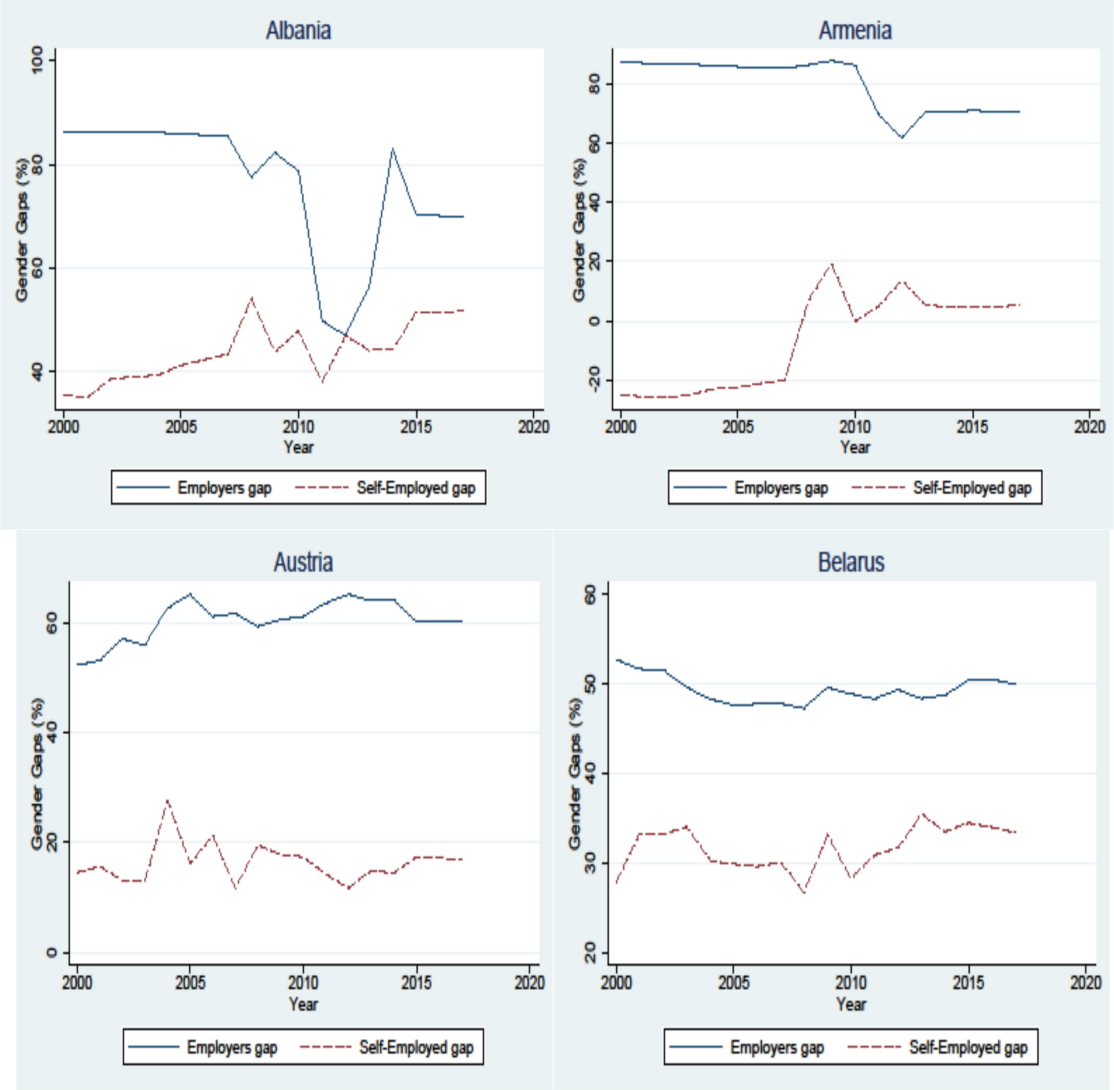
Table 3A: Entrepreneurship gaps at the country level using micro data (unconditional)

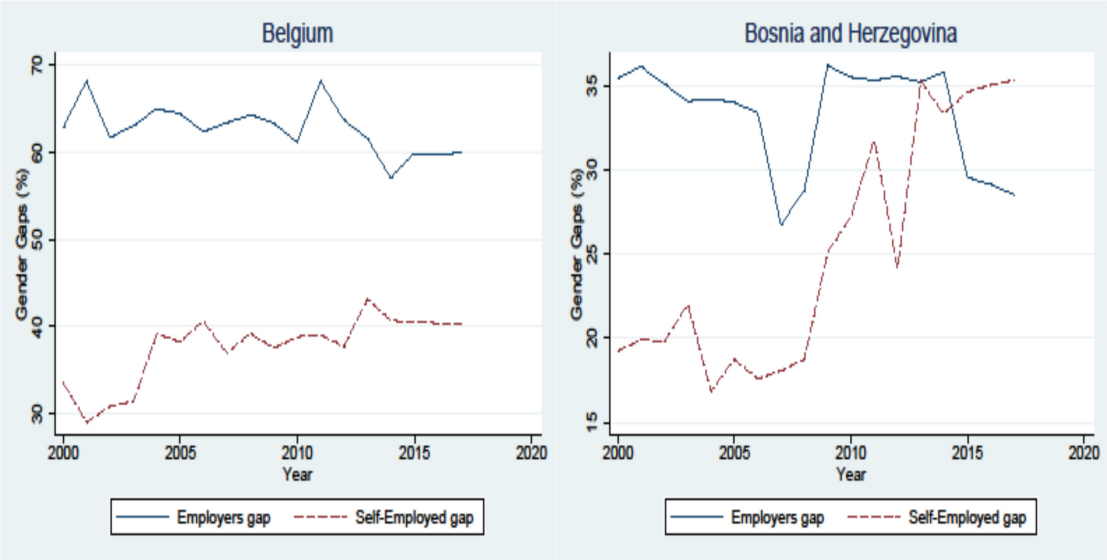
Country	Fraction of Entrepreneurs			Fraction of Employers			Fraction of Self Employed		
	M	F	p value	M	F	p value	M	F	p value
Albania	0.43	0.38	0.0470	0.20	0.10	0.0018	0.35	0.34	0.7383
	(0.02)	(0.03)		(0.02)	(0.02)		(0.02)	(0.03)	
Armenia	0.21	0.15	0.0519	0.09	0.09	0.8636	0.20	0.15	0.1368
	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	
Austria	0.14	0.09	0.0264	0.13	0.06	0.0015	0.10	0.09	0.7126
	(0.02)	(0.01)		(0.02)	(0.01)		(0.02)	(0.01)	
Belarus	0.07	0.04	0.0465	0.04	0.016	0.0164	0.05	0.03	0.2412
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Belgium	0.08	0.06	0.2085	0.07	0.02	0.0048	0.09	0.12	0.0543
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.02)	
Bosnia and	0.09	0.07	0.3478	0.05	0.04	0.3754	0.06	0.05	0.7004
Herzegovina	(0.02)	(0.02)		(0.01)	(0.01)		(0.01)	(0.01)	
Bulgaria	0.13	0.07	0.0046	0.07	0.02	0.0041	0.08	0.06	0.2952
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Croatia	0.08	0.03	0.0026	0.06	0.02	0.0026	0.05	0.02	0.0408
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Cyprus	0.15	0.10	0.0502	0.15	0.07	0.0070	0.16	0.16	0.9387
	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	
Czech	0.13	0.05	0.0000	0.05	0.01	0.0043	0.11	0.05	0.0039
Republic	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Denmark	0.14	0.04	0.0000	0.11	0.03	0.0000	0.09	0.05	0.0060
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Estonia	0.10	0.04	0.0001	0.08	0.02	0.0000	0.05	0.03	0.0622
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Finland	0.12	0.07	0.0074	0.06	0.04	0.0974	0.11	0.06	0.0281
	(0.02)	(0.01)		(0.01)	(0.01)		(0.02)	(0.01)	
France	0.06	0.04	0.3517	0.07	0.04	0.0397	0.08	0.08	0.7559
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Georgia	0.27	0.16	0.0037	0.18	0.07	0.0007	0.26	0.20	0.0636
	(0.03)	(0.02)		(0.03)	(0.02)		(0.03)	(0.03)	
Germany	0.08	0.06	0.0884	0.07	0.04	0.0323	0.06	0.05	0.4297
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Greece	0.35	0.25	0.0027	0.24	0.07	0.0000	0.39	0.43	0.3140
	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	
Hungary	0.07	0.06	0.6108	0.04	0.02	0.05	0.06	0.06	0.5413
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Iceland	0.19	0.10	0.0007	0.12	0.09	0.0910	0.14	0.07	0.0034
	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	
Ireland	0.15	0.05	0.0000	0.08	0.02	0.0018	0.12	0.04	0.0001
	(0.02)	(0.01)		(0.02)	(0.01)		(0.02)	(0.01)	
Italy	0.30	0.15	0.0000	0.21	0.10	0.0000	0.21	0.16	0.0485

	(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)	
Latvia	0.07	0.04	0.0590	0.04	0.02	0.0119	0.04	0.03	0.1983
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Lithuania	0.12	0.04	0.0000	0.09	0.03	0.0001	0.04	0.03	0.0950
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Luxembourg	0.05	0.05	0.6093	0.06	0.04	0.0911	0.03	0.07	0.0009
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Macedonia	0.11	0.04	0.0013	0.06	0.03	0.0710	0.05	0.02	0.0825
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Malta	0.10	0.06	0.0370	0.08	0.04	0.0348	0.10	0.13	0.3074
	(0.02)	(0.02)		(0.02)	(0.01)		(0.02)	(0.02)	
Montenegro	0.14	0.09	0.0170	0.06	0.05	0.6291	0.13	0.06	0.0014
	(0.02)	(0.02)		(0.01)	(0.01)		(0.02)	(0.01)	
Netherlands	0.15	0.10	0.0105	0.12	0.08	0.0170	0.12	0.13	0.6658
	(0.02)	(0.01)		(0.02)	(0.01)		(0.02)	(0.02)	
Norway	0.16	0.08	0.0008	0.09	0.04	0.0069	0.13	0.07	0.0036
	(0.02)	(0.01)		(0.01)	(0.01)		(0.02)	(0.01)	
Poland	0.15	0.07	0.0005	0.05	0.02	0.0118	0.03	0.02	0.2975
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Portugal	0.07	0.05	0.3896	0.06	0.03	0.0403	0.12	0.18	0.0113
	(0.01)	(0.01)		(0.01)	(0.01)		(0.02)	(0.02)	
Romania	0.10	0.06	0.0320	0.03	0.03	0.9436	0.07	0.06	0.5337
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Russian	0.04	0.02	0.0467	0.04	0.02	0.2067	0.01	0.01	0.3515
Federation	(0.01)	(0.01)		(0.01)	(0.01)		(0.004)	(0.005)	
Serbia	0.20	0.11	0.0009	0.10	0.05	0.0171	0.16	0.10	0.0085
	(0.02)	(0.02)		(0.02)	(0.01)		(0.02)	(0.02)	
Slovakia	0.13	0.07	0.0041	0.05	0.02	0.0091	0.10	0.05	0.0129
	(0.02)	(0.01)		(0.01)	(0.01)		(0.02)	(0.01)	
Slovenia	0.12	0.06	0.0022	0.09	0.04	0.0119	0.07	0.04	0.0500
	(0.02)	(0.01)		(0.02)	(0.01)		(0.01)	(0.01)	
Spain	0.15	0.11	0.0905	0.10	0.04	0.0011	0.13	0.14	0.4955
	(0.02)	(0.02)		(0.02)	(0.01)		(0.02)	(0.02)	
Sweden	0.15	0.05	0.0000	0.09	0.02	0.0000	0.08	0.04	0.0092
	(0.02)	(0.01)		(0.01)	(0.01)		(0.02)	(0.01)	
Switzerland	0.07	0.04	0.0336	0.05	0.04	0.3262	0.06	0.06	0.7995
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Ukraine	0.14	0.07	0.0008	0.05	0.03	0.0675	0.12	0.08	0.0336
	(0.02)	(0.01)		(0.01)	(0.01)		(0.02)	(0.01)	

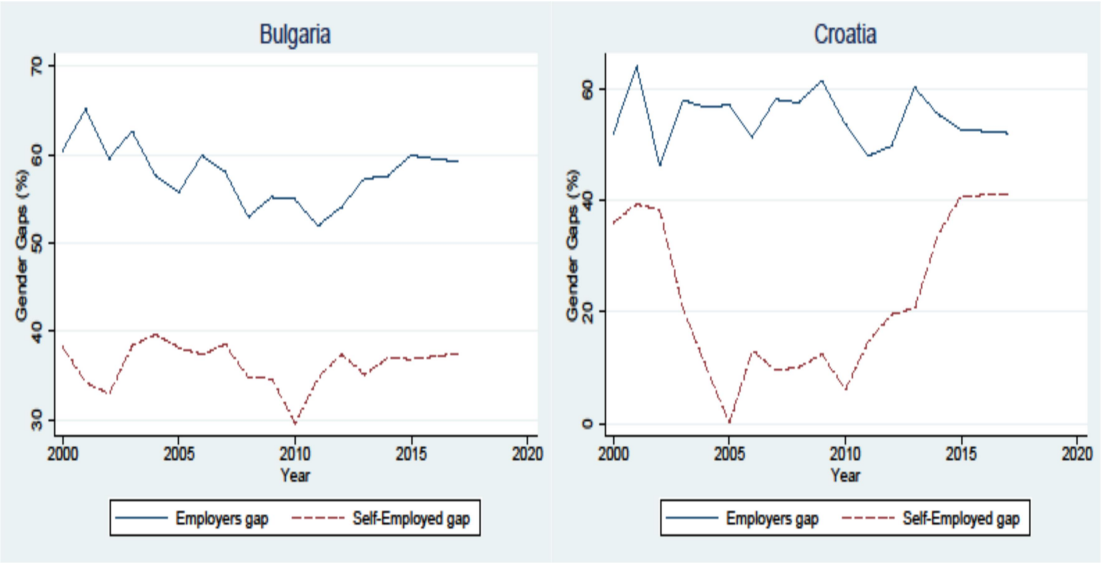
Standard errors in parenthesis

Evolution of gender gaps by country

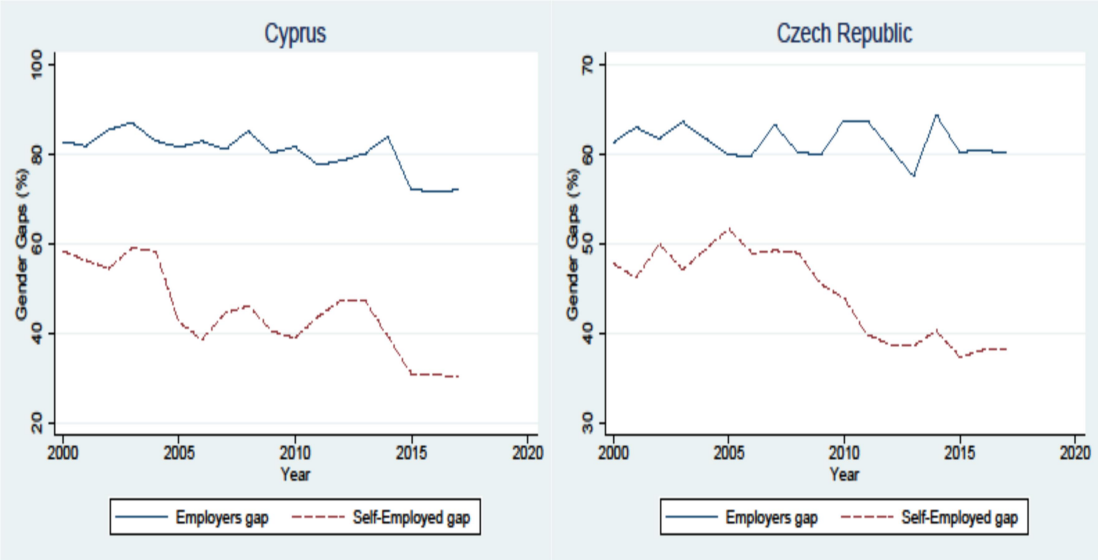


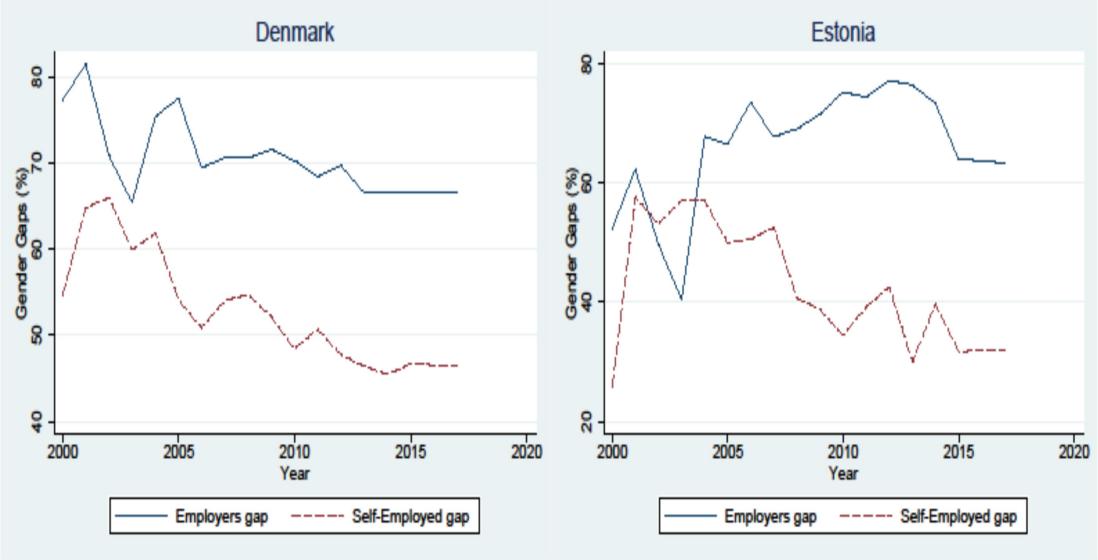

Belgium
Gender Gaps (%)
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

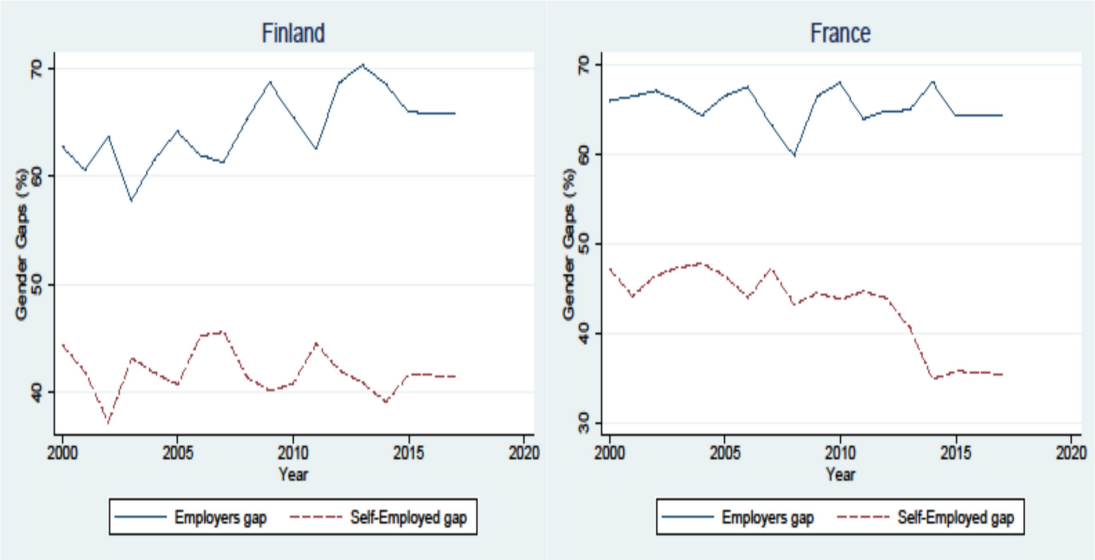
Bosnia and Herzegovina
Gender Gaps (%)
15
20
25
30
35
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Bulgaria
Gender Gaps (%)
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

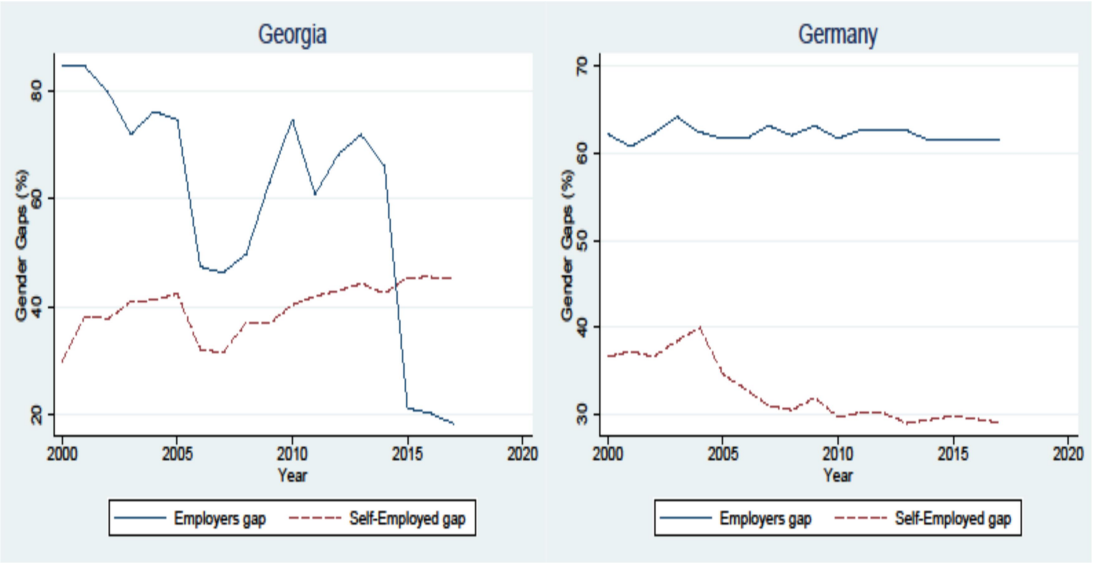
Croatia
Gender Gaps (%)
0
20
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Cyprus
Gender Gaps (%)
20
40
60
80
100
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Czech Republic
Gender Gaps (%)
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

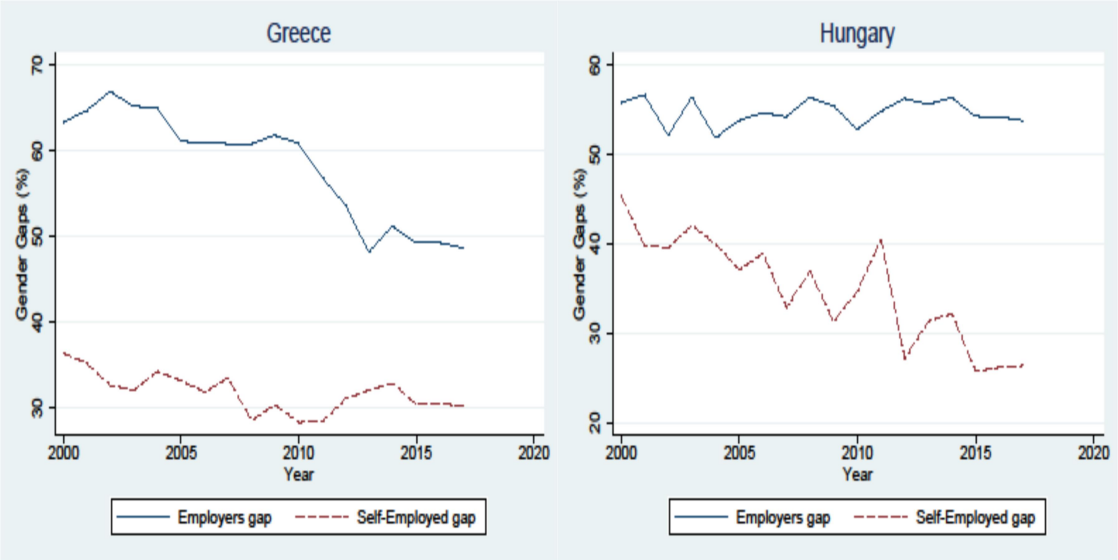

Denmark
Gender Gaps (%)
40
50
60
70
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Estonia
Gender Gaps (%)
20
40
60
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

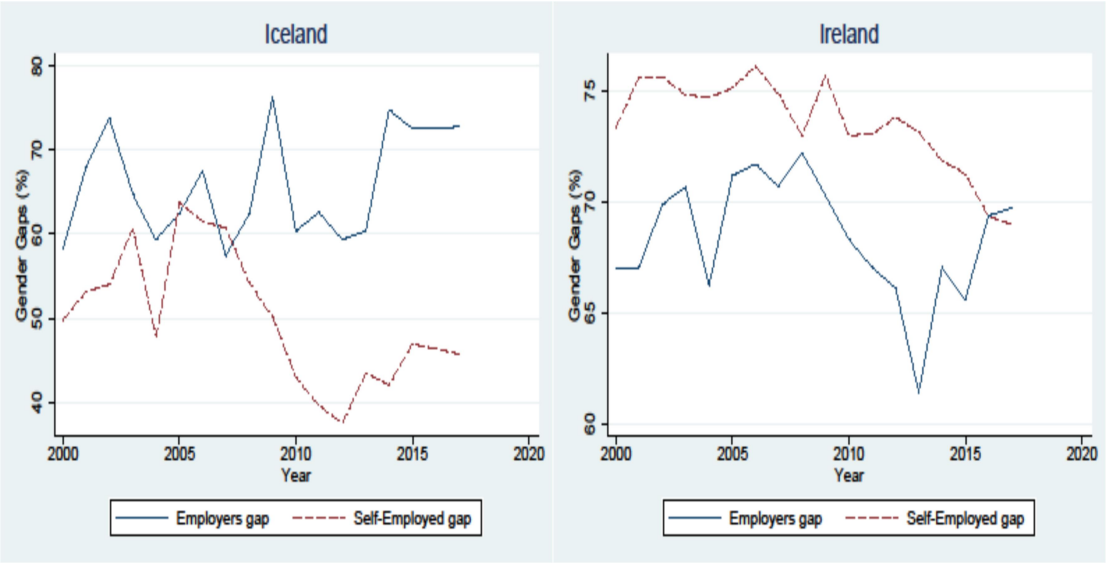

Finland
Gender Gaps (%)
70
60
50
40
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

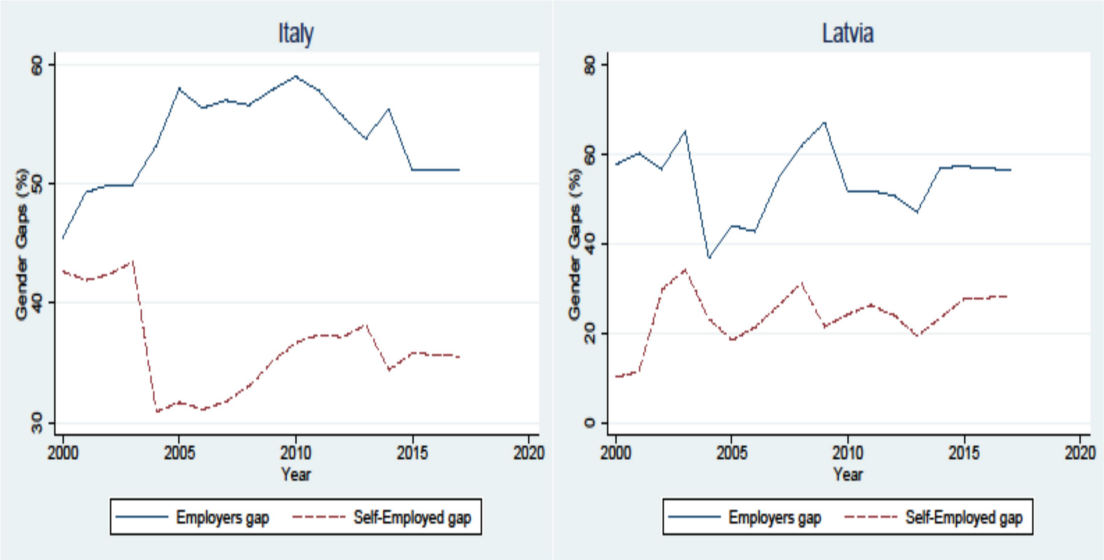
France
Gender Gaps (%)
70
60
50
40
30
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Georgia
Gender Gaps (%)
80
60
40
20
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

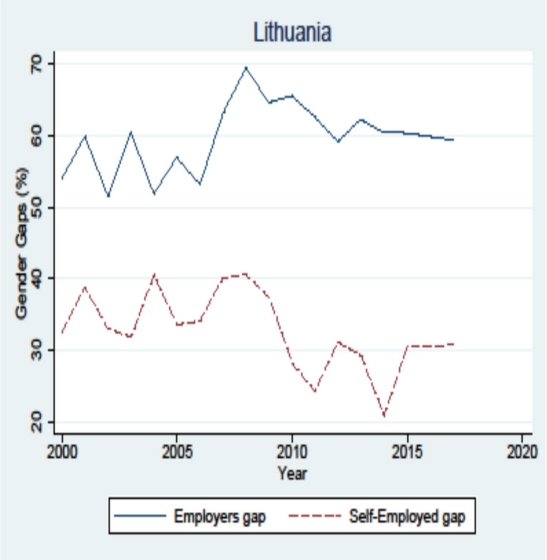
Germany
Gender Gaps (%)
70
60
50
40
30
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

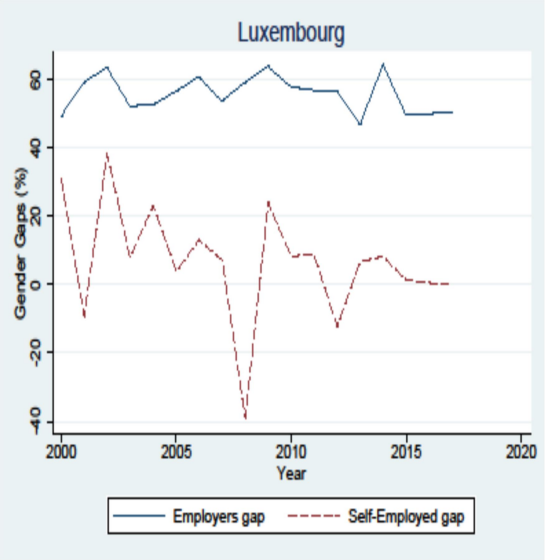

Greece
Gender Gaps (%)
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Hungary
Gender Gaps (%)
20
30
40
50
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

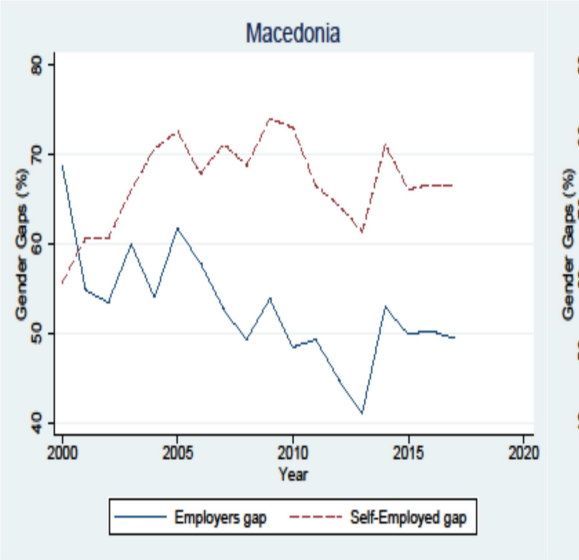

Iceland
Gender Gaps (%)
40
50
60
70
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Ireland
Gender Gaps (%)
60
65
70
75
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

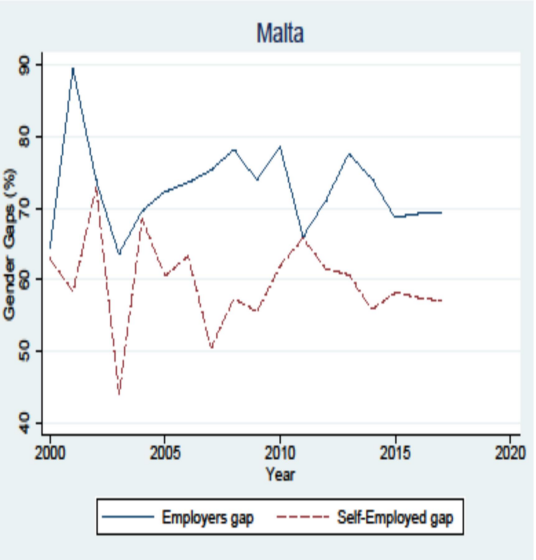

Italy
Gender Gaps (%)
30
40
50
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

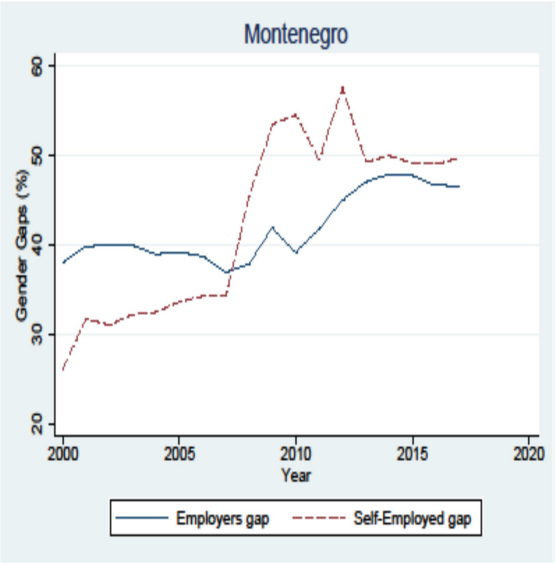
Latvia
Gender Gaps (%)
0
20
40
60
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

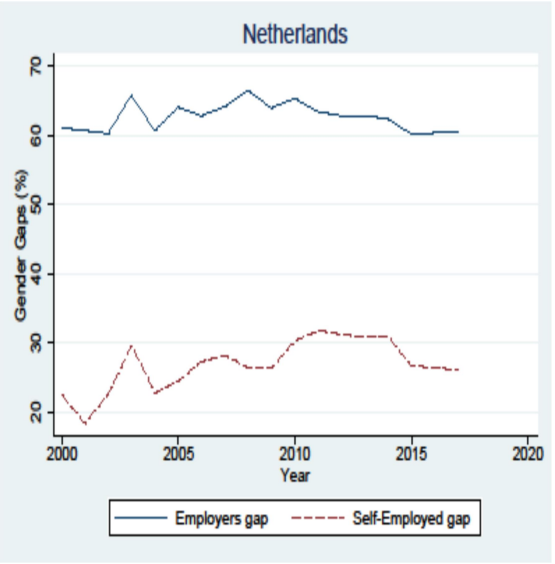

Lithuania
Gender Gaps (%)
20
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

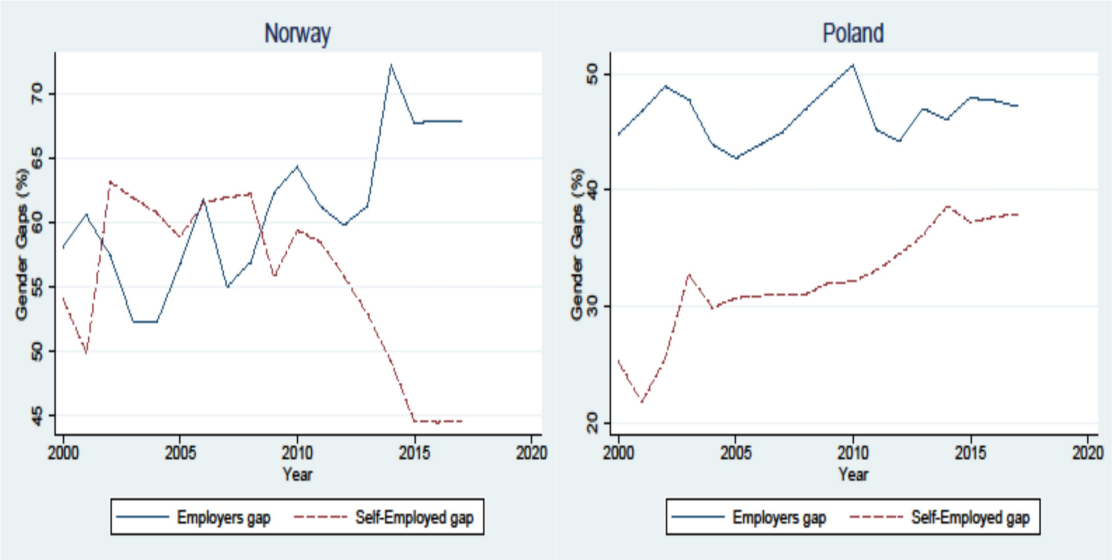

Luxembourg
Gender Gaps (%)
-40
-20
0
20
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

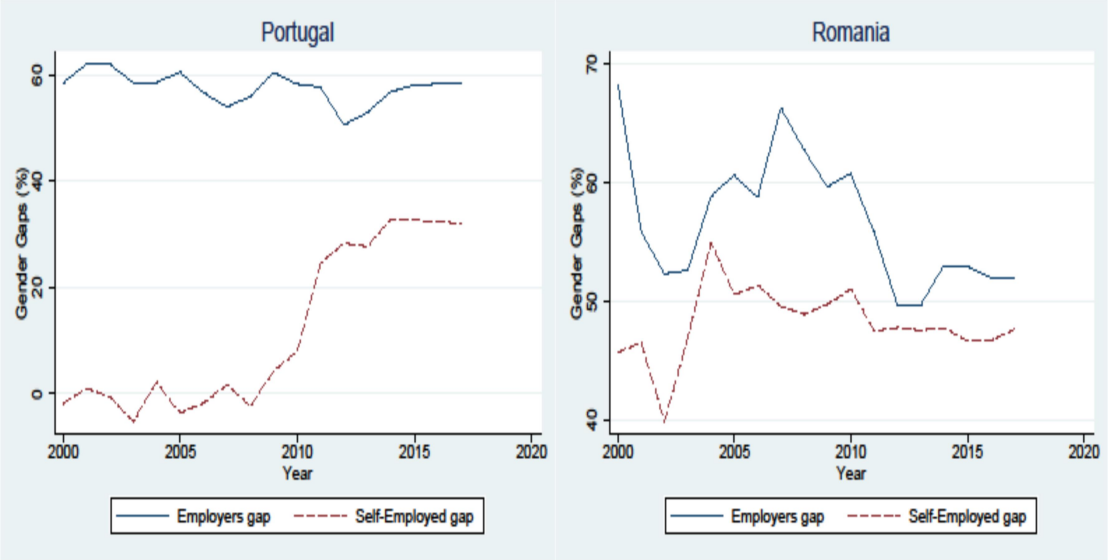

Macedonia
Gender Gaps (%)
40
50
60
70
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

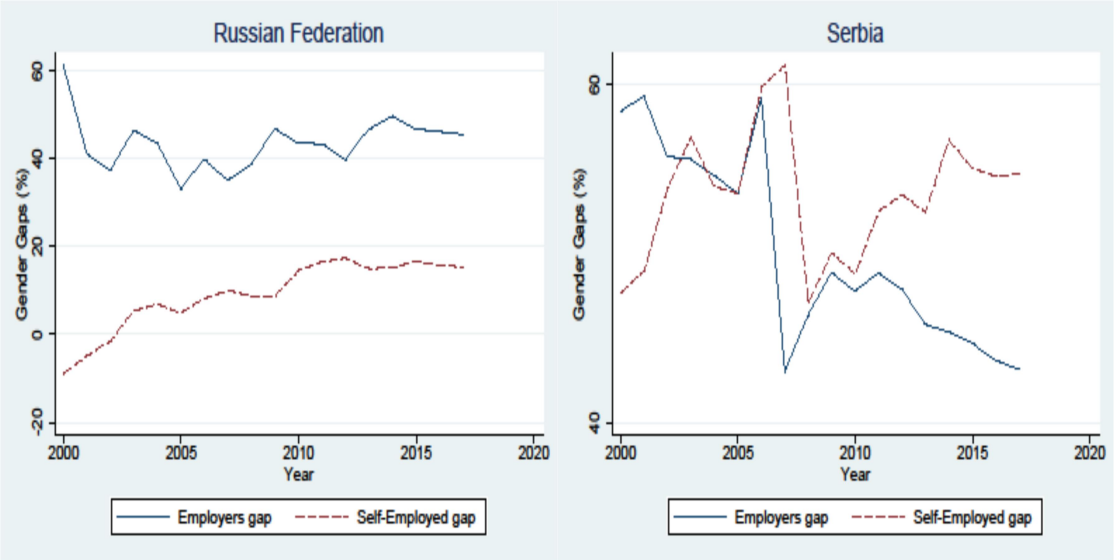

Malta
Gender Gaps (%)
40
50
60
70
80
90
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

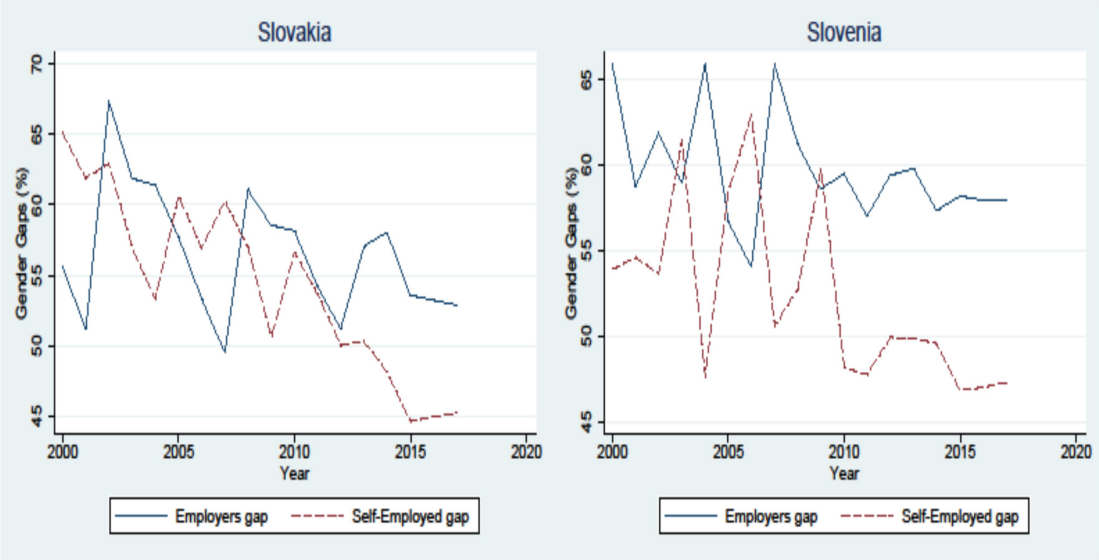

Montenegro
Gender Gaps (%)
20
30
40
50
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

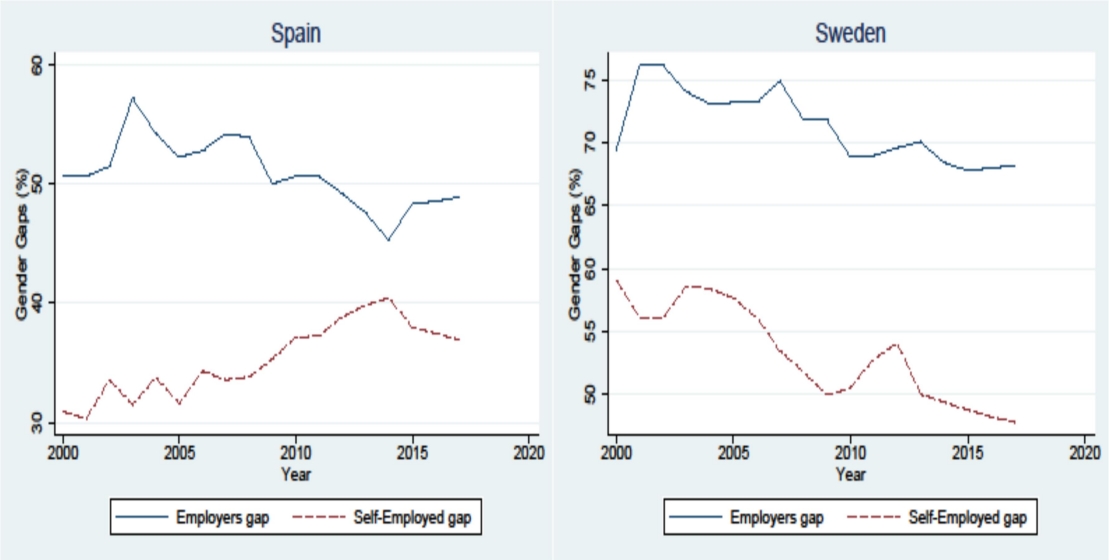

Netherlands
Gender Gaps (%)
20
30
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Norway
Gender Gaps (%)
45
50
55
60
65
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Poland
Gender Gaps (%)
20
30
40
50
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

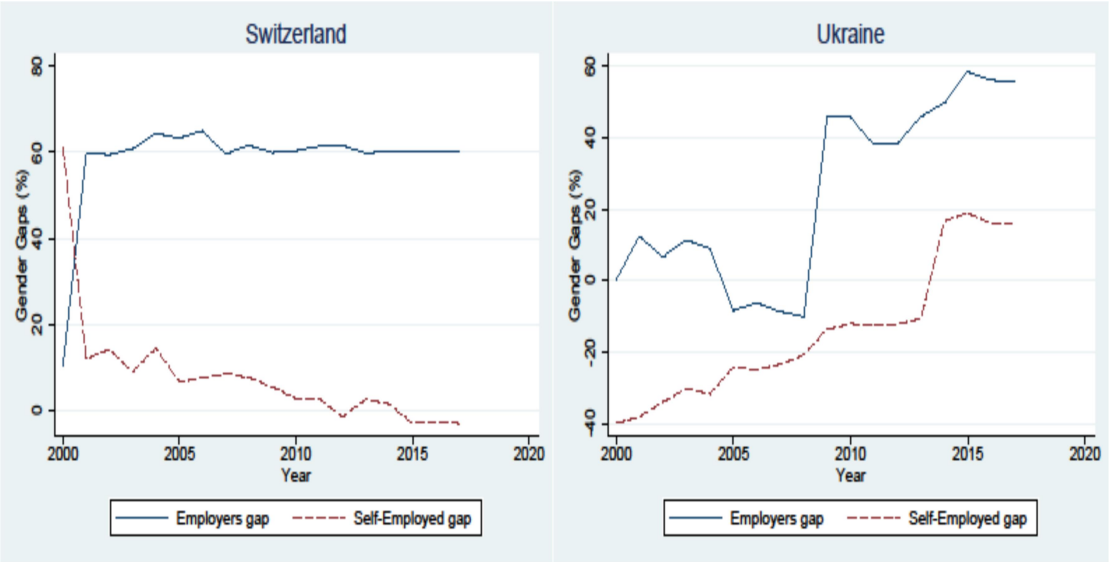

Portugal
Gender Gaps (%)
0
20
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Romania
Gender Gaps (%)
40
50
60
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Russian Federation
Gender Gaps (%)
-20
0
20
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Serbia
Gender Gaps (%)
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Slovakia
Gender Gaps (%)
45
50
55
60
65
70
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap
Slovenia
Gender Gaps (%)
45
50
55
60
65
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Spain
Gender Gaps (%)
30
40
50
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

Sweden
Gender Gaps (%)
50
55
60
65
70
75
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap


Switzerland
Gender Gaps (%)
0
20
40
60
80
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

Ukraine
Gender Gaps (%)
-40
-20
0
20
40
60
2000
2005
2010
2015
2020
Year
Employers gap
Self-Employed gap

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