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# **Gender Gap in Self-Employment and Employership: Regional Differences**

Entrepreneurship plays a crucial role in production and economic growth as it enhances competition in the market and creates employment opportunities. However, this form of employment also has sociological and political significance due to its impact on social class structure and can lead to important outcomes. This study focuses on gender-based and regional disparities in entrepreneurship, exploring the factors that determine entrepreneurship at the macro and micro levels and examining the potential factors that contribute to gender inequalities in entrepreneurship. The literature review provides a theoretical background and presents empirical evidence of gender inequalities in entrepreneurship, employership, and self-employment. Pooled cross-sectional data from the Income and Living Conditions Survey spanning 2006-2018 is used to estimate gender inequalities in entrepreneurship, with logit models. The first-stage models include microeconomic determinants and control variables for Level 1 NUTS regions where individuals reside. The study analyses the effects of region and gender in entrepreneurship in comparison to paid employees and unpaid family workers. The second-stage models estimate logit models containing microeconomic determinants of entrepreneurship for each region and examine gender inequalities alongside other microeconomic variables at the regional level. In the third stage, separate models are estimated for women and men in regions categorized into two groups based on their level of development, using individual personal characteristics to identify differences.

**Keywords:** employership, entrepreneurship, gender gaps, microeconomic determinants, regional differences, self-employment

## **L'écart de genre dans l'auto-emploi et l'employeurship: Différences régionales**

L'entrepreneuriat joue un rôle crucial dans la production et la croissance économique, car il stimule la concurrence sur le marché et crée des opportunités d'emploi. Cependant, cette forme d'emploi a également une signification sociologique et politique en raison de son impact sur la structure de classe sociale et peut entraîner des résultats importants. Cette étude se concentre sur les disparités liées au genre et à la région en matière d'entrepreneuriat, en explorant les facteurs qui déterminent l'entrepreneuriat aux niveaux macro et micro et en examinant les facteurs potentiels qui contribuent aux inégalités de genre en matière d'entrepreneuriat. La revue de littérature fournit un contexte théorique et présente des preuves empiriques d'inégalités de genre en matière d'entrepreneuriat, d'employeurs et d'auto-emploi. Les données transversales regroupées de l'enquête sur les revenus et les conditions de vie couvrant la période de 2006 à 2018 sont utilisées pour estimer les inégalités de genre en matière d'entrepreneuriat, avec des modèles logit. Les modèles de première étape comprennent des déterminants microéconomiques et des variables de contrôle pour les régions NUTS de niveau 1 où résident les individus. L'étude analyse les effets de la région et du genre sur l'entrepreneuriat par rapport aux salariés et aux travailleurs familiaux non rémunérés. Les modèles de deuxième étape estiment des modèles logit contenant des déterminants microéconomiques de l'entrepreneuriat pour chaque région et examinent les inégalités de genre ainsi que d'autres variables microéconomiques au niveau régional. Dans la troisième étape, des modèles distincts sont estimés pour les femmes et les hommes dans les régions classées en deux groupes en fonction de leur niveau de développement, en utilisant les caractéristiques personnelles individuelles pour identifier les différences.

Mots-clés : auto-emploi, déterminants microéconomiques, différences régionales, écarts de genre, employeurship, entrepreneuriat

## **1. Introduction**

Compared to developed countries, labor markets in developing countries exhibit a significant prevalence of self-employment (Campbell and Ahmed, 2012), and the share of self-employment decreases as the share of paid employment increases in the development process of countries. Since the 1980s, Turkey's increasing integration into the global economy and industrialization has caused changes in the social class structure and polarization as the share of paid employment has increased (Kaya, 2008). Entrepreneurship has been seen as a pathway to upward mobility and financial success for those who have limited access to traditional career paths. Therefore, self-employment and its share in total employment are not only important in terms of economic effects but also has sociological and political implications.

Due to its ability to trigger innovation and competitive dynamics in the market, entrepreneurship is seen as an important driver of regional economic development by regional policy makers and, therefore, current regional policies in many regions around the world focus on promoting entrepreneurship. New businesses create new employment opportunities and serve as a mechanism for transitioning between knowledge creation and economic growth. Thus, the development of regional entrepreneurial skills is being used as a tool for developing the regional knowledge economy. In this regard, the literature explores why the probability of self-employment is higher in some regions than in others, and how these differences will affect regional development (Dawson et.al., 2012).

Gender inequality is observed in many socio-economic indicators such as education, wages, occupation, access to production inputs, and political representation in both developed and developing countries. According to Becker and Lewis (1973), one of the most important factors affecting gender inequality is the level of prosperity of countries, and as countries become richer, gender inequality decreases. Despite comprising half of the population, women's contribution to the macroeconomic system remains low in terms of both labor force participation rates and their share in high-productivity sectors, and women contribute to the economy well below their potential. The burden of unpaid work on women, social norms, and traditions that shape them lead to women having lower levels of human capital accumulation compared to men, limiting women's performance in the labor market and causing gender-based segregation in the labor market (Hirway, 2015).

One of the most overlooked aspects of gender inequality in the labor market in the literature is the low presence of women in entrepreneurship activities (Cuberes and Teignier, 2017). Women entrepreneurs face greater constraints in accessing resources, credit, and technology compared to men (Hirway, 2015), and therefore, the lower representation of women in entrepreneurship activities compared to men is a common phenomenon worldwide (Kelley et al., 2013).

Significant regional differences are observed both in entrepreneurial behavior and entrepreneurial activities, and these differences are often persistent. In order to benefit from the potential of regions in the process of economic development, it is important to reduce regional differences in terms of labor market entry, unemployment, and entrepreneurship, and to understand the reasons for these differences. Both micro and macro-level factors should be taken into account to explain these differences. Individuals have personal values and preferences, and they make entrepreneurial decisions by evaluating their own capacities and opportunities, but these decisions are conditioned not only by their personality traits and household characteristics, but also by the presence of other businesses in the region, the development of the regional market, and socio-cultural approaches and legal barriers regarding entrepreneurship at the macro level. Therefore, spatial differences in entrepreneurial behavior and actual entrepreneurial activities are a result of the regional demographics, region-specific economic characteristics, and institutional components (Bosma and Schutjens, 2011).

However, the gender gap in employership and self-employment has been diminishing, also shown with the observations of studies on female entrepreneurship in Turkey mentioning an improvement despite many problems and linking the gender gap in entrepreneurship to factors such as deficiencies in socioeconomic structure, social gender roles and domestic patriarchal production relations (Toprakci Alp and Aksoy, 2018).

Gender inequality in entrepreneurship is a significant issue, with its magnitude varying across countries and being associated with significant macroeconomic output losses. For instance, Cuberes and Teignier (2017) demonstrate that gender inequality leads to a 9.4% reduction in per capita output through the misallocation of resources and a decrease in total productivity. Therefore, identifying valid factors that explain gender inequalities and producing policies aimed at reducing them would be a crucial step in addressing this issue (Cuberes et al., 2018).

In this study, entrepreneurship tendencies and gender inequality in entrepreneurship in Level 1 NUTS regions in Turkey were investigated. In this regard, macro factors that determine entrepreneurship in regions, such as the socioeconomic development levels of the regions and the attitudes towards women's employment at the regional level, as well as individual characteristics that influence individuals' entrepreneurial tendencies were examined at the regional level. Gender inequality in entrepreneurship was estimated using pooled cross-sectional data from the Income and Living Conditions Survey at the regional level through logit models, and gender differences in the determinants of entrepreneurship were investigated by estimating separate models for men and women in regions classified according to their development levels.

Senturk's (2020) study used Household Labor Force Survey data to examine the determinants of self-employment preferences versus paid employment, at the regional level, for men and women separately in 2017. In this study, however, entrepreneurs were examined in two separate groups: employers and own-account workers, with a different approach. Using the Income and Living Conditions Survey instead of the Household Labor Force Survey, the effect of important determinants of entrepreneurship in the literature, such as individuals' health status, ownership of financial capital, and liquidity constraints, on their entrepreneurial tendencies was examined. Pooling the cross-sectional data sets provided a large data set suitable for multivariate analysis, as well as the opportunity to separately examine the determinants of employer status and own-account work.

## **2. Background**

Female employment in Turkey has faced a downward pressure with the transition from agricultural employment to urban employment while female labour force participation has increased with the improvement in their educational level. However, due to reasons such as high opportunity cost of working for women, insufficient work experience, discrimination against women and additional costs related to employing women, non agricultural unemployment rates for women have been higher than that of men. On the other hand; regulations on the retirement age of women, the diminishing negative effect of marriage and having children on women employment and the increasing mean age at first marriage had positive effects on women's employment in Turkey (Gursel and Uysal Kolasin, 2010).

Despite the improvement in the last two decades, Turkey still suffers from a higher gender gap in both paid employment and self-employment types when compared with middle and high income countries. As the gender gap in paid employment is close to that of middle-low income countries, in employership and self-employment Turkey is not even close to low income countries with only 21 female employers for each 100 male employers and 46 female self employed for each 100 male self employed (ILO data, 2000-2019, writer's own calculations).

The phenomenon that countries have different amounts of gender gap in self-employment also applies to regions within Turkey. Entrepreneurial behaviour and entrepreneurship activities show important amounts of gender gap and these gaps occasionally tend to be permanent which can be an obstacle in achieving the full potential of regions in the process of economic development. Both micro and macro factors need to be taken into account in explaining these differences between regions. Individuals have personal values and preferences and they decide on being an entrepreneur after considering their own capacities along with the opportunities around them. These decisions are also conditional on their personalities and household specifications as well as on the presence of other entrepreneurs in the region, the development level of the regional market, socio-cultural approach against self-employment or difficulties arising from formal regulations. Therefore, spatial differences regarding entrepreneurial behaviour and entrepreneurship activities are the result of all regional demographics, region specific economical characteristics and institutional components (Bosma and Schutjens, 2011).

Cuberes et.al. (2018) explained the regional gender gaps in entrepreneurship with development level of regions, institutional structure and regional approach against women's rights in the context of macro factors. Accordingly, GDP and GDP per capita, socioeconomic development level, the distribution of GDP and small enterprises among economic activities, level of unemployment, women's participation in labour force and regional perspective towards women's employment might be macro indicators of different amount of gender gaps among regions.

Higher GDP per capita may indicate a higher demand for income-elastic services provided by small enterprises and easier and less costly raising of capital for potential entrepreneurs (Dawson et.al., 2012). In this regard TR1 Istanbul is the most advantageous region for entrepreneurs by taking up 31% of total GDP with the highest per capita GDP

of 16264\$ (TurkStat, 2018).

In developing regions manufacturing is the industry that has the highest potential for self-employment whereas in developed regions, where mostly big firms dominate the manufacturing industry, services industry would present more opportunities for start-ups. Therefore, a positive relationship is expected between the share of manufacturing industry and self-employment in developed regions and the reverse for developing regions. Acs et.al (1994) has confirmed this phenomenon for both developed and developing countries. Looking at Turkey's case all regions except TR4 East Marmara have a services industry with a dominant share over agriculture and manufacturing and all regions have a relatively small share of companies in the services industry with more than 10 employees. TRC Southeast Anatolia is the region with the highest unemployment rate among other regions as in the last five years TRB, TRA, TR9 and TR7 have also experienced high increases in their unemployment rate along with TRC. Among regions, important differences are observed regarding women's participation in the labour force, especially when non-agricultural employment is in subject for less developed regions. Even in rapid developing regions with an increasing share of manufacturing industry, women's participation in labour force does not increase significantly signalling the overcoming effect of sociocultural factors on economic ones (Burtan Dogan and Kaya, 2014). In 2019 as women's labour force participation in the developed regions of Turkey (TR1-TR6) was at 36%, in the less developed regions it was 31% despite including TR9 East Blacksea with the highest participation rate of women in labour force with 43,5%.

The figures regarding the proportional distribution of labour force by employment status coincides with the development level of the regions; developed regions having higher proportions of paid employment in total employment.

The regional approach towards female employment is considered as an important factor in determining different levels of female entrepreneurship in regions. 2016 Family Structure Survey shows that in Turkey 16,4% of people do not approve paid employment of women whereas 15,3% do not approve of women working at all. TR3 Aegean has the lowest percentage of people not approving paid employment of women with 9,4% whereas TRC Southeast Anatolia has the highest with 28,5%.

Besides macro factors determining the entrepreneurial potential of regions; individual specifications that differ by regions also play a significant role such as fear of failure, the ability to grasp entrepreneurship opportunities and having necessary traits to start a



business (Bosma and Schutjens, 2011). As the differences in self-employment between women and men arise from microeconomic differences such as education and attitude towards risk, macro factors emphasize these differences (Faria et.al., 2020). The 2015 study of Karadeniz indicates various degrees of gender gap in all entrepreneurial traits that have been examined such as noticing opportunities in the region to start a new business, being self confident about having the necessary knowledge and ability to start a new business, holding back from starting a new business out of fear of failure and considering starting a new business is a good career choice. In 2014 TR1 Istanbul, as 44% of men claim that they notice opportunities around to start a new business this ratio is only %35 for women. TR6 Mediterranean region has the lowest gender gap in noticing opportunities and fear of failure as TR7 Middle Anatolian region has the highest gender gap in trusting to have the necessary traits to start a business.

### **3. Related Literature**

Gender gaps in entrepreneurship have been attributed to high opportunity costs for women as a result of their roles within the family by some studies on developed countries (Koellinger et.al, 2013, Cowling and Taylor, 2001) whereas some studies assert that choosing self-employment, men and women have different motives and employment strategies such that as men choose self-employment to improve their long term career opportunities, women choose self-employment as an alternative to unemployment or part time employment (Rosti and Chelli, 2005, Georgellis and Wall, 2005). According to Ahl (2006) and Bruni et.al. (2004) women and men simply make different type of selections in their employment decisions. Being married and having health insurance through the spouse (Devine, 1994) and having young kids (Edwards and Field-Hendrey, 2002) have been shown to be associated with a higher possibility of being self employed for women. Naudé (2013) has pointed out that comparatively more educated women will choose paid employment over self-employment whereas Minniti and Naudé (2010) claimed that the determinants in choosing self-employment does not vary between women and men but the size of their effects vary by the development level of the region.

Although the literature on entrepreneurship in developing countries is vast, the gender dimension has often been neglected. Limited number of studies show that in developing countries, most of micro, small and middle sized enterprises are run by women, frequently home based, and as the firm size increases, the number of ones run by women decreases

(World Bank, 2012). Some studies on regional gender gaps analysed countries in separated groups based on their income level and found that gender gap is higher for high income countries when employership is in question. This finding is explained with the out of necessity concept of entrepreneurship. In countries within the low income group, where fewer job opportunities exist, the frequency of women is found to be higher among the out of necessity entrepreneurs (Cuberes et.al., 2018). Moreover, some studies found indications of differences in productivity and performance between women owned firms and firms run by men due to discriminating institutional environment against women and characteristics of women (Croson and Gneezy, 2009; OECD, 2012; Sabarwal and Terrell, 2008).

Empirical studies on the determinants of being entrepreneurs showed the significance of gender gaps in entrepreneurship even if determinants such as marital status, age, educational attainment, number of children, income level, having entrepreneur parents or spouse and social capital have been controlled for in the models (Cuberes et.al., 2018, Koellinger et.al., 2013). However, Koellinger et.al. (2013) showed the magnitude of gender gap almost halved when personal traits such as fear of failure, consciousness of one's own abilities, realizing opportunities and having a network of other entrepreneurs have been added to the model and concluded that the gender gap in entrepreneurship is mainly the result of a lower tendency of women to start a business due to their personal traits. Caliendo et.al. (2015) similarly focused on showing the relationship between gender gap and personal traits in Germany and found that almost  $\frac{3}{4}$  of the gender gap in entrepreneurship is due to women's relatively lower risk taking personalities as opposed to other personal traits such as openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability, which point to a higher possibility of women transitioning into self-employment. Daoud et.al. (2015) study conducted with data for Palestine, Tunisia and Israel also showed that personal traits of women may affect the tendency to become an entrepreneur in different directions such as fear of failure negatively and perception of abilities positively. Using data from Italy Oggero et.al. (2019) examined the effect of financial literacy and digital skills while controlling for geographic region, age, marital status, having a child and income variables and found that financial literacy makes a positive effect only for men whereas the effect of having digital skills is higher for men pointing to other external factors such as social norms to be affecting women's entrepreneurship preferences. Faria et.al (2020) study using EU data

found that the gender gap in self-employment is an outcome of micro variables such as education and risk perception while conjunctural developments and unemployment effects, which find their place as GDP, GDP per capita, tax burden, infrastructure and globalisation in the model, emphasize these gaps. Senturk (2020) examined the regional effects to self-employment tendency in Turkey and found that in regions TR2 Batı Marmara, TR3 Ege, TR5 Batı Anadolu, TR6 Akdeniz, TR7 Orta Anadolu, TR8 Batı Karadeniz, TR9 Doğu Karadeniz, TRA Kuzeydoğu Anadolu and TRB Ortadoğu Anadolu the probability of being self-employed is higher compared to TR1 Istanbul while in TR4 Doğu Marmara and TRC Güneydoğu Anadolu it is lower and interpreted this finding as in regions where competition and population density is higher or in less developed regions self-employment tendency is relatively lower.

Although there are a number of studies that tackle with gender gaps in entrepreneurship taking into account the development levels of countries or the differences of countries within Europe and North Africa (e.g. Cuberes et.al., 2018; Daoud et.al., 2015; Faria et.al., 2020), we have not come across many studies that consider regional differences within a country, and the ones that look at regional differences (e.g. Senturk, 2020 had findings on the regional differences in entrepreneurial tendencies but not the gender gap). This study aims to close this gap in the literature by analysing the gender gap in entrepreneurship and determinants of entrepreneurship for women and men by regions.

#### **4. Data and Descriptive Statistics**

Turkish Statistical Institute's Household Labour Force Survey (LFS) and Income and Living Conditions Survey (SILC) are the two major surveys that can be employed in studying the micro determinants of self-employment such as age, educational attainment, household specifications and access to financial sources by Turkey's regions.

LFS has been collecting information by regions since 2004, on type of activities, occupation, status at work, duration of employment for individuals who are currently working. SILC, beginning in 2006, produces annual cross sectional data by regions on income related variables and living conditions as well as employment variables of individuals. In studies that examine the determinants of self-employment, access to financial sources has an essential part. Therefore, cross sectional SILC data has been used in this study since it involves information on household income, incomes other than wages and entrepreneurial income, ownership of houses, properties that might be used as

collateral, aids received from family and kinsmen. As the use of large data sets is preferable when conducting multi variable analysis we have pooled the cross sectional micro data sets of SILC for different years and carried out the estimations with these. Number of observations for each cross sectional data sets is presented by status at work in Table 1.

**Table 1. Number of observations**

<b>Year</b>	<b>Total</b>	<b>OLF</b>	<b>EM</b>	<b>UE</b>	<b>SE</b>	<b>UPF</b>	<b>PE</b>
<b>Total</b>	<b>596.811</b>	303.958	10.890	22.241	51.703	40.281	167.738
<b>2006</b>	<b>30.186</b>	15.487	706	1.168	3.189	2.705	6.931
<b>2007</b>	<b>30.263</b>	15.346	634	963	3.089	2.906	7.325
<b>2008</b>	<b>31.141</b>	15.582	621	1.135	3.096	2.713	7.994
<b>2009</b>	<b>32.539</b>	16.112	608	1.544	3.285	2.885	8.105
<b>2010</b>	<b>32.875</b>	16.498	607	1.291	3.203	2.771	8.505
<b>2011</b>	<b>40.679</b>	20.581	722	1.559	3.767	3.051	10.999
<b>2012</b>	<b>47.504</b>	24.050	835	1.532	4.228	3.576	13.283
<b>2013</b>	<b>53.496</b>	26.889	906	1.916	4.649	3.784	15.352
<b>2014</b>	<b>60.525</b>	31.262	1.029	1.975	4.968	3.843	17.448
<b>2015</b>	<b>59.662</b>	30.820	1.073	1.910	4.693	3.332	17.834
<b>2016</b>	<b>57.942</b>	30.190	1.047	1.706	4.431	2.940	17.628
<b>2017</b>	<b>58.744</b>	30.083	1.041	2.663	4.399	2.836	17.722
<b>2018</b>	<b>61.255</b>	31.058	1.061	2.879	4.706	2.939	18.612

The descriptive variables used in model estimations have been grouped into status at work, demographic characteristics, family, education, employment and financial capital categories. Status at work variable is compiled from the answer of the question regarding the status at main job. Paid employment is abbreviated as “PE”, employership as “EM”, self-employment as “SE”, unpaid family workers as “UPF”, unemployment as “UE” and “OLF” for individuals who are out of the labour force. Being either employer or self-employed has been referred to as entrepreneur and abbreviated as “ENT”. Dependent variables have been constructed as taking value 1 for employers and self-employed and otherwise value 0. Paid employees and unpaid family workers have been examined as comparison groups. On the other hand, to investigate whether employers differ from self-employed in their determinants another dependent variable is defined which takes value 1 for employers and 0 for self-employed. Marital status of individuals has been defined as married and not married which covers the categories never married, widowed, divorced and living separately. Household’s income status has been defined as in Cetindamar et.al. (2012), showing which quintile the household’s income falls in the previous year unlike current year’s employment status, thus attempting to avoid endogeneity of the income variable in the model. The explanations on the variables are presented in Table 2.

**Table 2. Dependent and independent variables**

<b>Dependent Variables</b>	
ENT-UFW	1; if employment status is employer or self-employed 0; if employment status is unpaid family worker
ENT-PE	1; if employment status is employer or self-employed 0; if employment status is paid employee
EMP-UFW	1; if employment status is employer 0; if employment status is unpaid family worker
EMP-PE	1; if employment status is employer 0; if employment status is paid employee
SE-UFW	1; if employment status is self-employed 0; if employment status is unpaid family worker
SE-PE	1; if employment status is self-employed 0; if employment status is paid employee
EMP-SE	1; if employment status is employer 0; if employment status is self-employed
<b>Demographic Characteristics</b>	
Female	1 for women, 0 for men
Age	Completed age of individual
Age <sup>2</sup>	Square of completed age of individual
Married	1 for married, 0 otherwise
Health	General health condition from one's own perspective (1-Very well, 2-well, 3-neither good nor bad, 4-poor, 5-very poor)
Head of household	1 if the individual is also the head of the household; 0 otherwise
<b>Family</b>	
Kids	1 if there are kids under 14 in the household; 0 otherwise
Size of household	Number of household members
<b>Education</b>	
Primary education or below	1 if illiterate or literate with no diploma or highest completion level is primary school or middle school; 0 otherwise
High school	1 if highest completion level is high school; 0 otherwise
Vocational high school	1 if highest completion level is vocational high school; 0 otherwise
High	1 if highest completion level is university or masters or doctorate; 0 otherwise
<b>Employment</b>	
Agriculture	1 if employed in agriculture; 0 otherwise
Manufacturing	1 if employed in manufacturing; 0 otherwise
Construction	1 if employed in construction; 0 otherwise
Services	1 if employed in services; 0 otherwise
Registered	1 if individual is registered in social security system due to main job; 0 otherwise
Hours	Total hours worked in a week
<b>Financial Capital</b>	
House	1 if the individual owns a house; 0 otherwise
Security income	1 if the individual receives security income; 0 otherwise
Transfers	1 if the household receives transfer income in cash or kind; 0 otherwise
Income quintile	The quintile in which household's disposable income falls (1-5)

When the distribution of employment statuses is examined by employment sectors, agriculture diverges from other industries (Table 3). As the dominant employment status in non-agricultural sectors is paid employment, in agriculture it is self-employment for men and unpaid family working for women. On the other hand, the information on income of self employed in agricultural sector is known to be misleading (Millán Tapia, 2009). For these reasons agricultural sector has been excluded from our data set and descriptive

statistics has been computed accordingly (Appendix tables).

**Table 3. Employment status by industries**

	<b>Total</b>	<b>Male</b>	<b>Female</b>
<b>Non-Agricultural</b>			
EMP	5.3%	6.3%	1.9%
SE	11.1%	12.2%	7.6%
UFW	2.5%	2.0%	4.2%
PE	81.2%	79.5%	86.3%
<b>Agricultural</b>			
EMP	1.8%	3.1%	0.4%
SE	38.7%	63.5%	13.2%
UFW	48.8%	19.6%	78.7%
PE	10.8%	13.8%	7.7%

## 5. Empirical Results

In cases when the dependent variable takes on values only between 0 and 1; instead of ordinary regression models, logistic curve function structure should be used to ensure the estimated values to be between 0 and 1. A logistic curve function structure has been shown in (5.1) where  $P$  stands for the value of the dependent variable ranging between 0 and 1, and this structure is known as the logit model (logistic model) in the literature (Ramanathan, 2002).

$$\ln \left[ \frac{P}{1-P} \right] = \alpha + \beta X + u \quad (5.1)$$

With logit models the negative outcomes of the dependent variable are represented with 0, whereas the positive ones are represented with 1. Accordingly, in this study for the cases when individuals are entrepreneurs, employers or self-employed, the dependent variable takes on the value 1, and otherwise 0. In logit model estimation the model in equation (5.2) is estimated with maximum likelihood approach. The likelihood function for the logit function is shown in equation (5.3) where  $S$  stands for all the observations that satisfy the condition  $y_j \neq 0$  and  $F(z) = e^z / (1 + e^z)$  for  $j$ , whereas  $w_j$  represents the observation weights in the data set (StataCorp, 2015).

$$\Pr(y \neq 0 | x_j) = \frac{\exp(x_j \beta)}{1 + \exp(x_j \beta)} \quad (5.2)$$

$$\ln L = \sum_{j \in S} w_j \ln F(x_j b) + \sum_{j \notin S} w_j \ln \{1 - F(x_j b)\} \quad (5.3)$$

The analyses in this study have been carried out in three parts. In the first group of analyses a non-agricultural subsample of observations for Turkey has been used and probability of entrepreneurship, employership and self-employment have been estimated as a function of microeconomic determinants and in this model a dummy for NUTS1 regions took part with TR1 Istanbul as the reference region. In the second group of analyses gender gaps in entrepreneurship, employership and self-employment have been examined in Turkey and NUTS1 regions, controlling for microeconomic determinants. In this context the probability of an individual to be an entrepreneur, employer or self-employed has been estimated as the function of variables such as gender, demographic characteristics of individuals, family specifications, employment characteristics and financial capital for Turkey and 12 NUTS1 regions. In the third group of analyses the regions have been divided into two groups based on their development level and model estimations have been carried out for Turkey and two region groups, separately for women and men.

The estimations mentioned above have been repeated for different comparison groups being paid employees, unpaid family workers and lastly self-employed for when the dependant variable is the probability to be an employer. The first group of analyses demonstrate the existence of regional differences and gender gaps in the probability of being an entrepreneur, employer or self-employed when other microeconomic factors are controlled for as shown in Table 4. For each entrepreneurship category the probability of women to be an entrepreneur is found to be significantly lower compared to men. TR1 Istanbul is the reference region for the region dummy. When the comparison group is paid employment, the probability of being self-employed in reference to TR1 Istanbul is higher in every region except TR4 East Marmara whereas the possibility to be an entrepreneur is higher with respect to TR1 Istanbul in every region except TR4 East Marmara and TRC Southeast Anatolia. The possibility to be an employer is higher than TR1 Istanbul in TR3 Aegean, TR5 West Anatolia, TR6 Mediterranean, TR9 East Black Sea and TRB Central East Anatolia while it is less likely to be an entrepreneur in TRA Northeast Anatolia. When the likelihood of being an entrepreneur is compared with the likelihood of being an unpaid family worker, the probability of being an entrepreneur is lower than TR1 Istanbul in all regions but TRA Northeast Anatolia, TRB Central East Anatolia and TRC Southeast Anatolia. In TRC Southeast Anatolia, the probability of being self-employed rather than an unpaid family worker is higher in comparison with

TR1 Istanbul. The rightmost panel of Table 4 shows the estimation results of the likelihood of being an employer in comparison with being self-employed. In TR2 West Marmara, TR3 Aegean, TR7 Central Anatolia, TR8 West Black Sea, TR9 East Black Sea, TRA Northeast Anatolia, TRB Central East Anatolia and TRC Southeast Anatolia the probability of being an employer instead of being self-employed is significantly lower than in TR1 Istanbul. Our second group of estimations aim at determining whether each NUTS1 region suffers from gender gaps in entrepreneurship, therefore the models have been estimated for each of the 12 regions. Table 5 shows the coefficient of the gender variable when microeconomic factors such as demographic characteristics, educational attainment, family characteristics, employment conditions and financial capital have been controlled for. A coefficient less than 1 indicates that women are less likely to be an entrepreneur compared to men. The left panel of Table 5, showing the estimations with paid employees as the comparison group of the dependant variable, in Turkey and each of the NUTS1 regions the likelihood of women being entrepreneurs and self-employed instead of paid employees is significantly less than that of men's. When the likelihood of employership is in question, there is a significant gender gap in all regions but TR2 West Marmara and TR9 East Black Sea. When the comparison group of the dependant variable is unpaid family workers the coefficients of the gender variable tend to be smaller than that of the dependant variable with paid employees as the comparison group, thus pointing to a larger gender gap in entrepreneurship when unpaid family working is concerned as the alternative. The gender gap in likelihood of employership compared to self-employment is significant for TR6 Mediterranean and TRC Southeast Anatolia whereas in TR2 West Marmara there is a negative gender gap in favour of the employership likelihood of women.





The third group of analyses examine whether the gender gaps and determinants of entrepreneurship vary between regions with different levels of development, thus we categorized 12 NUTS1 regions into two groups on the basis of their per capita GDP and socioeconomic development index and run the model estimations for both of these subsamples. The first group of developed regions consists of TR1 Istanbul, TR2 West Marmara, TR3 Aegean, TR4 East Marmara, TR5 West Anatolia and TR6 Mediterranean whereas the remaining six regions constitute the group of less developed regions.

The estimation results for the likelihood to be an entrepreneur (Table 6) point to a significant positive relationship of the development level with women's propensity to be an entrepreneur in comparison with being a paid-employee unlike men whose entrepreneurship tendency has nothing to do with the development level of the region they live in. This finding might be interpreted as the goods and services that women entrepreneurs produce receiving higher demand in developed regions compared with less developed ones. The reverse u-shaped relationship between age and the probability to be an entrepreneur is found to be valid for both men and women. Being married is found to have a significant positive relationship with women and men's propensity to be an entrepreneur instead of a paid employee but not in less developed regions for women. In less developed regions manufacturing industry has been found to offer more opportunities for female entrepreneurs for men the opposite holds. For women, the propensity to be an entrepreneur is estimated to be significantly related with less working hours while male counterparts were found to work more hours than paid employees. According to Simoes et.al. (2015) women's responsibilities of their family leave less time for building networks and sustain their social environment with family and friends. From this point of view the positive relationship of women's possibility to be an entrepreneur with getting income transfers might be interpreted as women's tendency to account for getting support from their community when they are deciding to be an entrepreneur in developed regions, where living conditions are relatively harder. The probability of women to be an entrepreneur instead of a paid employee in the post crisis 2009-2012 period, is significantly higher than in 2006 for developed regions. This finding might suggest that in the post crisis period women had access to paid employment opportunities less than other periods and thus entrepreneurship choices came out of necessity.

The estimation results presented in Table 7 suggests that developed regions offer more employership opportunities than the less developed regions (the coefficient of developed

region variable is statistically significant and greater than 1 in estimations with Turkey sample when the comparison group is paid employees) while both female and male self-employed find more chances to create employment in developed regions (the coefficient of developed region variable is statistically significant and greater than 1 in estimations with Turkey sample when the comparison group is self-employed). For women the propensity to become an employer has a reverse u-shaped relationship with age while for men the same relationship holds in less developed regions but not in developed regions where men's propensity to become an employer increases with age. In developed regions married or household head women's propensity to be an employer is higher compared to singles or regular household members whereas in less developed regions these specifications does not make significant difference when paid employees are concerned as the comparison group. Individuals with higher educational attainment have higher propensity to become paid employees rather than employers but this does not hold for women in less developed regions. For both region groups the likelihood of women to be employers is found to be higher for formal employment. Estimated coefficients for household income levels show that women's propensity to become an employer is higher only in high levels of income whereas for men significant positive relationship is estimated also for lower income levels. When compared with self-employment, even completion of high school is related with higher likelihood of employership for women in less developed regions; whereas in developed regions it takes university or higher degrees for a significant positive relationship between education and employership. The formality of employers is found to be higher compared to self-employed for both region groups and genders. In the same manner with entrepreneurship, the findings suggest that foa higher likelihood to become an employer and create employment, women should have more own capital compared to men.

Table 8 shows the estimation results regarding the likelihood to become self-employed and suggest that women's likelihood to become self-employed instead of paid employee is higher in developed regions compared with less developed regions. The reverse of this relationship holds for men. In developed regions the likelihood of women to become self-employed instead of paid employee is maximized at age 56 and in less developed regions at age 53; while men get to the maximum tendency 17 and 22 years younger. Having a young kid in the household is related with higher propensity to be self-employed whatever the development level of the region is for women, however it has not a significant effect

on that of men's in less developed regions. This might be related to working men having less responsibilities in child care in less developed regions due to gender norms, large sized households and closer relationships with extended family. When compared with the probability to be an unpaid family worker, the likelihood of being self-employed is negatively related with being married for women. Men with higher levels of educational attainment tend to prefer paid employment instead of self-employment whereas women who completed vocational high school has higher likelihood of being self-employed compared to women less educated than high school graduates, however women who are at least university graduates tend to be paid employees instead of self employed. To be working in construction and industrial sector is related with smaller likelihood of self-employment for men unlike women, who are more likely to be self-employed in industrial sector rather than services. In developed regions higher income level for women is found to be related with smaller likelihood to be self-employed.







### *5.1. Discussion*

The estimation results for 12 NUTS1 regions point to significant gender gaps in varying magnitude in entrepreneurship even when factors such as demographic specifications, educational attainment, family characteristics, work conditions and financial capital have been controlled for in the models. Potential entrepreneurs are the ones who can realize opportunities, are conscious about their knowledge and ability required to start a business and are risk takers. There are studies on Turkey pointing to gender gaps in aforementioned personal traits and fear of failure more frequent among women compared to men (Karadeniz, 2015). In this respect the findings of this study regarding gender gaps in entrepreneurship reflect gender gaps in individual specifications that have been linked to entrepreneurship.

This study has found a significant gender gap in the likelihood of being an entrepreneur instead of a paid employee of which size varies by the development level of the regions in line with the findings of Cuberes et.al. (2018). This finding may infer that the gender gaps are not only related to women choosing entrepreneurship less frequently than men due to the burden of unpaid jobs on women, social norms and customs but also the wealth and development level of the regions. On the other hand, there are studies that attribute these gaps to the shorter life of women owned enterprises compared to men owned ones even if there are not many studies that support this thought (Cuberes et.al., 2018).

Regions have been found to have different levels of entrepreneurial tendencies even after controlling for gender and other microeconomic characteristics of individuals. In TR1 Istanbul, the region with the lowest likelihood of self-employment against paid employment, more than 30% of domestic output is being produced and more than 80% of total employment is paid employment. Therefore, it might be inferred that in the most developed regions where there are relatively more opportunities for paid employment, the tendency to be an entrepreneur is expected to be lower. The estimation results pointing to an entrepreneurship possibility higher than TR1 İstanbul in all regions except TR4 East Marmara and TRC Southeast Anatolia are consistent with Senturk (2020)'s probit model results estimated with 2017 LFS data. Senturk (2020) asserted that the level of development and population density in regions affect work status preferences of individuals, for instance competition along with dense population and high living costs steering individuals to search for paid employment as a way to guarantee regular income



flows and on the other hand least developed regions pushing individuals away from self-employment.

The findings regarding the reverse u-shaped relationship between age and the likelihood to become an entrepreneur might be signalling that up to a certain age the tendency to become an entrepreneur gets higher as individuals accumulate human, social and financial capital that are necessary to start a business, aspire more elasticity in their employment conditions and consider self-employment as a means to postpone retirement but in latter ages along with increasing risk aversity the likelihood of starting a business decreases. The age in which the possibility to become an entrepreneur is at its maximum vary among regions.

The positive relationship estimated between poor health and the likelihood of being self-employed is in line with the argument that self-employment provides more opportunities for time and space adjustments between sickness/disabilities and duties of a job. On the other hand, the observed negative relationship estimated between poor health and the possibility to be an employer points to the requirement of good health conditions for an employer because of more stress and longer working hours.

The positive relationship between being married or being the household head with the probability of entrepreneurship found in most of the regions is consistent with studies that suggest married individuals's probability of transition into self-employment would be higher due to having relatively more wealth and using this wealth in case of financial difficulties to sustain their business, getting help from spouses both in terms of emotional support and business related activities.

Parker (2009) claims that formal education improves skills useful for entrepreneurship but also skills for paid employment and men with higher levels of educational attainment, who may catch the best paid employment opportunities, prefer paid employment over self-employment which includes financial risks. Our findings on the relationship of education level with entrepreneurship possibility confirm Parker (2009) for most of the regions but with larger coefficients of higher education for developed regions in comparison to less developed ones. This might be interpreted as a result of the higher demand for goods and services provided by small enterprises, higher disposable income per capita to be used as initial capital and broader financial opportunities that developed regions present, and consequently well educated individuals may choose entrepreneurship in developed regions more than in less developed ones. Therefore, it

might be inferred that in developed regions opportunity driven entrepreneurs are more frequent than less developed regions.

Our finding that educational attainment is positively related to employership possibility against self-employment might be showing that self-employed who are capable of creating employment are the ones having relatively stronger human capital.

Economic development theories assert that as the firm size in services sector is smaller compared to that of manufacturing sector in developed regions they offer more opportunities for self-employment. In line with this, in almost all of the regions the propensity to be an entrepreneur instead of a paid employee is lower in construction and manufacturing sectors compared to services sector. However, employment in manufacturing sector in TRA Northeast Anatolia is found to be positively related to the propensity of being an entrepreneur instead of a paid employee. This finding is in line with the inference that regions being in different levels of development. TR2 West Marmara differs from other regions with a positive relationship between employment in construction sector and being an employer instead of a paid employee. TR2 West Marmara has the highest ratio of employers in construction sector among regions with 18%.

Our findings are consistent with studies that suggest self-employment to be a relatively more tiresome employment status that requires more time to be on the job and to work; on the other hand, among entrepreneurs, employers have been seen to work more compared to self-employed.

Households' nonlabor income and house ownership are found to be related to increase in being an entrepreneur regardless of the type of entrepreneurship. Entrepreneurial activities require a substantial amount of initial capital and especially in developing countries as access to financial capital is limited own capital is accommodated to start up these activities. In less developed regions entrepreneurship is related to higher household income whereas the contrary holds in developed regions. This finding might be interpreted as people with higher income in developed regions tend to wait for paid employment opportunities bearing the financial risk of unemployment for a while but on the other hand in less developed regions as paid job opportunities are limited higher income people start up their own jobs instead of being unemployed.

Employership requires relatively more own capital than self-employment and this might be the interpretation of positive coefficients for higher income quintiles in all of the regions.

In developed regions where a negative relationship has been found between higher household income percentiles and self-employment in contrast with the positive relationship with employership might suggest that entrepreneurs tend to employ paid employees and take advantage of scale economies to be able to compete with numerous other firms in developed regions.

When the determinants of entrepreneurship have been analysed separately for women and men; differences have been realized between regions by development level in type of determinants and the direction and magnitude of the relationship with the dependant variable. The findings of analyses for Turkey sample showed that in developed regions men tend to be paid employees while women tend to be self-employed. Both women and men are found to have higher propensities to be employers instead of self-employed in developed regions, inferring an increased scale of production at the face of a higher demand and more opportunities of marketing for the goods and services of enterprises in developed regions. Therefore, employers in developed regions seem to be motivated by utilizing the economic and social opportunities around and thus are more in sync with the job creation hypothesis.

Our finding regarding to the age at which the propensity of being an employer is at its maximum being higher in developed regions might be a reflection of whether creating employment in developed regions requires more experience and capital accumulation than in less developed regions or increasing risk averseness with age emerges sooner in less developed regions.

Women who have social security, working longer hours, have a small sized household and in 4<sup>th</sup> or 5<sup>th</sup> income quintiles have a higher probability of being employers instead of being paid employees regardless of the development level of the regions. For developed regions, unlike less developed ones, women who are married, household head, having children in the household tend to be employers instead of paid employees. For the women in developed regions the probability of being an employer is found to be lower with being a vocational school graduate which is in line with the findings of Darici and Tasci (2015) for Turkiye. In less developed regions the coefficient of being registered worker and in higher income categories is three times that of developed regions.

For women being married is found to be related to a less probability of being an employer instead of an unpaid family worker in both developed and less developed regions. For men the reverse holds in less developed regions. This might to some extent

result from social gender norms and roles where married women tend to shoulder more responsibility in household and family care and thus prefer employership less due to its nature of longer working hours.

## **6. Conclusion and Policy Implications**

Entrepreneurship is a transition mechanism between the creation of knowledge and economic growth through the creation of new employment opportunities and innovative activities. In addition to its economic significance, the changing part of self-employed, often identified with entrepreneurs in many studies, in overall employment within the globalization and industrialization process has a significant impact in both sociological and political perspectives.

Many policies developed and implemented to achieve economic and social development focus on fostering entrepreneurship. Self-employment in developing countries exhibits a heterogeneous structure in terms of individuals' motives for choosing this type of employment and the results they achieve in terms of economic productivity. Therefore, in order to predict the outcomes of policies aimed at increasing the share of this group in employment and to determine the objectives of new policies, it is important to know who makes this career choice. In this regard, this study investigates the characteristics that affect the career choices of employers and self-employed individuals and how these characteristics differ by gender and region.

In this study, thanks to a large data set constructed by pooling cross-sectional SILC microdata, different groups of entrepreneurs could be examined separately, and inequalities and related factors in terms of gender and region were observed. Micro factors that could affect gender inequality in entrepreneurship in regions were discussed, including the educational levels of women and men in regions and characteristics that show their entrepreneurship potential. As a result of logit model estimates based on SILC cross-sectional data for the years 2006-2018, it was observed that individuals' entrepreneurship probabilities differed by gender and region. While the presence of gender inequality was found to vary among regions and subgroups in entrepreneurship, it was present in almost all regions. The probability of self-employment in most regions is found to be associated with longer working hours, informality, and low education levels in non-service sectors, while employers are found to be relatively more on the formal side of employment with higher levels of education. There are sectoral differences in

entrepreneurship depending on the opportunities provided among regions. Higher probability of self-employment compared to paid employment due to decreased job opportunities during economic downturns has only been observed in some regions. Women's entrepreneurship is found to be more likely in developed regions, while men were less likely to choose self-employment in developed regions where there are more paid employment opportunities. However, compared to self-employment, the probability of employership is found to be higher in developed regions than in less developed regions, indicating that employers in developed regions take advantage of relatively broad economic and social opportunities and therefore tend to have motives consistent with the job creation hypothesis.

According to the findings of the study, there is inequality between women and men in entrepreneurship, which varies across regions and different employment statuses. This inequality between women and men at the macroeconomic level is associated with potential output losses. Despite the negative societal perceptions towards women employment that continue to this day, a significant portion of women cannot translate their entrepreneurial ideas into the economy due to reasons such as fear of failure and lack of confidence in their knowledge and skills. The fact that women's entrepreneurship is more dependent on equity capital than men's suggests that policies aimed at eliminating women's access to capital constraints, such as mentoring programs and venture capital initiatives, would be effective. The level of development of regions may increase the likelihood of women becoming entrepreneurs, as there may be more financial capital opportunities for women in developed regions, and the higher income level may indicate greater demand for products produced by women entrepreneurs.

On the other hand, marriage and having children have a greater impact on women's likelihood of becoming entrepreneurs than men, indicating that women have more responsibilities related to housing and family and therefore cannot show enough presence in the labor market. Especially, the findings related to working hours suggest that women and men have different motives for entrepreneurship. The most important way to encourage women's entrepreneurship is to enable them to trust themselves and their abilities in entrepreneurship through education and sharing successful examples. It is evaluated that gender differences in entrepreneurship can be reduced by ensuring gender equality in access to education, economic opportunities, and earnings, and preventing inequality from being passed on to future generations to accelerate development.

The strong relationship between the entrepreneurial tendency and equity capital assets for both women and men reveals the need for support policies that provide alternative ways to equity capital for innovative and creative entrepreneurs in addition to equity capital access. Considering that the findings related to entrepreneurial tendency and age stem from increasing experience and equity accumulation with age, it is thought that environments where experienced entrepreneurs share their experiences and mentoring practices can be created, and experience deficiency can be overcome. It is also thought that policies that eliminate the lack of experience and capital of entrepreneurial candidates can turn entrepreneurship into an employment status independent of age and equity accumulation and become an option for young people with high energy and education levels and creative ideas.

Just like gender inequalities, regional differences in entrepreneurship may hinder the potential for economic development. Therefore, policies that increase the level of economic development in regions with low levels of entrepreneurship can reduce regional disparities in entrepreneurship and thus increase potential output.

### **Disclosure Statement**

The views expressed in this work are entirely those of the authors and do not in any way bind Turkish Statistical Institute.

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