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Family, Gender Inequality and Women's Entrepreneurship

Name of student: Audrey Valenska Artavasya Sigit

Student ID number: 466846

Supervisor: Dr. Niels Rietveld

Second assessor:

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Abstract

A gender gap still exists in the field of entrepreneurship. In this thesis I explore the relationship between gender inequality and women's entrepreneurship engagement as well as the moderating effect of having children under 18 years old in one's household on women's entrepreneurship engagement. Using data from a sample of individuals aged 20-64 from 20 innovation-driven countries in the European Social Survey in combination with World Economic Forum's Gender Inequality Index, I found a negative relationship between being a woman and entrepreneurship engagement and a positive relationship between gender inequality and women's entrepreneurship engagement. Meanwhile, I found no significant relationship between the presence of children under 18 in one's household on women's entrepreneurship engagement and therefore no significant moderating relationship. These results open possibilities for further research regarding the role of family and gender inequality on women's entrepreneurship.

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I. Introduction

From the gender pay gap to the existence of unequal gender roles, the effects of gender inequality are felt by women to this day. Despite advances made in levels of gender inequality in different countries through increases in women's educational attainment as well as participation in political and economic affairs, there still exists a gender gap in the field of entrepreneurship: according to the OECD, in 2018 women are only 60% as likely as men to be self-employed in the EU.

As the adage goes, "you can't have it all"—women who want to pursue careers while also raising a family are still faced with challenges such as unequal household workloads and work-family conflicts. Some women are also drawn to entrepreneurship as a career choice that offers them flexibility in choosing when and where to work (Kirkwood & Tootell, 2008) and as such can combine their family and work responsibilities.

Exploring the role of gender inequality and the role of having a family, particularly raising children, on women's entrepreneurial engagement may help in expanding the research efforts to understand the factors that lead women to choose entrepreneurial careers. As such, the main research question of this thesis is:

> *How does gender inequality affect women's entrepreneurial engagement, and how does having a family (i.e., children under 18 years old in one's household) moderate this relationship?*

In order to answer this research question, I will discuss existing entrepreneurship literature regarding women's participation in entrepreneurship as well as factors that affect women's entrepreneurship. I will also conduct empirical analysis through multilevel logistic regression, utilizing data from the 9th round of the European Social Survey in combination with the World Economic Forum's Gender Inequality Index. Afterwards, I will present the results of this empirical analysis and continue with a discussion of the results. Finally, I will conclude the thesis with suggestions for avenues of further research.

II. Theoretical framework

a. Women's entrepreneurship

Entrepreneurship is acknowledged to be a predominantly male field (Ahl, 2006). Women are still found to be thirty percent less likely to enter into entrepreneurship than men (Dheer, Li & Treviño, 2019). Earlier female entrepreneurship literature focused on finding out the differences between male and female entrepreneurs. For example, DeMartino and Barbato (2003) investigated the differences in motivation between male and female MBA graduates in starting their own business. Even though the men and women surveyed come from similar educational and career backgrounds, the authors found that the married women with dependents had higher preference for career flexibility, family policies, family obligations and spouse issues as their career motivators, significantly higher than married men with dependents. The differences between genders were much smaller when comparing those without dependents, except men still rank wealth creation higher as a motivation for pursuing entrepreneurship. Thus, it can be concluded that differences between male and female entrepreneurs are not necessarily due to differences in know-how; rather, they have different motivations to begin with.

In order to understand the gap between the amount and performance of women-owned businesses compared to men-owned ventures, Winn (2005) analysed the reasons women pursue the entrepreneurship career as well as the challenges that women face as entrepreneurs. The author postulated that business ownership can be an ideal choice for women who are often made to choose between career or family, allowing them to have more flexibility and autonomy. However, women face challenges in terms of acquiring start-up funding due to investors' and banks' lack of trust in women's intent to expand and grow their business, since they may not be exclusively driven by a profit motive. Apart from that, traditional family structures as well as family responsibilities can lead women into role conflicts between being a mother as well as an entrepreneur, which can further lead to isolation and stress.

However, findings by Rey-Marti, Tur Porcar and Mas-Tur (2015) regarding the link between women entrepreneurs' motivation and business survival found that when women are motivated to start their business to achieve work-life balance, they have a lower chance of

achieving medium-term business survival. Meanwhile, those who are motivated by their propensity for risk-taking are more likely to succeed with their business. This may caution women against choosing an entrepreneurship career solely to reduce the work-family conflict, as risk-taking is an important aspect of entrepreneurship and may pay off in terms of business survival.

Women perceive lack of support as a more important barrier to entrepreneurship than men do (Shinnar, Giacomin & Janssen, 2012). Supportive institutions can be one way to solve this. In her work, Thébaud (2015a) emphasizes the role of institutions that attempt to bridge the work-family conflict. She argued that institutional factors such as subsidized childcare, paid leave and opportunities for part-time work will tend to reduce the number of women who become early-stage entrepreneurs, as they are less likely to pursue entrepreneurship as an alternative career choice that enables them to reduce their work-family conflict. The author's findings support this, as the institutions that support the family are associated with an increase in the gender gap in early-stage and established business ownership, while reducing the gender gap in terms of business size, growth aspirations, and propensity to innovate or use new technology. It can be concluded that supportive institutions can broaden career choices for women and enable them to pursue more innovative, opportunity-based forms of entrepreneurship rather than becoming one out of necessity.

The existing gap between male and female entrepreneurial engagement needs to be investigated, which leads to the first hypothesis:

Hypothesis 1: There is a negative relationship between being a woman and being engaged in entrepreneurship.

b. Gender inequality in entrepreneurship

Gupta, Turban, Wasti and Sikdar (2009) find support for their hypothesis that entrepreneurship is perceived as a masculine field, and that entrepreneurs are perceived to have more masculine characteristics. They also found that while women see an overlap between feminine and entrepreneurial characteristics, men do not have similar views, seeing more congruence between masculine and entrepreneurial characteristics. Lastly, the authors found that higher identification with masculine characteristics, and not necessarily being of

the male sex, is associated with having higher entrepreneurial intentions. This has implications for how entrepreneurial decisions are made, including investment decisions from banks or investors: women entrepreneurs may not get as much support as they could, simply because they do not fit the masculine gender stereotypes that entrepreneurs are associated with.

Gender status beliefs, or the widely shared cultural beliefs about men's and women's abilities, also affect female entrepreneurs adversely (Thébaud, 2015b). In an experimental setting, Thébaud found that the experiment's participants had lower expectations for women entrepreneurs and the viability of their business plans compared to men entrepreneurs. Meanwhile, innovative ideas seem to be more highly rewarded when coming from women rather than men, which may suggest that women's ability to innovate is perceived to align more with the stereotype of a masculine, entrepreneurial characteristic. This existing gender bias can negatively affect women entrepreneurs who are seeking the support of stakeholders.

Culture, alongside gender, also affects the extent to which women and men perceive the barriers to entrepreneurship. Shinnar et al. (2012) applied Hofstede's (1998) cultural dimensions in order to compare how male and female university students in China, United States and Belgium perceive barriers to entrepreneurship. They found that in China, where a more masculine culture prevails and women and men grow up with similar expectations due to the one-child policy, women are less deterred from entering entrepreneurship by their perceived lack of competency than women in the United States and Belgium are. As such, when traditional gender roles do not constrict the decisions made by women, women may find that they are more capable of entrepreneurship and thus pursue it as a career.

Another study focusing on socio-cultural factors that affect women's entry into entrepreneurship is one by Dheer et al. (2019). While they found differences across cultures in the gender gap between women's and men's early entrepreneurship activities, they found that in more masculine nations, there is a smaller gender gap in starting new ventures. This can be explained by a greater emphasis on masculine values and ego goals as well as the subjugation of women in traditional institutions, which may push women towards entrepreneurship careers to achieve more autonomy and flexibility. Additionally, institutional non-compliance also has a positive moderating effect on the gender gap, which may suggest that women may find it easier to start new ventures in the presence of more lenient social

norms and informal mechanisms. Lastly, the authors found that generalized trust has a negative moderating effect on the gender gap in starting new ventures, which may point towards a need for more formal institutions that protect the interests of female early entrepreneurs, who may not have existing agreements of trust with suppliers, for example.

While women entrepreneurs face challenges due to the gender inequality that exists in entrepreneurship, studies regarding the effect of gender inequality on women's entrepreneurial activities have yielded mixed conclusions. Sarfaraz, Faghih and Majd (2014) did not find a significant relationship between the gender empowerment measure index (GEMI) and women's entrepreneurial activity. Meanwhile, Klyver, Nielsen and Evald (2013) found a negative association between a nation's level of gender equality and women's self-employment choice compared to men, an association that is more strongly negative in developing countries and male-oriented industries. Klyver et al. (2013) suggest that especially in more developed countries, national-level gender equality channels women more towards employment rather than self-employment. Their findings are also consistent with the idea that what constitutes gender inequality tends to change at different development stages; for example, the existence of benefits such as childcare for employed rather than self-employed individuals could encourage more women towards traditional employment, while also relatively increasing gender equality in a certain nation.

To consider the cultural differences that tend to affect the gender gap in entrepreneurship in different nations, we will focus our analysis on the innovation-driven economies as defined by the World Economic Forum (WEF), as these nations may have more in common at their similar stages of economic development. In such countries, progress made in gender equality is reflected in the availability of supportive institutions such as the option to do part-time work and affordable childcare for employees, which can benefit women who want to achieve a work-family balance but may deter them from choosing an entrepreneurial career to do so. As such, we hypothesize that:

Hypothesis 2: There is a positive relationship between gender inequality in a country and individual engagement in entrepreneurship of women.

c. The family

Previous literature has suggested that finding a balance between work and family is a priority for women who pursue their career in entrepreneurship. Aldrich and Cliff (2003) postulated the family embeddedness perspective of entrepreneurship, which puts emphasis on how inextricably linked the family is to entrepreneurship. The entrepreneur and their family may participate in exchanges of interpersonal resources and support due to their relationship. Thus, the dual role of female entrepreneurs as an entrepreneur and her role in the family, such as being a mother, should be considered in analyses.

In order to estimate the relationship between family and women's entrepreneurial engagement, we define the family as the presence of dependents below the age of 18 in the individual entrepreneur's household. This is because children below the age of 18 generally require parental supervision and depend on their parents for financial support. Therefore, much of an adult entrepreneur's family responsibilities will likely relate to time spent on childcare, which may decrease as their children grow older.

Male and female entrepreneurs have different views on work-family balance. Eddleston and Powell (2012) suggest that work-family balance is affected by the family's functions of enrichment and support. The authors define family-to-business enrichment as occurring when "resources generated in the family domain are applied in the business domain in a way that benefits the business domain" (p. 517), such as transferring skills and behaviours acquired in the family to the business domain. Meanwhile family-to-business support is experienced through emotional and instrumental support, such as through the division of household tasks or family members' help in running the business. They found that female entrepreneurs experience more work-family balance through family-to-business enrichment, while male entrepreneurs find more work-family balance through family-to-business support. It can be concluded that the gendered nature of entrepreneurship means that women and men still have different experiences with regards to their families when they pursue this type of career.

Rønsen (2012) found that the presence of young children up to the age of 10 in a family has a positive and significant effect on women's propensity to choose entrepreneurship as defined as self-employment. The author suggests that women may choose to become entrepreneurs due to the added flexibility that it gives in choosing their own working hours and time spent on childcare. The author also found that the presence of a partner who is also

self-employed increases the likelihood that someone chooses self-employment, which may suggest the presence of human and social capital transfers within the household. Therefore, we hypothesize:

Hypothesis 3: There is a positive relationship between the presence of dependents below the age of 18 in a household and individual engagement in entrepreneurship of women.

Gender inequality is pervasive in the family context despite its decline at the national level in several countries, as demonstrated by the division of childcare and housework between men and women. Mothers still participate more in childcare than fathers (Craig & Mullan, 2011) and having young children is associated with a decrease in women's hours spent in employment (Andringa, Nieuwenhuis, & van Gerven, 2015). In their comparison of four countries (Australia, Denmark, Italy and France), Craig and Mullan (2011) found that working and non-working mothers, even in the most gender-egalitarian country, still contribute more childcare hours, especially to routine childcare tasks such as picking up children from school. Meanwhile, a larger proportion of fathers' childcare time is spent doing non-routine, possibly more enjoyable tasks such as play activities.

Individual and national-level gender ideologies in a country affect housework division and women's employment (Fuwa, 2004; Andringa et al., 2015). Traditional gender roles are the beliefs that women's employment is at odds with family life, whereas those with egalitarian gender roles posit that women's employment is not incompatible with family responsibility. Thus, we can infer that gender egalitarian individuals and countries have a stronger support for gender equality. Andringa et al. (2015) found a negative association between the national level of traditional gender roles and the number of hours women work. Thus, women in countries with traditional gender ideology contribute more hours into housework and childcare than their counterparts in gender egalitarian countries. Conversely, higher national expenditures on childcare services are associated with an increase in number of hours worked by women and affects women who hold traditional gender roles more positively, suggesting the positive effects of structural support systems that allow women to reduce their work-family conflict.

Fuwa (2004) investigated the effect of macro-level gender inequality on division of housework, using the gender empowerment measure index (GEMI) to measure national

levels of gender equality. The author found that in countries where the GEMI is higher, women can negotiate a more equal division of housework. On the other hand, the author also found that in countries where women have a higher labour force participation, being in full-time employment has a positive effect on the level of housework that women participate in, which means that women are not necessarily able to negotiate a more egalitarian housework division; this suggests that gender equality in the workplace may not necessarily be followed by gender equality within families unless societal values support a more egalitarian household division of labour.

The implication of gender inequality on women's entrepreneurial engagement is that women in countries with higher levels of gender inequality may be induced to choose a career that offers them more flexibility, which entrepreneurship may offer in comparison to paid employment. With the burden of higher demands of housework and childcare that they carry, entrepreneurship offers women more strategies to manage work-family conflict, for example by choosing when to work, who to work with and where to work, such as by starting a business at home (Kirkwood & Tootell, 2008). Therefore, we hypothesize that:

Hypothesis 4: The presence of dependents below the age of 18 in the household moderates positively the relationship between gender inequality and the individual engagement in entrepreneurship of women, such that it is stronger for women with dependents below the age of 18 in the household.

III. Data

The data used to test my hypotheses come from a combination of the European Social Survey (ESS) and the World Economic Forum's Gender Inequality Index (GII).

ESS is a biennial cross-national survey of attitudes and behaviors. Data is collected for the ESS every two years through interviews with private residents of the different countries, and the data is meant to be representative of all persons aged 15 and over in those countries. The questionnaire is made up of a core section, a rotating module which asks different questions each round, as well as a 21-item human values scale. The countries must achieve a sample size of at least 1500 participants each round or 800 participants for countries with a population size less than 2 million people. For my research, I am using ESS

data from Round 9 which started in 2018, which has data from 20 innovation-driven economies as defined by the World Economic Forum (WEF) that I restricted my sample to. I also focused my analysis on individuals aged 20 to 64 who are in their productive working years. I also removed individual data points from the sample with missing information, for example partnership status and occupation.

An advantage of the ESS is that it contains data on the age and number of the children in the household, which is not included in other datasets regarding entrepreneurship. This data is relevant for the hypotheses that I tested and can assist in comparing the results with past studies of the same topic.

The GII is an initiative by the World Economic Forum since 2006 to measure gender-based inequalities in different countries. It is based on four criteria, which are economic participation and opportunity, educational attainment, health and survival, and political empowerment. The GII is measured annually and can be used to track progress in achieving gender equality over time. I used GII values from the years 2018 to 2020 which are included in Round 9 of the ESS. In my research, I use the GII values as a measure of gender equality in a certain country.

a. Individual-level variables

The main dependent variable in this research is entrepreneurship, which is derived from the ESS variable employment relation. Following Wennekers & Thurik (1999), who distinguished entrepreneur types into Schumpeterian entrepreneurs, intrapreneurs or managerial entrepreneurs, and managerial business owners (self-employed), I defined entrepreneurs as individuals who are either self-employed or working for own family business, as these are the indicators that most closely describe entrepreneurship. The variable entrepreneurship takes a value of 0 when the individual is employed in wage work and 1 for entrepreneurs.

The individual-level independent variables in this study are gender (female) and the age of the youngest child in the household. The variable female takes a value of 0 for men and 1 for women, which is relevant for testing Hypothesis 1. Meanwhile, the age of the youngest child in the household is used to test Hypotheses 3 and 4 which concern the

presence of dependents below the age of 18 in the household. As children at different ages may require different amounts of childcare, I divided this variable into categories for ages 0-2, 3-6, 7-11 and 12-17 years old as well as those without young children. I derived this data from the ESS dataset's variables for the years the interviewee's household members were born as well as the relationship between the interviewee and the household member, focusing on children as the interviewee is likely the primary caregiver of this child through their parental relationship.

As control variables at the individual level, I used age, age squared, years of education and the partnership status of the interviewee, based on the research of Rønsen (2012). Age and age squared are included to determine the relationship between age and entrepreneurial engagement, which may have a non-linear relationship. Meanwhile, years of education is associated with the accumulation of human capital, which in turn may affect an individual's likelihood of being an entrepreneur. I also included partnership status as a binary variable with 1 representing a partnered (married or in a legal partnership) and 0 for those divorced, separated or otherwise single as partnered and non-partnered women may have different levels of time spent for labor and/or childcare (Andringa et al., 2015).

b. Country-level variables

In order to test Hypotheses 2 and 4, which are about the effect of gender inequality on women's entrepreneurial engagement, I used the Gender Inequality Index (GII) as the main independent country-level variable. The value of GII is an integer between 0 and 1, calculated from the average of the four criteria that make up the index, with 0 representing complete gender inequality and 1 representing complete gender equality according to the four criteria.

To control for the differences between different countries, I used the annual percentage of GDP growth as well as GDP per capita (in logarithmic form) as reported by the World Bank. These control variables are included as they represent the level of economic development in a country, which in turn affects the level of entrepreneurship (Dheer et al., 2019).

IV. Methodology

As the ESS contains clustered data where individual observations are nested within different countries, I conducted multilevel logistic regression in order to find out the relationship between family and gender inequality with women's participation in entrepreneurship. Like logistic regression, multilevel logistic regression is useful for when the outcome is variable is binary, as it is in the case of this thesis (either someone is engaged in entrepreneurship or not). The multilevel logistic regression equation thus indirectly estimates a probability through a logistic function which can then be converted into a probability estimate.

An advantage of multilevel logistic regression is that it enables the estimation of different log-odds in different clusters as well as estimating different effects for lower-level variables within the clusters (Sommet & Morselli, 2017). However, Sommet and Morselli caution that having less than 40 clusters of the higher-level variables (in the case of my analysis, the number of countries) reduces statistical power and increases the likelihood of Type-I errors. Still, due to the nature of the data, I considered this to be the most appropriate methodology to test my hypotheses.

In order to test the Hypothesis 1, which is about whether being female lowers one's probability of being engaged in entrepreneurship, I used a sample 22,584 men and women aged 20 to 64 in estimating the model. Meanwhile, for Hypotheses 2 to 4, as gender inequality is a variable that negatively affects women, I used a sample of 11,566 women aged 20 to 64 which was included in the 9th round of the European Social Survey (ESS).

In this thesis, I would like to not only estimate the direct effects of the presence of young dependents in the household as well as gender inequality on women's entrepreneurial engagement (Hypotheses 2 and 3), but also estimate the moderation effect (Hypothesis 4). To do so, I first ran a multilevel logistic regression with the age of the youngest child in the household and GII as independent variables, firstly without the presence of control variables. Then, I ran a similar regression with the inclusion of individual-level and country-level variables. Lastly, I ran the full regression model where I include the age of the youngest child in the household, GII as well as an interaction variable of GII and the age of the youngest child in order to estimate the moderation effects of gender inequality on women's entrepreneurial engagement.

The equation for the full multilevel logistic regression model is as follows:

$$P(WE_{ij} = 1) = \beta_{0j} + (\beta_{1j} + u_j) \cdot age\ of\ youngest\ child_{ij} + \beta_{2j} \cdot GII_j + \beta_{3j} \cdot (age\ of\ youngest\ child_{ij} \times GII_j) + \beta_{4j} \cdot \{individual\ level\ controls\} + \beta_{5j} \cdot \{country\ level\ controls\} + u_j + \varepsilon_{ij}$$

Where $P(WE_{ij} = 1)$ represents the probability of a woman engaging in entrepreneurship, $age\ of\ youngest\ child_{ij}$ represents the categorical variable of the age of the youngest child of a specific individual i in a country j, GII_j represents the value of the Gender Inequality Index in a certain country, and $(age\ of\ youngest\ child_{ij} \times GII_j)$ represents the interaction variable between the age of the youngest child and the level of gender equality in a certain country. Meanwhile, $\{individual\ level\ controls\}$ is a vector which includes the individual level control variables (age, age squared, years of education, partnership status), while the vector $\{country\ level\ controls\}$ includes the country level control variables, namely the logarithm of GDP per capita and GDP growth. Country-level variation are represented by the variable u_j while ε_{ij} represents the error term for the individual. The coefficients which are represented by β_{ij} are important for the interpretation of the results.

V. Results

a. Descriptive results

Table 1: Descriptive statistics of full sample

Variable	Obs.	Mean	S.D.	Min	Max
Entrepreneur	22,584	0.13	0.34	0	1
Female	22,584	0.51	0.50	0	1
Age	22,584	44.15	12.34	20	64
Age squared	22,584	2,101.86	1,071.50	400	4,096
Age of youngest child					
0-2 years	22,584	0.07	0.26	0	1
3-6 years	22,584	0.09	0.28	0	1
7-11 years	22,584	0.09	0.29	0	1
12-17 years	22,584	0.09	0.29	0	1
Partnered	22,584	0.50	0.50	0	1
Years of education	22,584	14.23	4.08	0	60
GII	22,584	0.77	0.04	0.68	0.89

GDP growth	22,584	2.23	1.99	-10.84	8.52
Log GDP per capita	22,584	10.69	0.40	10.05	11.37

Table 1 includes the descriptive statistics from the combined European Social Survey (ESS) Round 9 and World Bank dataset for the full sample of men and women.

After removing missing values from the relevant variables, I had a sample size of 22,584 individuals from 20 different countries. I also limited the sample to consisting of individuals between 20 and 64 years old. From Table 1, we can see that the mean of the Entrepreneurship variable is 0.13. As this is a binary categorical variable with values 0 and 1, this can be interpreted as 13% of the individuals in this sample are engaged in entrepreneurship.

The mean of the variable Female is 0.51, which can be interpreted as 51% of the individuals in the sample are female. The average age of the sample is around 44 years old. Meanwhile, I divided the ages of the youngest children into approximately equally sized groups with the base category being people who do not have any children under the age of 18 in their household. Years of education ranges from 0 to 60 years of full-time education with an average of 14.23 years.

For the country-level variables, the average value of GII is 0.77. GDP growth and log GDP per capita average out at 2.23 and 10.69 respectively.

Table 2: Descriptive statistics of female and male individuals in the sample

	Female					**Male**				
Variable	**Obs.**	**Mean**	**S.D.**	**Min**	**Max**	**Obs.**	**Mean**	**S.D.**	**Min**	**Max**
Entrepreneur	11,566	0.10	0.31	0	1	11,018	0.16	0.37	0	1
Age	11,566	44.21	12.29	20	64	11,018	44.10	12.39	20	64
Age squared	11,566	2,105.28	1,068.20	400	4,096	11,018	2,098.27	1,075.00	400	4,096
Age of youngest child										
0-2 years	11,566	0.07	0.26	0	1	11,018	0.07	0.26	0	1
3-6 years	11,566	0.09	0.29	0	1	11,018	0.08	0.28	0	1
7-11 years	11,566	0.10	0.30	0	1	11,018	0.09	0.28	0	1
12-17 years	11,566	0.10	0.30	0	1	11,018	0.09	0.28	0	1
Partnered	11,566	0.50	0.50	0	1	11,018	0.51	0.50	0	1
Years of education	11,566	14.40	4.03	0	60	11,018	14.05	4.12	0	50
GII	11,566	0.76	0.04	0.68	0.89	11,018	0.77	0.04	0.68	0.89

GDP growth	11,566	2.28	1.98	-10.84	8.52	11,018	2.17	2.01	-10.84	8.52
Log GDP per capita	11,566	10.68	0.41	10.05	11.37	11,018	10.70	0.40	10.05	11.37

Table 2 shows a comparison of the female and male individuals in the sample. There are 11,566 female individuals and 11.018 male individuals, respectively. Both genders have an average age around 44 years old and about 14 years of education. Around 50% of both genders are also partnered individuals.

There are differences in the rate of entrepreneurial engagement between the women and men in the sample. While about 10% of women are entrepreneurs (average value of variable entrepreneurship for women: 0.10), about 16% of men are entrepreneurs. This shows the existing gender gap in entrepreneurship in the sample. There are also slight differences in the age of the youngest children in men and women's households; for example, 10% of women have a child aged 12-17 years as the youngest child in their household while 9% of men have children in the same age range.

b. Model results

Table 3: Multilevel logistic regression results for the relationship between being female, gender inequality and age of youngest child in one's household on individual engagement in entrepreneurship.

Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Age of youngest child				
0-2 years	-0.04	-0.29	-0.07	0.31
	(0.79)	(0.12)	(0.75)	(0.91)
3-6 years	0.37***	0.12	0.27	-4.90**
	(0.00)	(0.53)	(0.18)	(0.02)
7-11 years	0.11	0.06	0.03	-1.38
	(0.27)	(0.72)	(0.85)	(0.56)
12-17 years	0.04	0.31***	0.18	1.21
	(0.68)	(0.00)	(0.22)	(0.43)
Gender gap index	-2.15	-4.52**	-4.02**	-4.62**
	(0.21)	(0.02)	(0.03)	(0.03)
Gender gap index x age of youngest child				
0-2 years				-0.50
				(0.90)
3-6 years				6.74**
				(0.02)

7-11 years				1.85
				(0.55)
12-17 years				-1.35
				(0.52)
Female	-0.48***			
	(0.00)			
Partnered	-0.03		0.08	0.08
	(0.71)		(0.59)	(0.60)
Years of education	0.02**		0.04***	0.04***
	(0.01)		(0.00)	(0.00)
Age	0.08***		0.07	0.07
	(0.00)		(0.16)	(0.16)
Age squared	-0.00***		-0.00	-0.00
	(0.00)		(0.31)	(0.32)
GDP growth	-0.02***		-0.04***	0.04***
	(0.00)		(0.00)	(0.00)
GDP per capita	-0.34*		-0.26	-0.26
	(0.06)		(0.29)	(0.29)
Constant	1.15	1.26	1.22	1.66
	(0.50)	(0.40)	(0.69)	(0.59)
Between-country variance	0.05	0.06	0.04	0.05
Observations	22,584	11,566	11,566	11,566

* p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01

Table 3 includes the model results for Hypotheses 1 to 4. Model 1, which includes the entire sample including male and female, is used to test Hypothesis 1, *"There is a negative relationship between being a woman and being engaged in entrepreneurship"*. I used the full multilevel logistic regression model including the variable "female" to understand the relationship of having the female gender on being an entrepreneur based on my sample. Indeed, the coefficient for female is negative and significant (β = -0.48, $p < 0.01$), meaning that there is a significant negative relationship between being a woman and being engaged in entrepreneurship. As such, based on the findings from Model 1 we do not reject the first hypothesis.

Model 1 also shows the expected general relationship between the individual-level and country-level control variables on the likelihood of being engaged in entrepreneurship. Being partnered does not significantly affect an individual's likelihood of entrepreneurial engagement. Years of education has a positive and significant coefficient (β = 0.02, $p < 0.05$), which suggests that accumulation of human capital has a positive relationship with one's likelihood to be an entrepreneur. Meanwhile, age has a positive and significant coefficient (β

= 0.08, $p < 0.01$), suggesting that as an individual gets older, they are more likely to be entrepreneurs. Age squared has a negative and significant coefficient which may reflect a non-linear relationship between age and being an entrepreneur. The country-level control variables, (log) GDP per capita and GDP growth are both significant and have negative coefficients, which suggests that as GDP per capita and GDP growth increase, entrepreneurial engagement is less likely.

Model 1 also provides an estimate of how having young children under the age of 18 affects an individual's likelihood to be an entrepreneur, for both men and women. In Table 2, we only see a significant coefficient for the youngest child in one's household being aged 3-6 years, while the coefficients for other age groups were not significant.

To test Hypotheses 2 to 4, I only ran the models on the female persons in the sample, as the variable gender inequality predominantly negatively affects women. I first started with Model 2 which only includes the two main independent variables, which are the age of the youngest child in the household and the Gender Inequality Index (GII) which represents the level of gender inequality in the country. Based on the table, only the coefficient for individuals with youngest children in their household aged 12-17 is significant ($\beta = 0.31$, $p < 0.01$), while the GII is has a significant negative relationship with a woman being an entrepreneur ($\beta = -4.52$, $p < 0.05$). At this stage of the model, except for the group with youngest children aged 0 to 2 years, the coefficients for different age groups are positive, although only the coefficient of group with youngest children aged 12-17 was significant.

In model 3, which included the individual-level and country-level control variables, the relationship between age of one's youngest child and a woman's likelihood to be engaged in entrepreneurship becomes less clear. The coefficients of the different youngest children's age groups are no longer significant. Meanwhile, the coefficient for GII is still negative and significant ($\beta = -4.02$, $p < 0.05$). The significance levels of the individual control variables are quite different to Model 1 which includes the full sample of both men and women: in Model 3, the coefficient for age, age squared, and (log) GDP per capita are no longer significant, while years of education and GDP growth still are.

Model 4 still shows a negative and significant relationship between GII and women's entrepreneurial engagement. As the value of the GII is an index between 0 and 1 with 1

representing the most gender equality and 0 representing an absence of gender equality, based on the results from Models 2 to 4 I do not reject Hypothesis 2, *"There is a positive relationship between gender inequality in a country and individual engagement in entrepreneurship of women".*

As I am interested in the moderator relationship of gender inequality on the presence of children below the age of 18 on women's entrepreneurial engagement (Hypothesis 4), in Model 4 I included an interaction variable of GII and the age of the youngest child of an individual to show the hypothesized moderator relationship in the model. Compared to Models 2 and 3, there are changes in the significance and sign of the relationship between age of youngest child and a woman's entrepreneurial engagement in this model. Instead of a significant coefficient for the youngest child age group of 12-17 years, Model 4 shows a significant negative relationship between having the youngest child in the household aged 3-6 with women's entrepreneurial engagement (β = -4.90, $p < 0.05$). Meanwhile, the coefficient of the interaction term between GII and the age group 3-6 years shows a significant positive relationship (β = 6.74, $p < 0.05$). Apart from the coefficients for individuals whose youngest child in the household is aged 3-6 years, none of the coefficients for the other age groups were significant.

Based on the results from Models 2 to 4, which showed no significant differences in the likelihood of entrepreneurial engagement for women with children of different ages compared to the base category of those without children, I rejected Hypothesis 3, which is *"There is a positive relationship between the presence of dependents below the age of 18 in a household and individual engagement in entrepreneurship of women"*. Indeed, the sign of the relationship between age of youngest child in one's household and entrepreneurial engagement was negative for certain age groups while being positive for others, and not significant based on the p-values.

Hypothesis 4 is *"The presence of dependents below the age of 18 in the household moderates positively the relationship between gender inequality and the individual engagement in entrepreneurship of women, such that it is stronger for women with dependents below the age of 18 in the household"*. While the results from Model 4 showed a positive interaction effect of the GII with having a youngest child aged 3-6 years in the household, having the youngest child in the household in other age groups did not create a

significant difference, nor did it show a significant moderator relationship. Based on these results, I reject Hypothesis 4.

As an additional note, on average the between-country variance in the four models is around 5%. As the sample I used only had 20 countries (groups in the second level) and does not meet the minimum recommended number of groups of 40, caution is needed in the interpretation.

VI. Discussion

In line with findings by Dheer et al. (2019), I found a negative association between being a woman and being engaged in entrepreneurship in the innovation-driven economies in my sample. Entrepreneurship is indeed still a predominantly masculine field, and the factors that contribute to women being less likely to engage in entrepreneurship are complex. The differences may have stemmed from different career expectations between men and women (DeMartino et al., 2003) or even culture and perception of gender roles (Shinnar et al., 2012). Throughout my thesis, I attempted to explore the role of gender inequality and the presence of young dependents in a woman's household on her likelihood of being engaged in entrepreneurship.

I found a significant negative association between the Gender Inequality Index (GII), which reflects the level of gender equality in a nation, with a woman's likelihood of being engaged in entrepreneurship. This result is in line with the findings of Klyver et al. (2013), especially the results coming from developed countries. This may at first seem counterintuitive, as gender equality should enable women to engage in a wider variety of careers and have equal chances of succeeding as men. However, as Ahl (2006) argued, women's career choice is a phenomenon that is affected by social constructions and there may still be other factors, including institutional, which could explain why women are less likely to engage in entrepreneurship despite advances in gender equality.

The role of having young dependents in the household is also less clear. While some previous research suggest that women choose entrepreneurial careers to achieve greater flexibility and to minimize work-family conflicts (DeMartino et al., 2003; Winn, 2005; and Kirkwood et al., 2008), based on the regression results presented in Table 3, the presence of

dependents younger than 18 years old in the household did not have a significant relationship with women's entrepreneurial engagement. It seems that there is no significant barrier to participating in parenthood for women who choose to become entrepreneurs rather than to be employed in wage work, although this does present a challenge to testing hypotheses regarding women's choice of entrepreneurial careers to achieve work-family balance.

Family and parenthood can be some of the aspects of life in which gender inequality is experienced by women, for example through inequities in the labor division at home (Fuwa, 2004; Andringa et al., 2015). However, based on the empirical analysis, I did not find a significant moderator relationship between the presence of dependents in the household younger than 18 years old and gender inequality on a woman's likelihood to be engaged in entrepreneurship. Parenthood, at least in the current sample of individuals from innovation-driven economies, does not seem to be at odds with women's entrepreneurial engagement, and perhaps the availability of institutions such as external childcare arrangements help to broaden women's career choices.

Parenthood is a complex phenomenon, and views on parenting can differ between countries and individuals. Rather than age and/or number of children, there may be better metrics for measuring the relationship between parenthood and (entrepreneurial) career choice which could be collected through future surveys or questionnaires.

As the current sample is made up of people who are already engaged in entrepreneurial careers and not people who are just starting up, there may already be differences in the characteristics of the individuals in the sample compared to people who are entering entrepreneurship for the first time, for example in their ages or levels of education. In future research, it may be interesting to explore the effect of gender inequality on women's entry into entrepreneurship, particularly in the startup phase, while also considering possible institutional and societal factors such as gender roles and familial values that make up someone's motivation to become an entrepreneur. It would also be interesting to control for the field or type of industry that the female entrepreneur is involved in.

Another limitation in this thesis is the low number of countries used in the model, which can adversely affect the interpretation of the multilevel logistic regression results. It

would be useful in the future to have a larger sample from more countries and expand the research to developing economies where the state of gender inequality differs.

VII. Conclusion

In this thesis I have attempted to answer the question, "how does gender inequality affect women's entrepreneurial engagement, and how does having a family (i.e., children under 18 years old in one's household) moderate this relationship?" I focused my analysis on 20 innovation-driven economies with data coming from the European Social Survey (ESS) as well as the World Economic Forum's Gender Inequality Index (GII). Through multilevel logistic regression, I found that reflecting past entrepreneurship literature, women are still less likely to be engaged in entrepreneurship than men. Meanwhile, gender inequality has a positive relationship with women's entrepreneurship engagement—the higher the level of gender equality in a country, the less likely are women to be engaged in entrepreneurship. However, I also found that the presence of dependent children under 18 years old did not significantly affect a woman's likelihood to be engaged in entrepreneurship. Thus, I did not find a significant moderating relationship between having dependents under 18 years old on gender inequality's effect on women's entrepreneurial engagement.

There are several implications coming from the results found in this thesis. First, a further exploration of gender inequality's role on women's entrepreneurial engagement is needed. The GII, which I used to measure the level of gender inequality in a nation, is made up of four factors: economic participation and opportunity, educational attainment, health and survival, and political empowerment. It may be interesting to see which of the factors that make up gender inequality have the biggest impact on women's entrepreneurial engagement so that policies could be tailored to encourage women to pursue careers in entrepreneurship.

Further research could also be done on how to family affects women's entrepreneurial engagement, which could be expanded to the role of parental figures and extended family on whether a woman chooses to pursue entrepreneurship. It may be possible that having parents who are also entrepreneurs could impart effects on women's entry into entrepreneurship. As parenthood is also a complex phenomenon, more research could be done on its role to

entrepreneurs and how they conduct themselves in their careers, for example through exploring the role of hours spent on childcare or different parental values on the performance of entrepreneurs.

As there is still a considerable gender gap in the field of entrepreneurship, more research needs to be done in order to close this gap. For example, the existing view of entrepreneurship as a "masculine" career which aligns with more masculine cultures (Gupta et al., 2009; Shinnar et al., 2012; Dheer et al., 2019) may pose as a challenge to women who want to pursue entrepreneurship. Perhaps encouraging more women to pursue entrepreneurship during their education, since education is positively associated with women's entrepreneurial engagement, and opening more opportunities can produce the gradual societal change needed in order to increase women's engagement in entrepreneurship.

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