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Why are women becoming more entrepreneurial than man?
Case Study: Czech Republic

Master's thesis

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Declaration

1. I hereby declare that I have compiled this thesis using the listed literature and resources only.
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3. I fully agree to my work being used for study and scientific purposes.

In Prague on July 30, 2019 Kateřina Halenka

References

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Abstract

Self-employment has been considered an important part of recovering and growing economy as well as an area of interest of current governing bodies on national and supranational level. Therefore, this study aims to provide deeper understanding, what influences self-employment and how does such influence differ between men and women. Purpose of the study is threefold. First, to synthesize a model of influential factors based on current academic debate. Second, to analyze the case of the Czech Republic (exceptional in higher self-employment growth rates for women than men) to understand whether gender difference phenomenon is universal or only limited to time/space/industry. And third, to analyze what are factors driving self-employment. To answer the question *How does influence of factors on self-employment differ between genders?* correlation research design is introduced to examine relationships between micro- and macro-environment factors (explanatory variable) and gender specific self-employment rate (response variable). To analyze these relationships, secondary data collected from online open source platforms of national and supranational public institutions are utilized. Firstly, comparability analysis is conducted between male and female (self-)employment development in Czechia. Secondly, influence of individual factors is examined in a bivariate correlation analysis. Lastly, multiple regression model for each gender is created to determine which variables are of significance.

Keywords

Self-employment, entrepreneurship, alternative employment, female entrepreneurship, labour market, determinants, factors

Abstrakt

Sebezaměstnání (samostatná výdělečná činnost) je považováno za klíčový prvek rostoucí ekonomiky a bod zájmu národních i mezinárodních institucí. Z toho důvodu je cílem této studie lépe pochopit, co míru sebezaměstnávání ovlivňuje a jak se vlivy liší s ohledem na pohlaví. Cíl práce je trojí. V prvé řadě, na základě rešerše literatury, představit souhrnný model faktorů, které hrají vliv v rozhodnutí stát se osobou samostatně výdělečně činnou. V druhé řadě analyzovat situaci v České republice (mimořádnou pro vyšší míru růstu podílu sebezaměstnaných žen než mužů) a prozkoumat jestli se jedná o celospolečenský fenomén nebo zda-li je jev přítomen pouze v některém období, kraji či odvětví. A zatřetí analyzovat, které faktory ovlivňují sebezaměstnání a jak se liší jejich vliv na ženy a muže.

Odpověď na otázku *Jak se liší dopad faktorů ovlivňujících sebezaměstnání na muže a ženy?* je hledána pomocí kvantitativního výzkumu mezi nezávislými proměnnými (faktory mikro a makro prostředí) a závislou proměnnou (míra sebezaměstnanosti žen a mužů). Výzkum používá metody komparativní analýzy, korelační analýzy a vícenásobné regresní analýzy. Analyzována jsou sekundární data volně dostupná z online platforem veřejných institucí.

Klíčová slova

Podnikání, živnostníci, soukromníci, ženy podnikatelky, alternativní formy zaměstnání, trh práce, faktory

Název práce

Proč se ženy stávají podnikavějšími? Případová studie: Česká Republika

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Introduction

In 2008, the world has suffered a severe economic crisis. It affected governments, businesses and individual households alike. More than a decade later, it is safe to say that the situation has turned for the better, with GDP growing, unemployment sinking and wages rising. However, not all countries and economies have recovered at the same speed.

One of aspects that helps an economy overcome a crisis is it's share of self-employment: the higher is the self-employment rate, the faster is the recovery after an economic shock. (Shapiro, 2013) This may be, among others, a reason why the European Union recognizes self-employment to be "a key for achieving smart, sustainable and inclusive growth" and "seeks to build capacity [for it] in EU countries and regions" (Supporting entrepreneurs and the self-employed, 2010). However, self-employment struggles instead of flourishing: rates have been decreasing in number of countries and gender gap is rising. (Baruffaldi, Marino & Parrotta, 2016)

Eurostat defines self-employment as "the sole or joint owner of the unincorporated enterprise in which he/she works". Self-employment rate reflects the employment rate of the country as well as the entrepreneurship situation and brings multiple benefits to the individual as well as the economy: one's income, self-realization or ability to provide possible future employment to others, etc (Startiene & Remeikiene, 2013). Additionally, governments are supporting self-employment as a tool of economic growth, therefore it is widely relevant what factors have impact on self-employment rates and are thus worth influencing.

Nevertheless, instead of growth has the European Union witnessed a slight decline in male self-employment rate (-0,73%) and close to stagnation in female self-employment rate (+0,11%) in the last decade. Particularly, the gender inequality is noticeable since 17

out of 28 EU countries have witnessed average relative growth in female self-employment share on total employment (av. 26,1%) as opposed to only 13 out of 28 countries seeing relative growth in male self-employment share on total employment (av. 14,3%). A similar trend can be seen in the number of self-employed: 18/28 countries see rise in number of female self-employed (av. 32,9%) as opposed to 13/28 in number of males (av. 16,2%). (author's calculations based on Labour force survey (2019)

As a result, a question arises: Why have women become more active in self-employment than men? The academia agrees that multiple factors influencing entering as well as it's successful duration of self-employment can be defined. There are several models that consider the topic. Some researchers focus on individual factors (internal, micro-environmental) that affect a person individually, while others study collective factors (macro-environmental, external) that affect society as a whole. Individual factors include e.g. age, gender, marital status, family background, education, work experience, personal wealth, etc. (Bates, 1995; Aidis, 2003; Dawson, Henley and Latreille, 2009) On the contrary, collective factors can be categorized as cultural, political, economical, technological or geographical. (Verheul et al., 2001; Wennekers, Uhlaner & Thurik, 2002; Startiene & Remeikiene, 2013)

Nevertheless, there is rarely documentation looking at both concepts jointly and empirical evidence of their impact is even more scarce. In light of this, the purpose of this study is to attempt to fill in the existing gap. First, to review the current state of literature on the subject and to aggregate information on determinants of self-employment participation (chapters 1 and 2) in order to create a *compound* model of both micro- and macro-environment factors (chapter 3). The thesis additionally aims to do so with special attention to the difference in impact on men and women. Next, the thesis aims to test

academic findings and provide empirical evidence for factors' influence gender differences.

Provided that, the thesis will conduct a comparative study of male and female self-employment on a representative sample of an EU country: a state that has seen rise in both absolute numbers of both female and male self employed as well as growth of both male and female share on total gender specific employment (to focus on cases where both genders see rise to examine which factors cause the change and to eliminate cases where absolute numbers of self-employed rises together with number of people involved in other forms of employment, thus not being specific to the trend of higher engagement in self-employment).

Upon brief statistical analysis following EU countries meet the criteria: Belgium, Czechia, Estonia, France, Latvia, Luxembourg, Malta, Netherlands, Slovakia and Slovenia. Upon excluding Slovakia from the selection (for the lack of available results) and Malta (upon very significant yearly fluctuations that eliminate definition of a trend), all countries show a steady growing trend except for the Czech Republic, that showed steady growth between 2008-2012 that turned into a steady decline between 2012-2018. The turning point presents an interesting opportunity to study what factors have changed to result in change of self-employment behavior.

Furthermore, as of 2018 Czech Republic is the country with highest employment rate (97,07%) within the whole European Union (Labour force survey, 2019). The share of self-employment on total employment in Czechia reached 17,1% , thus preceding not only the EU average, but also all but one of the major economic powers - G8 countries (OECD Labour Force Statistics, 2018). The question then follows: What has driven gender specific labour market change in Czech Republic? Implicitly also raising questions if it would be

possible for other (EU) countries to utilize the same factors to encourage increase in (female) self-employment (not only) to fulfill Europe 2020 vision.

The research shall introduce quantitative methods design in order to answer what has driven changes in female labour market between the years 1998 - 2018. Given that previous studies mostly drew from small samples using self-reported data and absence of time-series analyses or macro panel data (Saridakis, Marlow & Storey, 2014), the aim of this thesis is to fill in the gap (methodology is described in chapter 3.1). Foremost, the thesis will attempt to answer when and where the gender specific change in labour market occured. With this intention, time-series modelling using bivariate correlation analysis will be applied in order to examine labour market development in detail (chapter 4.3).

For that purpose, secondary data from Eurostat, OECD and Czech Statistical Bureau is used to perform a comparative analysis of female and male labour market in Czechia. The analysis will focus on smaller geographical regions as well as time periods (quarterly or annual data). Moreover, comparison of number of employed (categorized not only by gender) and their respective share among different types of alternative employment should discover when and where is the difference in trend (most) present.

Next, the thesis shall focus on why the gender specific change occurs. The second part shall conduct bivariate and multiple regression analysis inspired by research design of Saridakis, Marlow & Storey (2014) to examine relationship between micro- and macro-environment factors (independent variable) and gender specific self-employment rate (dependent variable) (chapter 5). The relevant hypotheses are expected to emerge from literature review. To conclude, thesis will present its findings as well as limitations and suggestions for future research in the area.

1 From employment to self-employment

Cambridge dictionary defines employment as "the fact of someone being paid to work for a company or organization". Economically, it represents one of the three primary factors of production - labour. Moreover, it is crucial especially in the tertiary sector, which now represents more than 60% of global GDP. (United Nations, 2018) Socially, it is considered one of the three key goals important for life satisfaction (Aysan & Aysan, 2016) given that it provides opportunity to satisfy variety of individual's needs. (Staniewski & Szopinski, 2013) In essence, it is the equilibrium between labour supply (workers) and workforce demand (organizations) defined by three pillars - working conditions (labour law), workplace and working hours. (Svobodová, 2014)

Nonetheless, the role of employment has shifted and requires adaptation from the standard fixed workplace and working hours scheme. Such trend translates into emergence of flexible or *alternative* forms of employment. (Farber, 1999) Most common arrangements include part-time work, temporary help, leased employees, independent contracting or the use of Professional Employer Organizations (PEO). (Cappelli & Keller, 2013) These allow for both flexibility of the working time (duration and scheduling) as well as of the workplace (occasional home office, fully remote work, virtual teams, etc.). (Svobodová, 2014)

Moreover, given the contemporary demographic and technological development, the interest in so-called "standard" employment is decreasing on both, supply and demand side, and the need for flexibility in employee-employer relationships rises. On one hand, employers may prefer more contingent solution to changes in labour demand, lower human resources costs and see an opportunity for different treatment (e.g. no benefits). (Cappelli

& Keller, 2013) On the other hand, employees may seek to fulfill need for self-expression and independence (Dawson, Henley and Latreille, 2009), higher wealth generation (Allen & Curington, 2014) or "cost optimization" to reduce tax burden (Szaban & Skrzek-Lubasińska, 2018).

As a result, the concept of self-employment is becoming a solution of increasing popularity. *Self-employed* is described as "the sole or joint owner of the unincorporated enterprise in which he/she works" (Eurostat, 2019) or simply running own business at own risk (Szaban & Skrzek-Lubasińska, 2018). The decision for independence often arises from voluntary or forced unemployment (Farber, 1999). Aside from benefits to individual workers or organizations, the notion benefits the society as a whole in social, economical and other ways. On one hand, it serves as outlet for discrimination of minority groups (Georgellis, Sessions & Tsitsianis, 2005). On the other hand, it has a positive impact on economy, e.g. increased speed of recovery after an economic shock. (Shapiro, 2013)

Furthermore, the term self-employment is frequently used in connection or even interchangeably with *entrepreneurship*. Despite sharing common features (e.g. running own business at own risk, need for entrepreneurial skills, etc.), it is crucial to distinguish between the two. (Szaban & Skrzek-Lubasińska, 2018) The key determinant is the employment of others in an enterprise as opposed to sole work of a self-employed. This is not only the criteria cited by academia, but also differentiation used by Czech and European administrative and statistical bodies. In this study, only persons without employees shall be considered within the target group.

Nevertheless, the precise definition often depends on legal regulations of a particular country. Generally, to qualify as self-employed people must have registered with state authority and must not employ others. (Szaban & Skrzek-Lubasińska, 2018)

Additionally, the group is distinguished from other forms of employment and divided within itself according to the level of (economic and organizational) dependency. (European Commission, 2018) The lowest level of independence is classified as *dependent self-employed* (providing services to one employer), followed by *hybrid self-employed* (occasional service providers besides main gig), *opportunity self-employed* (highly skilled freelancers) and *one-person business owners*. (Szaban & Skrzek-Lubasińska, 2018)

Regardless of form, decision to enter self-employment is not taken at one singular point in time. (Bates, 1995) And even after embarking, the success is uncertain since significant number of entreprises (up to 30%) fail within the first two years of operation. (Small Business Association, 2019) Therefore to understand the formula for a permanent successful result, it is important to review factors of entry as well as factors of survival. (Millán, Congregado & Román, 2012) Given the complexity of the process, it is complicated to find the precise cause of self-employment entry. However it has been discussed that the decision is not taken insulated without impact from both inside and outside.

In summary, chapter 1 introduced the concept of employment and it's three founding pillars (working conditions, place and hours). Later it explained why it currently does not satisfy labour market supply and demand and introduced alternative forms of employment as a solution. Namely, it defined self-employment as increasingly popular answer and described various degrees thereof together with formal background. Furthermore, it pointed out that the decision to enter self-employment is neither taken at once nor insulated from influences. Lastly, it foreshadowed that influencing elements can be of various nature and thus introduced the upcoming chapter on factors.

2 Factors affecting self-employment entry

As previously described, individuals in labour market in general have three choices: unemployment, wage employment and self employment. (Karpinska, Maas & Jansen, 2012) While unemployment is arguably the "worst" option, the decision between wage employment and self-employment is often complicated. After defining self-employment, the thesis focuses on factors that influence becoming self-employed. Foremost, it is important to review whether the decision to enter self-employment is voluntary or not. To answer, the concept of push and pull approach is described in this chapter, including the prevalence of internal and external aspects of one's decision.

Moreover, the text transitions to analyze in detail factors affecting both the particular person - individual factors - and factors affecting all prospective self-employed - collective factors. Overview of determinants is followed by a section devoted to gender differences in factors affect, the pivotal point of this study. Next, it reviews two specific circumstances (transition economies and conflict with entrepreneurship) and their implications for factor change. In general, this chapter provides review of up-to-date academic debate focusing on factors applicable for self-employment, in order to introduce synthesised determinants model in chapter 3.

2.1 Push and pull approach

As already mentioned, it is important to distinguish if entry to self-employment is by choice or involuntary (Li & Zhao, 2011) Especially, during periods of economic crisis and rising unemployment two opposing notions can be observed. (Dawson & Henley, 2012) Such notions are referred to as "push" and "pull", sometimes addressed as

"prosperity pull" and "unemployment push" factors or arguments. (Pietrobelli, Aquilina & Rabellotti, 2004)

On one hand, self-employment is seen as opportunistic and answering to circumstances (Georgellis, Sessions & Tsitsianis, 2005). That is, in an event of recession and lack of work opportunities "pushing" force towards entry is formed. (Millán, Congregado & Román, 2012) Starting a business is considered the only way out , since the individual does not have any alternative options to participate in labour market. (Alvarez, Gradin & Soledad Otero, 2013) For this reasons it is sometimes also called "necessity entrepreneurship" (Dawson & Henley, 2012) and people describe their motivations as "I start my own business because I have to" (Staniewski & Szopinski, 2013).

On the other hand, it is argued that regardless of timing self-employed possess particular abilities that urge them to proactively pursuit independence. (Georgellis, Sessions & Tsitsianis, 2005) That is, in time of prosperity that brings good demand and business conditions, they are "pulled" to enter. (Millán, Congregado & Román, 2012) On the other hand, economic growth brings better prospects for a business and better chances of finding a well paid job if the business fails. (Alvarez, Gradin & Soledad Otero, 2013) This notion is also called "opportunity-based entrepreneurship" (Dawson & Henley, 2012) and people describe their motivations as "I start my own business because I want to" (Staniewski & Szopinski, 2013).

Conclusively, push dynamics are argued to be associated with external factors while pull forces are argued to be influenced more by internal determinants. (Dawson & Henley, 2012)

2.2 Individual factors

As has been noted, it is assumed that self-employment is a conscious choice influenced by factors on the basis of which individuals decide to pursue independence instead of / in addition to wage-employment. (Saridakis, Marlow & Storey, 2014) Individual characteristics, or micro-environment factors, have been studied by tens of researchers. They can be categorized for example into demographic (subject to scarce or impossible change) or social-psychological (subject to possible frequent change). (Startiene & Remeikiene, 2013) Demographic factors include *basic characteristics* (age, gender, marital status, children), *family background*, *human capital* (education and work experience), *nationality and ethnicity* and *access to financial capital*, while social-psychological factors entail *personality characteristics* (Dvouletý, 2018b)

2.2.1 Age

Age is one of the most influential factors. Overall, self-employment is more common choice for younger people. (Pietrobelli, Aquilina & Rabellotti, 2004) In regards to entry, older population is more likely to choose self employment because they have more resources (financial, human, social capital), stronger desire for flexibility (Simoes, Crespo & Moreira, 2016) or may wish to postpone leaving job market at the end of their career (Parker, 2004). With regards to exiting, negative non-linear trend in impact of age is present, with the turning point defined between 35 - 45 (Dvouletý, 2018b) or 40-50, with the exception of the youngest age group. (Millán, Congregado & Román, 2012)

2.2.2 Gender

Gender in general is crucial in deciding whether to enter self-employment or not. Men are 2-3 times more likely to enter self-employment (Glavin, Filipovic & Maas, 2019)

and a clear negative relationship between being female and likelihood of entering is evident. (Alvarez, Gradin & Soledad Otero, 2013) Despite theory of class mobility or theories of discrimination providing multiple reasons why women are likely to enter SE (Simoes, Crespo & Moreira, 2016), women are still underrepresented among self-employed. However their participation has been increasing. Even though, they represent minority upon entry, once they enter there is no reason for different survival rates. (Millán, Congregado & Román, 2012)

2.2.3 Marital Status

Marital status has been proved to have positive impact on self-employment rates. One of the causes is that the spouse can be source of skill and knowledge transfer as well as motivation. (Simoes, Crespo & Moreira, 2016) Especially in cases when the spouse is self-employed him/herself, survival rates are reported to be higher. (Millán, Congregado & Román, 2012) Furthermore he/she can also provide labour below market rates and may offer tax advantages. (Parker, 2004) For men unlike women other forms of relationship e.g. cohabitation, also significantly increase self-employment entry chances. (Özcan, 2011)

2.2.4 Family Background

Another important factor is the family background of an individual, may that be the former family or the newly formed family. There is a strong evidence of intergenerational links. (Georgellis, Sessions & Tsitsianis, 2005) If one's parents are self-employed, they can provide knowledge and experience and even offer inheritance of the family business. (Parker, 2004) Moreover, having own family provides conflicting effect. On one hand, children limit time invested and foster failure, on the other hand, they can provide additional motivation. (Millán, Congregado & Román, 2012) However, parents in general

tend to be less risk averse and thus less willing to part-take in self-employment. (Parker, 2004) Overall, falling fertility rates are expected to improve female participation in labour market, including self-employment. (Saridakis, Marlow & Storey, 2014)

2.2.5 Education

Influence of education level has been discussed to have ambiguous impact both on entry (Parker, 2004) and exit rates (Millán, Congregado & Román, 2012). Arguably people entering self-employment do not need to acquire formal education. (Millán, Congregado & Román, 2012) Also, regions with higher education levels demonstrate lower self-employment rate since skilled professionals have more career options. (Li & Zhao, 2011) In contrast, higher education is connected to increased human capital as well as improved survival rate. (Freytag & Thurik, 2010)

2.2.6 Work experience

Previous self-employment experience, wage employment and unemployment experience have ambiguous impact on survival rate and self-employment duration. (Millán, Congregado & Román, 2012) Generally speaking, longer work experience increases likelihood of entry (Dvouletý, 2018b) due to accumulated experience, knowledge and correlation to higher age. In like manner, experience is often measured as current age minus school leaving age and fails to distinguish different types of experience. (Parker, 2004) In addition, people already employed in alternative forms of employment (e.g. part-time) are expected to be more likely to enter self-employment. (Alvarez, Gradin & Soledad Otero, 2013) Conversely, not all experience provides the same impact and there is a negative correlation e.g. with employment in public sector or with firm size.

2.2.7 Nationality and Ethnicity

Immigrants and minorities tend to have a disadvantage in accessing paid labour (due to labour market entry barriers e.g. language, education recognition, etc.) and thus their self-employment participation tends to be higher. (Millán, Congregado & Román, 2012) This allows for their better integration in both economy and society. (Dvouletý, 2018b) Specifically, some determinants of migration are aligned with factors of self-employment (risk tolerance, thrift). (Simoes, Crespo & Moreira, 2016) Furthermore, workers coming from country with strong self-employment tradition are often more likely to enter. Lastly, minority workers are also often affected by discrimination both as employees and as consumers resulting in number of both positive and negative effects. (Parker, 2009)

2.2.8 Personal Net Worth

Most existing study results support positive correlation between personal wealth and self-employment entry and survival. (Millán, Congregado & Román, 2012) Personal net worth entails own financial means (Georgellis, Sessions & Tsitsianis, 2005) as well as access to outside financial capital. (Eliasson & Westlund, 2013) With growing endogenous capital, external funds also become more accessible due to increased bonita. (Parker, 2004) As a result, individuals of stronger financial background are more likely to enter self-employment (to a limited extent). Personal wealth is a critical constraint especially in particular sectors - e.g. manufacturing and wholesaling. (Bates, 1995)

2.2.9 Social-psychological factors

Social-psychological factors include one's motivations, values and personal characteristics. Motivation can be categorized as classic (yearning independence, financial

gain and self-realization), forced (financial necessity, job loss) and work-family related (typically more important to women). (Glavin, Filipovic & Maas, 2019) Some of key personal characteristics include risk propensity, self-esteem (Eliasson & Westlund, 2013) as well as need for achievement, over-optimism and tolerance of ambiguity. (Parker, 2004) Others represent self-efficacy and proactive personality (Fernandes et al., 2018) or creativity (Staniewski & Szopinski, 2013).

2.2.10 Other

In addition, health condition and social capital also play role. Health can be of twofold influence. Either good health promotes stress resistance or poor health seeks flexibility and escape from discrimination in self-employment. (Dvouletý, 2018b) Among other health issues, disability has a specific role. (Simoes, Crespo & Moreira, 2016) Nevertheless, self-employment provides higher stress rates and longer work hours and often requires individual to cover his/her own health insurance. (Parker, 2004) As an additional factor, social capital represents social relations and connections and is suggested to provide information and support. As a matter of fact, it can compensate for limited financial and/or human capital. (Parker, 2004) Therefore, is often considered an element of the "human capital".

In summary, this subchapter introduced internal determinants, that affect each self-employed individually. It discovered, that for many variables previous findings are inconclusive and cannot be predicted with certainty. However, some conclusions can be reached: Age groups of youngest workers and worker between 35-50 are most likely to enter self-employment. Committed serious relationship (marriage of cohabitation) has positive impact on entry rate. Higher education hinders entry rate but improves retention.

Longer work experience has positive relation, especially if it includes experience with alternative forms of employment. Both migration/minority status and personal wealth have positive relationship to self-employment entry and so does social capital.

2.3 Collective factors

In addition, individual's decision is influenced by *external* factors that have impact on the society as a whole. (Eliasson & Westlund, 2013) They can affect self-employment rates in one of two ways: either directly changing costs and benefits of self-employment, or by moderating effects of individual factors. (Karpinska, Maas & Jansen, 2012) They can be categorized into cultural, economic, institutional and political factors, technological and geographical. (Startiene & Remeikiene, 2013). Correspondingly they are also often called macro-environment factors or determinants.

2.3.1 Cultural factors

Despite family being important channel to share values individual's culture is also highly affected by the culture of the whole society. (Parker, 2004) There are number of theoretical explanations: "aggregate psychological trait" theory expects that the more self-employed are present, the higher chance of entry. "Degree of moral approval" theory suggests that higher social status of self-employed and greater attention to self-employment within education system lead to rate increase. In contrast "push explanation" theory presents segregating self-employed group from others, driving them into entry upon values conflict with majority society. (Freytag & Thurik, 2010) Nonetheless, the effect of culture is proven hard to quantify, especially in case of horizontal culture transmission (Marcén, 2014) and often tends to affect more the preferences rather than the actual decision. (García, 2014)

2.3.2 Economic Factors

On the contrary, economic factors have been thoroughly studied and quantified. Both economic state and development have been linked to self-employment rate. First, structure of economy plays a role. Industry focused economies tend to exhibit lower self-employment rate as opposed to service focused economies (Li & Zhao, 2011). It is mostly due to higher skill and capital demands thereof. (Parker, 2004) However, increased barriers to certain fields do not deny access to self-employment as a whole but rather shape one's industry choice. (Bates, 1995) Furthermore, the development stage of economy is of influence. Mild positive impact of GDP growth rate (as a stage of development indicator) has been observed. (Millán, Congregado & Román, 2012)

Comparatively, increase in capital positively affects self-employment rate since it is the primary resource needed. (Parker, 2004) That is the case for both own and outside capital. Higher lending rates naturally have negative impact on self-employment rate (Millán, Congregado & Román, 2012) as well as decrease in individual's personal wealth (Parker, 2004). In addition, increased imports have been proved to negatively influence self-employment survival rate. (Millán, Congregado & Román, 2012)

Equally important is the level of unemployment in the economy. It could both promote and hinder self-employment rate. (Alvarez, Gradin & Soledad Otero, 2013) Self-employment is often presented as one of solutions to unemployment and can provide viable alternative (mostly in push factor situations). However, empirical evidence is rather scarce. Level of unemployment in time-series studies tends to exhibit positive relationship, unlike in cross-section studies, where negative correlation is found. (Parker, 2004)

2.3.3 Political and Institutional Factors

In reaction to economic circumstances, political measures are employed and consequently serve as a factor. In general, smaller firms and self-employed often face less regulation. (Arum, Budig & Grant, 2000) For one thing, government can use instruments (e.g. taxation, subsidies, provision of information and advice) to diversify labour market risk and influence decision between "risky" and "safe" occupations. (Parker, 2009) In general, modern neo-liberal economic tendencies favoured deregulation, yet research suggests higher regulation promotes companies to engage in alternative forms of employment (e.g. contractual work) and thus increasing self-employment rate (Arum, Budig & Grant, 2000)

First political measure is the use of legislation and taxation tools. On one hand, tax deduction and evasion opportunities improve self-employment remaining rates. (Parker & Robson, 2004) In addition, higher income tax rates prevent low-skilled self-employed and improve survival rates. (Millán, Congregado & Román, 2012) Furthermore, higher payroll tax may lead to contractual work and thus also rise of (dependent) self-employment. (Parker & Robson, 2004) On the other hand, higher employee protection results in lower self-employment rate. (Millán, Congregado & Román, 2012)

Comparatively, government can utilize number of social security policies. Higher unemployment benefits discourage workers from entering self-employment by making unemployment more attractive. (Parker & Robson, 2004) In contrast, higher state retirement benefits promote self-employment as partial retirement option. (Parker, 2004) Lastly, government can e.g. decide to provide a guarantee to encourage banks to lend to self-employed ineligible for other lending instruments. (Parker, 2009) Besides, political ideology also influences extent of start-up incentive policies. (Baruffaldi, Marino &

Parrotta, 2016) Those have been proved to promote self-employment especially among women and minorities.

2.3.4 Technology

Similar to self-employment, technological change and innovation are major drivers of economic growth. (García, 2014) On one hand, improvements in transportation and telecommunication favour larger firms and hinder self-employment. (Pietrobelli, Aquilina & Rabellotti, 2004) On the other hand, introduction of more flexible production technologies hinders benefits from economy of scale and facilitates competition growth of smaller firms and self-employment. (Parker, 2004) Moreover, it also broadens the service market and requires greater niche specialization, thus also favouring self-employment before large corporations. (Parker, 2004)

2.3.5 Geography

Besides technology, other crucial production factors (labour, knowledge) often tend to be located together. On one hand, production externality or knowledge transfer may attract self-employed into cities despite higher costs, on the other hand the barriers for outsiders will grow since costs (e.g. housing, labour) will be too high. (Parker, 2004) Since access to infrastructure, capital and service supply matter and therefore some studies' results show that metropolitan regions have higher self-employment rate. (Eliasson & Westlund, 2013) However, in urban areas, demand and competition are generally higher. (Parker, 2004) Moreover, capital cities have advantage regardless of size. (García, 2014)

On the contrary, in regions with lower population density self-employment rate is expected to be higher since they are less attractive to larger firms (unable to exploit benefits of economy of scale). (Li & Zhao, 2011) Such regions demonstrate lower

education levels and lower buying power resulting in lower self-employment rates. (Parker, 2004) That is also the case for areas of concentration of capital-heavy industries. Correspondingly there are major differences between urban and rural self-employment sectoral composition. (Eliasson & Westlund, 2013)

2.3.6 Other

In addition, level of property protection and criminality are influential factors. First, higher level of protection of property rights is proven to link to higher self-employment rate. (García, 2014) Second, criminality plays a role in establishing self-employment ventures, e.g. more start-ups in retail and wholesales were, surprisingly, founded in areas with higher criminality rate. (García, 2014) However other studies have concluded a negative relationship between crime and self-employment rate. Jointly these can be seen as attributes of safety and security, both physical and material.

In summary, this subchapter introduced external determinants, that affect all self-employed as a group. It discovered, that macro-environment factors are more scarcely studied both theoretically and empirically. Cultural factors, despite multiple theoretical explanations, tend to affect preferences rather than actual self-employment rate. Economic factors exhibit the greatest extent of scrutiny with focus particularly on sector structure, development and un/employment rate. Political factors mostly entail role of taxation and social security policy tools. Next, impact of technology as well as geography has shown ambiguity in effects on self-employment. Lastly, other factors (e.g. criminality) have been briefly reviewed.

2.4 Self-employment and entrepreneurship factor differences

As mentioned, self-employment is distinguished into solo self-employed and self-employed with employees. Despite the study not focusing on the this distinction, it is important to acknowledge and to control factor differences among these two groups. For solo self-employed, higher level of economic development is often connected to greater number of better paying jobs, thus negatively influencing self-employment rates (except for dependent form). However, higher level of development allows for lesser importance of basic needs as opposed to increased interest in self-realization and independence. (van Stel, Wennekers & Scholman, 2014)

Comparatively, since solo self-employment is often viewed as a stepping stone to business creation (García, 2014) it could be assumed that entrepreneurs will be affected at least by the same factors as solo self-employed. Furthermore, for employer self-employed, higher level of development accompanied by rise of wages increases opportunity cost of entrepreneurship to become managers, thus also resulting in decline of self-employment. (van Stel, Wennekers & Scholman, 2014) More specifically, factor differences favouring job creators before solo self-employed can be observed e.g. in (higher) male turning age point, having child under 5yo for females, longer work experience and higher education as well as living with partner/spouse. (Dvouletý, 2018b) In general, some claim that men are slightly likely to become job creators (23,4% of cases) than women (16,8% of cases) (Dvouletý, 2019) however other research has proved these tendencies to be insignificant (Lukeš et al., 2013)

2.5 Transition economy specifics

Given the upcoming case selection it is important to note that not all economic systems allow for self-employment to the same extent and its role changes depending on the stage of economic development. (Li & Zhao, 2011) Significant part of today's EU has lived under very different economic conditions not too long ago. Under communism and socialism, self-employment was either right outlawed or very strictly limited. (Karpinska, Maas & Jansen, 2012) Therefore after the system turn, economies underwent a significant change resulting in accelerated development.

Self-employment is one of the most important efforts in transition from centrally planned to market economy. (Habibov, Afandi & Cheung, 2017) It creates jobs and drives innovation through private entreprises. (Li & Zhao, 2011) In post-socialist economies, jobs were scarce and self-employment was perceived as a necessity regardless of the dynamics of push and pull. (Castellano & Punzo, 2013) Therefore self-employment rate tends to be higher in transition economies and less developed regions than in market economies. It declines after transitioning since other employment opportunities become more competitive. (Pietrobelli, Aquilina & Rabellotti, 2004)

Market transition theory (among others) expects both individual and structural factors to play role. According to previous studies, most mentioned factors seem to be unaffected, however additional new factors are introduced. First, transition countries are expected to be connected to a higher level of corruption, either positively influencing self-emplyoment by compensating for ineffective bureaucracy, or negatively by unfair and disproportionate environment. (Karpinska, Maas & Jansen, 2012) Second, higher level of privatisation is connected to higher involvement in self-employment. (Karpinska, Maas & Jansen, 2012) Exceptionally, in transition economies, university education reduces

probability of self-employment because the system is not well tailored to provide necessary skills, and investment in higher education leads to preference of dependant employment and/or leisure (Habibov, Afandi & Cheung, 2017)

2.6 Gender differences in self-employment entry

As discussed, women represent a minority in self-employment workforce in all developed countries within all ethnic groups. (Parker, 2009) While some factors are of the same importance to both men and women (lack of employment opportunities), others differentiate. (Glavin, Filipovic & Maas, 2019) That is why some policy initiatives may be unequally effective with men and women. (Allen & Curington, 2014) In general, women are more likely to report pull motivations, unlike men who are more likely to follow market-led concerns. (Dawson & Henley, 2012)

With regards to individual factors, gender differences are present in all categories except for age and nationality. Female self-employed are more likely to be married then their male counterparts (Parker, 2009) and divorced or widowed status also plays a role unlike cohabitating (which has an evident effect for men) (Özcan, 2011). Likewise, having a child under 18 years old doubles female entry chances. (Glavin, Filipovic & Maas, 2019) In contrast, influence of having self-employed parents is higher for males. (Simoes, Crespo & Moreira, 2016) Moreover, relative to men, women are relying more on advanced education and work experience than wealth holdings. (Bates, 1995)

Concerning social-psychological factors, women are more risk averse (Simoes, Crespo & Moreira, 2016) and unlike men show motivation to create wealth expressed as benefit to the family (men do not seem to be motivated to create wealth in any form). (Allen & Curington, 2014) Lastly, Women have lower and are influenced less by social

capital (networking contacts) due to family care and lower job status. (Simoes, Crespo & Moreira, 2016)

With regards to collective factors, cultural, economic and political determinants seem to play role. Men are more sensitive to self-employment culture than women, heavily influenced by tradition that encourages entry. (Marcén, 2014) On the contrary, women are more likely to enter service provisions (education, health care, social work, etc.) (Wilde & Leonard, 2018) or trade. (Simoes, Crespo & Moreira, 2016) In addition, service sector size is positively related to male self-employment rate however negatively related to female. (Arum, Budig & Grant, 2000)

Furthermore, unemployment rate is supposedly more likely to influence more male self-employment entry. (Parker, 2004) In addition, approximately half of self-employed women work part time thus self-employment can be seen as substitute for part time waged work, unlike male where it is considered more of a substitute of full time work. (Saridakis, Marlow & Storey, 2014) At the same time, closing of gender wage gap can result in lower female self-employment rates, since higher wages decrease the attraction of self-employment. (Saridakis, Marlow & Storey, 2014) Last, men are affected more by an environment with higher regulation. (Arum, Budig & Grant, 2000)

3 Contested model of factors

Previous chapter reviewed academic debate on the subject of influential determinants and demonstrated that the most likely to have a clear influence on self-employment rates are age, work experience, marital status, having a self-employed parent/s and average rates of income tax (positive relationship) as well as higher interest rates (negative relationship). (Parker, 2004) Although the topic of gender differences has been discussed in parts, overall answer to how factors' effect varies depending on gender is missing.

In this chapter, compound model of factors is outlined. It is based on findings of literature review, specifically inspired in structure and terminology by Startiene and Remeikiene (2013), Simoes, Crespo and Moreira (2016) and Dvouletý (2018a,b). Next hypotheses to answer the research question *How does influence of factors on self-employment differ between genders?* are introduced. Consequently, in subchapter 3.1 research design is proposed to study each individual factor and to test hypotheses mentioned below.

Table 1
Factors influencing self-employment rate

Micro-environmental factors influencing self-employment rate *(i.e. internal or individual)*	
Category	**Factor**
Basic characteristics	Age
	Gender
	Marital status
	Family background
Human Capital	Education
	Work experience

	Social capital
Nationality and ethnicity	
Personal net worth	
Social-psychological factors	
Health	

Macro-environmental factors influencing self-employment rate *(i.e. external or collective)*	
Cultural	
Economic	Economic system[1]
	Economy structure
	Economic growth
	Access to capital
	Employment
Political and Institutional	Legislative measures
	Taxation
	Social security policy
	Political ideology
	Corruption
Technological	
Geographical	
Security	Criminality
	Individual property protection

Following hypotheses are formulated:

H_1 Influence of factors on self-employment rate varies between genders.

H_2 Women are more likely to be influenced by micro-environment factors.

H_3 Men are more likely to be influenced by macro-environment factors.

[1] described e.g. by level of privatization and including it´s failures e.g. gender wage gap

3.1 Research design

To answer the question *How does influence of factors on self-employment differ between genders?* and test derived hypotheses, quantitative research in a one country critical case is conducted. Given the lack of ability to manipulate (majority of) variables, correlation research design is introduced to examine relationships between micro- and macro-environment factors (explanatory variable) and gender specific self-employment rate (response variable). The relationship is investigated in a non-experimental trend study on a case of one specific country - the Czech Republic - within the time period between 1998 - 2018. The country is chosen due to its exceptionally high employment and self-employment rates as well as unusual development trend in the recent years. And the time frame is chosen to limit the skew from specific circumstances of economic transformation and to provide sufficient amount of available data.

To operationalize concepts, methodologies of Dvouletý (2018b) and Saridakis, Marlow & Storey (2014) are reflected. The control variable is gender. The dependent variables are gender specific male/female self-employment rates (expressed as share of total gender specific employment). Given the outcome of the first part of the research (chapter 4.3), factor analysis (chapter 5) utilizes macro-level perspective and uses corresponding variables. The independent variables are micro- and macro-environmental factors operationalized in Table 2 following previous practice in the field.

To analyze relationships between variables, secondary data sources are utilized. Data is collected from online open source platforms of national and supranational public institutions (due to limited financial and personnel means and to ensure replicability). Furthermore, objective statistics are preferred to self-reported data, to increase reliability of

the outcome. (Dvouletý, 2018) Data collected is limited to the time period 1998 - 2018 and to the scope of the Czech Republic as a sovereign country.

Consequently, several statistical correlation analyses are conducted. Firstly, simple comparability analysis is conducted between male and female (self-)employment trends in Czechia in specified time period. This aims to meet second objective of the study and discover extent of the phenomenon. Secondly, influence of individual factors is examined in a bivariate correlation analysis. Each factor's correlation is analyzed for each gender separately and coefficients are compared appropriately. Lastly, multiple regression model for each gender is created to determine which variables are of significance. Finally, results are presented in forms of tables and graphs accompanied with text description to ensure both clear explanation as well as access to unbiased output.

Table 2

Operationalization of concepts

	Factors		Variable/s
Micro-environmental	Basic characteristics	Age	Age 35-44 share on total population
		Marital status	Marital rates, Divorce rates
		Family background	Fertility rates
	Human Capital	Education	Share of tertiary education on total population
		Work experience	Duration of working life
		Social capital	*not included in the study*
	Nationality and ethnicity		Foreigners self-employment rate
	Personal net worth		Household net income
	Social-psychological factors		*not included in the study*
	Health		Government spendings on health (% of GDP)
Macro-environmental	Cultural factors		Share of SE on economically active population
	Economic	Economic system	Domestic credit to private sector (% of GDP)
		- Economic inequality	Gender wage gap
		Industry structure	Service sector share on GDP
		Economic growth	GDP per capita
		Access to capital	Real interest rate
		Employment	Unemployment rate
			Part-time employment rate
			Full-time emplyoment rate
	Political and Institutional	Legislative measures	Fraser index of economic freedom
		Taxation	Income tax as % of income
		Social security policy	Unemployment net replacement rate
		Political ideology	Median voters index
		Corruption	Corruption index
	Technological		Share of individuals using internet on total population
	Geographical		Share of urban on total population
	Security	Criminality	Total crimes
		Individual property protection	Property rights index

4 Case study: Czech Republic

To fulfil the research design, the Czech Republic was selected. As mentioned, it serves as an example of EU country and while all other possible candidates show a steady growing trend, Czechia provides interesting opportunity to study a change in factors given a development turning point (growth of 2008-2012 turned into a steady decline between 2012-2018). Moreover, despite not having the best starting position within post-soviet economies (Vecernik, 2011), it is performing exceptionally well. (Castellano & Punzo, 2013) Lastly, it is the top country in employment rate and exceeds EU self-employment rate average.

In following two chapters, the case study is analysed to answer the research question and to support or reject hypotheses. First, the country and its self-employment situation are introduced to provide the reader with relevant background information and definitions. Next, in subchapter 4.2, brief literature review of country specific self-employment factors' is presented to reflect on the proposed model and to remain aware of possible deviations. To follow, in chapter 4.3 czech labour market development is examined with attention to gender differences. Comparative analysis is performed to explore *when* and *where* the studied phenomenon occurs.

4.1 Introduction

After a successful era of "the first republic", independent gainful activity in Czechia was suspended for close to half a century, resulting in starting practically from scratch in 1990s. (Průša et al., 2009) During that period, self-employment under communism diminished to as little as 0,5% in 1960s. (Vecernik, 2011) Given the political changes in 1989, following economic development resulted also i self-employment

"resurrection". Even in later studies, negligible percentage of self-employed admits starting up before 1990. (Vecernik, 2011) Self-employment underwent a period of turbulent growth in 1990s, becoming a major source of employment after industry restructuralization from agriculture (also mitigating social impacts of market transition). (Průša et al., 2009)

Self-employed is defined according to Czech law No. 155/1995, §9 as a "person performing an independent earning activity" (osoba samostatně výdělečně činná - OSVČ - in czech). (Pavlicek, 2014) However, there is no uniform definition of the self-employed in the Czech Republic, since tax legislation, social legislation, statistical evidence and industrial policy treat this category differently. (Vecernik, 2011) Furthermore, there is an ambiguous line between self-employed and employed, mostly considering dependant self-employment as "false self-employment" or even outlawed (referred to as "Švarc system").

Consequently, statistical data on the phenomenon can vary slightly. National sources include e.g. Register of Economic Entities, National Accounts, Czech Social Security Administration or Ministry of Industry and Trade. (Vecernik, 2011) Additionally, European Union collects data within Labour Force Survey or Eurobarometer. (Dvouletý, 2018b) Lastly, worldwide statistics are also gathered, e.g. Global Entrepreneurship Monitor. (Lukeš et al., 2013) For this reason, it is important to use consistent data and provide transparent information. At the same time, previous research shows, that the data source should not have a significant impact on the outcome. (Dvouletý, 2018b)

4.2 Self-employment factors in Czechia

Although there have been numerous studies on factors influencing self-employment and entrepreneurship in the Czech Republic, their findings are conflicting. For example strong effect of geographic factors was supported by Novosak (2017) yet later rejected by

Lukeš (2013). However, brief study of czechs' motivation to self-employment showed the same tendencies as observed elsewhere - generally distinguishable into push and pull domain. (Průša et al., 2009) Universally, push factors seem to dominate (Smekalova et al., 2014) and self-employed are exceptionally responsive to change in environmental conditions. (Průša et al., 2008)

By contrast, micro-environment factors seem to be of lower significance. Education level was shown to have low significance. (Lukeš et al., 2013) Likewise, generational determinants have not proved to have effect on becoming self-employed (Castellano & Punzo, 2013) likely since research shows very few people actually have parent with SE experience (Lukeš et al., 2013). On the contrary, macro-environment determinants play the bigger role. There is an anticipated strong effect of privatisation, private property rights guarantee in constitution as well as liberal fiscal and tax policy. (Průša et al., 2009) Finally, there is a strong effect of government sector size. (Průša et al., 2006)

Accordingly, the self-employment sector is very sensitive to state regulation on both national and european level. (Průša et al., 2009) On one hand, there is a significant level of support to self-employed. (Vecernik, 2011) National programs of support to SME were of crucial importance ever since 1990s, then the role was taken over by EU Regional Operations programs. (Průša et al., 2008) Besides indirect support, even taxation tends to favour individuals over corporations (e.g. income tax rate). (Průša et al., 2006) Nevertheless, the government support is generally perceived negatively. (Smekalova et al., 2014)

On the positive side, starting position for men and women after the fall of the iron curtain, unlike in western countries, was argued to be the same - women did not have to fight for equality in self-employment. (Průša et al., 2008) However women have soon been

pushed out of the labour market into alternative forms of employment. (Keune, 2003) Moreover, their entry into self-employment was affected by inequality in other areas (education, unpaid domestic labour, etc.). On one hand, self-employment allows to balance work and family roles. On the other hand, it often leads to extensive work resulting in lack of time for family and consequently woman's feelings of failure. (Průša et al., 2008)

In summary, after the tremendous expansion in the 1990s, self-employment was said to peak and stabilize around 2000. (Vecernik, 2011) Czech rates seem to be affected more by the external macro-environmental factors, which have undergone a major change during country's transformation into an EU market economy. Regardless allegedly having the same starting position, men and women have joined self-employment at different rates. And recently, despite the decline of factors associated with higher influence on female self-employment entry (marriage rates, child births, sector share on economy, etc.), the share of czech female self-employment has been rising. Consequently, it stirs up a question: How come?

4.3 Czech labour market development between 1998 - 2018

In this chapter, czech labour market is examined with attention to gender differences. National and European data sources limited to the age group of 15-64 are considered. The study aims to examine when and where male and female (self-) employment varies and to analyze if development trends are of national or regional character. For this purpose, short summary of labour market development literature is provided followed by number of statistical calculations. Correlation analysis is performed to study the phenomenon, inspired by research of Keune (2003), Dvouletý (2019) and others.

According to some, recent czech development can be distinguished into two time periods - transition era (until 2003) and EU era (after 2004). During the early 1990s self-employment in Czechia underwent a disruptive growth. After the establishment of the Czech Republic (1993) the expansion slowed down and the self-employment share on total employment was relatively stable (Průša et al., 2006) until the recession in 1998 Nikolovova, Pertold & Vozar, 2014). Already at that time, gender differences started to become evident. Self-employed women had higher education, and dominated particular sectors (healthcare, social services) reflecting trends of the dependent employment market. (Průša et al., 2008)

In addition to the 1998 economic decline, state regulation increased at the verge of new millenium. After era of nearly unregulated business environment, several pieces of legislation were adopted, likely being the cause of decline of self-employment. (Průša et al., 2006) Key changes included e.g. mandatory contributions opt-outs change (2006), new labour code (2007), major tax reform (2008), major change in Percentage declared costs (2009) or reintroduction of the 40% PDC (2010). (Pavlicek, 2014) This lead mostly to the decline of partially self-employed, however also to the stabilization of perished to newly established self-employed. (Průša et al., 2006)

After the entry to the European Union (2004), inflow of foreign financial and human capital claimed influence. Decrease of self-employment (due to further legislation changes) was balanced with the rise of number of new entreprises, founded especially by male foreigners. (Průša et al., 2006)

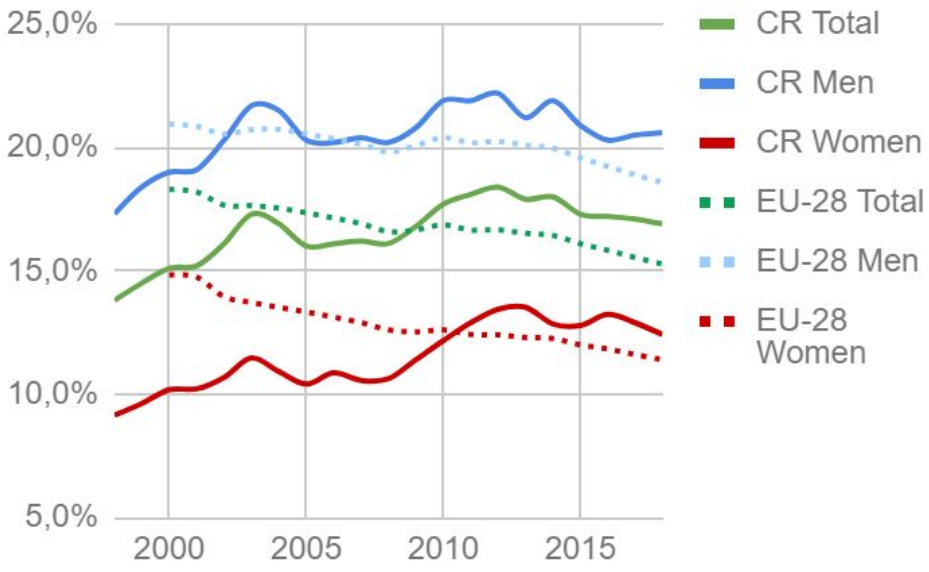
4.3.1 Gender specific self-employment development in general

As already mentioned, self-employment has been developing in a slightly different trend than in the majority of the European Union. Since 1998, self-employment rates have

been steadily growing for the most part. The exception to the rule are years immediately after the succession to the EU (2004 and 2005) together with the years 2013 and 2015. The later two are in line with the EU-28 development, however the time period right after 2004 enlargement manifested differently as can be seen in greater detail in Tables 3 and 4 (in Appendix). Moreover, it is necessary to mention that EU-28 data are only evaluated starting in 2002, since previous information is not available.

Graph 1

Self-employment rate as % of gender specific employment in Czechia and the EU-28



Additionally, gender differences in the growth trends are also evident. Within the twenty-one year studied period, czech women have demonstrated twice as often higher growth rate then the EU-28 average. Especially in the second half of the timeframe (2009-2016) czech women have demonstrated continuous higher growth rates than their male counterparts (with the exception of 2014) as can be in detail observed in Table 5. Generally, female self employment rate shows more volatile annual changes, however the overall rate shows relatively steady course. In summary, gender differences are characterized in the tables below.

Table 6

Descriptive statistics of gender specific self-employment rates (as % of employment)

		Mean	Min	Max	St. Dev.	Sample
Czechia	**male**	19,3%	12,0%	22,2%	0,0274	21
	female	10,7%	6,2%	13,5%	0,0208	21
EU-28	**male**	20,1%	18,6%	20,9%	0,0065	19
	female	12,8%	11,4%	14,8%	0,0097	19

Table 7

Descriptive statistics of gender specific self-employment relative annual change

		Mean	Min	Max	St. Dev.	Sample
Czechia	**male**	2,7%	-6,4%	12,7%	0,0495	21
	female	3,5%	-8,3%	14,8%	0,0616	21
EU-28	**male**	0,8%	-1,4%	6,9%	0,0196	16
	female	1,4%	-0,3%	7,9%	0,0201	16

Despite self-employment playing similarly stable role in both male and female employment (share on employment varying by 2,7% and 2,1% respectively), the annual growth/decline rates differ strongly with women's mean relative annual growth higher however more volatile. To compare, self-employment in the EU demonstrates similar trends. The share on total gender specific employment is even more stable than in Czechia and the differences between gender growth rate are present, yet much less distinct. Conclusively, preliminary findings confirm that female self-employment has been rising more than male in both EU and Czechia and that the trends in Czech Republic are more amplified thus provide better opportunity to be studied.

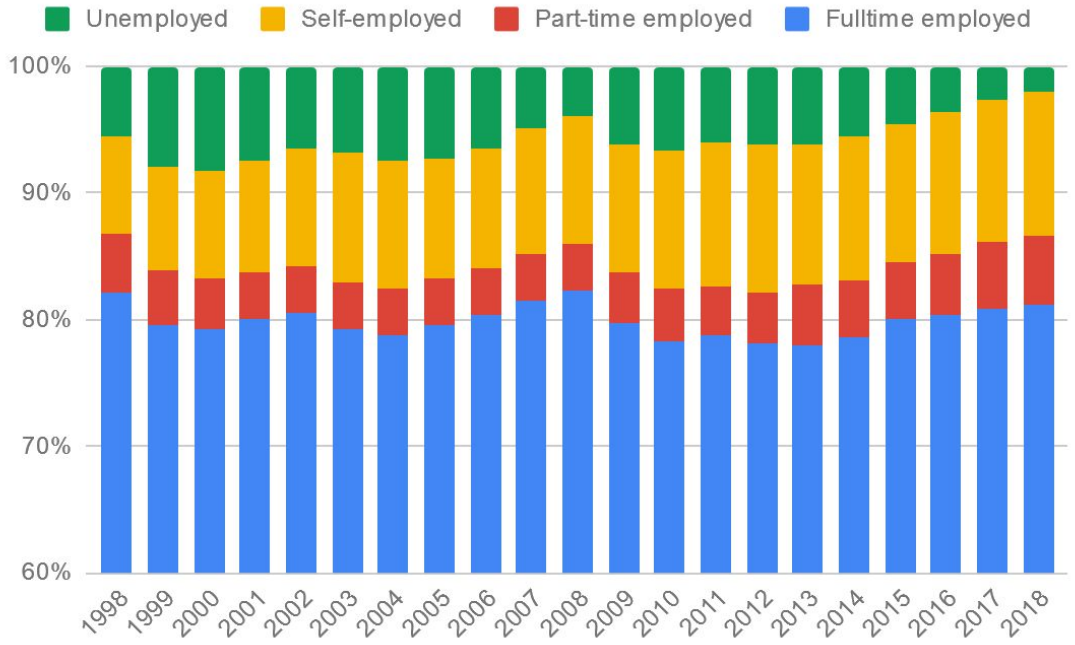
4.3.2 Self-employment as an alternative

Previous studies have outlined self-employment to serve as an alternative to regular employment (together with e.g. part-time employment or unemployment). Academia as well as used data sources acknowledges that members of the labour force/active population

can be either employed (full-time or part-time), self-employed or unemployed. Although the relationship between self-employment rate and other types of employment (i.e. macro-environmental factors) will be studied in chapter 5, this section aims to simply analyze if the higher female growth rates are not simply explained by lower employment (both full- and part-time) or unemployment by analyzing absolute number of persons (and its expression as a share of total active labour force) instead of a share of employment.

Graph 2

Active labour force division in the Czech Republic



From the graph above, it seems that the share of self-employment on total active labour force remains stable regardless of the development of the other three alternatives. It could then seem that there is no relationship between the alternatives. However that is not true. When viewing total number of persons, there has been found strong positive correlation[2] between full-time employment (r= 0,51) as well as part-time employment (r=

[2] verbal expression of r is derived from the Political Science Department at Quinnipiac University:
0 to +- 0,19 no or negligible relationship
+- 0,20 to 0,29 weak relationship
+- 0,30 to 0,39 moderate relationship
+- 0,40 to 0,69 strong relationship
+- 0,70 to 1 very strong relationship

0,59) and self employment. In addition, strong negative correlation (r= -0,51) was found between the number of unemployed and self-employed in Czechia. This however significantly deviates from the situation within the EU-28 where the relationship between fulltime employment is still positive but less strong (r= 0,30) as opposed to part-time having a stronger correlation (0,71). Especially distinct is the lack of significant relationship to unemployment (r= 0,16).

When accounting for gender differences, it is appropriate to compare correlation coefficients. In case of full-time employment, both women (r= 0,58) and men (r= 0,44) demonstrate strong positive relationship. That is relatively in line with the general EU situation for women (r= 0,76) and preceding male correlation (r= 0,03). In case of part-time employment, both genders again demonstrate positive relationship - moderate in case of men (r= 0,36) and very strong in case of women (r= 0,73). The supranational situation is similar for women (r= 0,97), however quite the opposite for men (r= -0,52). Lastly, the correlation between unemployment and self-employment has again a similar moderate to strong negative trend for both women (r= -0,65) and men (r= -0,34) which is not demonstrated in the European context (r= 0,03 and r=0,18 respectively).

Table 8

No. of Czechs (in thousands) by activity between 1998 - 2018 and correlation to no. of SE[3]

Gender	Activity	Mean	Min	Max	St. Dev.	r	P-value
Male	Full-time	2 691,21	2 558,30	2 787,30	66,61	0,44	0,000281
Female	Full-time	1 921,93	1 865,60	2 035,70	51,82	0,58	0,033918
Male	Part-time	61,38	44,90	74,40	8,69	0,36	0,088580
Female	Part-time	200,94	165,30	249,40	28,47	0,73	0,436017
Male	Unemployed	153,40	52,47	207,20	43,79	-0,34	0,640765
Female	Unemployed	176,25	65,86	241,36	47,69	-0,65	0,148350

[3] Self-employed

In summary, it is evident that men and women in Czechia, unlike in the EU in general, exhibit the same polarity in correlation to other forms of employment. The positive correlation to full-time and part-time employment does not suggest a trend of choosing self-employment "over" dependent employment. This notion is further supported by the strong negative relationship to unemployment, that suggest self-employment to be driven by "push domain" as an only solution rather that "pull" choice in prosperity. However, the correlation of part-time employment and unemployment cannot yet be supported, given its inability to reject nonexistence of the relation (P-values) and needs to be further tested. Overall, the differences in strength of relationship may demonstrate different degree of influence over male and female self-employment rate and shall be studied in detail in chapter 5.

4.3.3 Gender specific seasonality in self-employment

Upon confirming that there is a difference in self-employment rate growth between genders, it is appropriate to examine whether the phenomenon is generally present or if it only occurs in specific points in time or space. First, the study attempts to compare development in quarterly intervals instead of annual. It does so by computing share of self-employment on the total employment and absolute and relative growth between quarters analyzing whether there is a seasonal variation between men and women.

Upon preliminary examination of the share of self-employment on total gender specific employment (see Table 9), it is evident that both genders exhibit similar trends - lowest rate in Q1, slight growth in later quarters and relatively stable variation. Furthermore, the positive relationship between number of self-employed men and women is very strong in all quarters (r_{Q1}=0,83, r_{Q2}=0,86, r_{Q3}=0,86, r_{Q4}=0,87) as well as between gender specific shares of total employment (r_{Q1}=0,81, r_{Q2}=0,85, r_{Q3}=0,85, r_{Q4}=0,86).

Table 9

Descriptive statistics of self-employment as % of total employment by quarter

Gender	Quarter	Mean	Min	Max	St. Dev.
Male	Q1	14,8%	10,5%	17,5%	1,60%
	Q2	14,9%	11,0%	17,5%	1,54%
	Q3	15,0%	11,7%	16,9%	1,38%
	Q4	15,0%	12,0%	17,0%	1,34%
Female	Q1	8,3%	5,7%	10,4%	1,46%
	Q2	8,4%	5,9%	10,6%	1,48%
	Q3	8,4%	6,0%	10,5%	1,43%
	Q4	8,4%	6,3%	10,5%	1,36%

However to explore whether there are seasonal differences in self-employment rate it is necessary to compare difference between quarters between the two genders. With regards to the growth of self-employment share on total gender specific employment, very mild mean quarterly growth (0,03% to 0,09%) can be observed for both men and women throughout the year. The only exception is the third quarter, where male self-employment rate exhibits on average growth of 0,08% however female self-employment reports on average decline -0,03%. Variation across years observed is slightly lower for women than man. (See Table 10 in appendix for detail information)

With regards to the growth of absolute numbers of self-employed men and women, trends vary significantly between genders. In the first quarter, men report average decline of 0,28% in total number of self-employed, while women report average increase of 0,49%. In the second quarter, both men and women report growth (1,16% and 1,65% respectively). Than is also the case for the fourth quarter (0,29% and 0,96% respectively). However, in the third quarter men report on average growth (1,18%) and women report decline (-0,16%). Nevertheless, variations for both genders by far exceed measured

quarterly mean differences, thus the statistic cannot be considered of significance. (See Table 11 in appendix for detail information)

Next, the relative growth percentages for each quarter are compared. Quarterly difference in self-employment share on total employment demonstrates that in 12 out of 21 years observed, female growth rates exceeded males in second and fourth quarter. In quarters 1 and 3, the results rolled out otherwise. Quarterly relative difference in total number of self-employed demonstrates that in all but third quarter numbers of female self-employed have been increasing more than those of male. (See Tables 12 and 13 in appendix for detailed heat map) That is in line with mean analysis mentioned in the previous paragraph.

In summary, detailed analysis of quarterly development suggested that both genders undergo similar seasonal changes following continuous slight growth in both absolute numbers and share on total employment. However, there are negligible differences between men and women. While women demonstrate higher growth rates in second and fourth quarter, men exhibit larger growth in the third quarter. Nevertheless, variances altogether are of such a minor scope that no significant difference in seasonality between male and female self-employment can be sustained.

4.3.4 Gender differences in self-employment at regional level

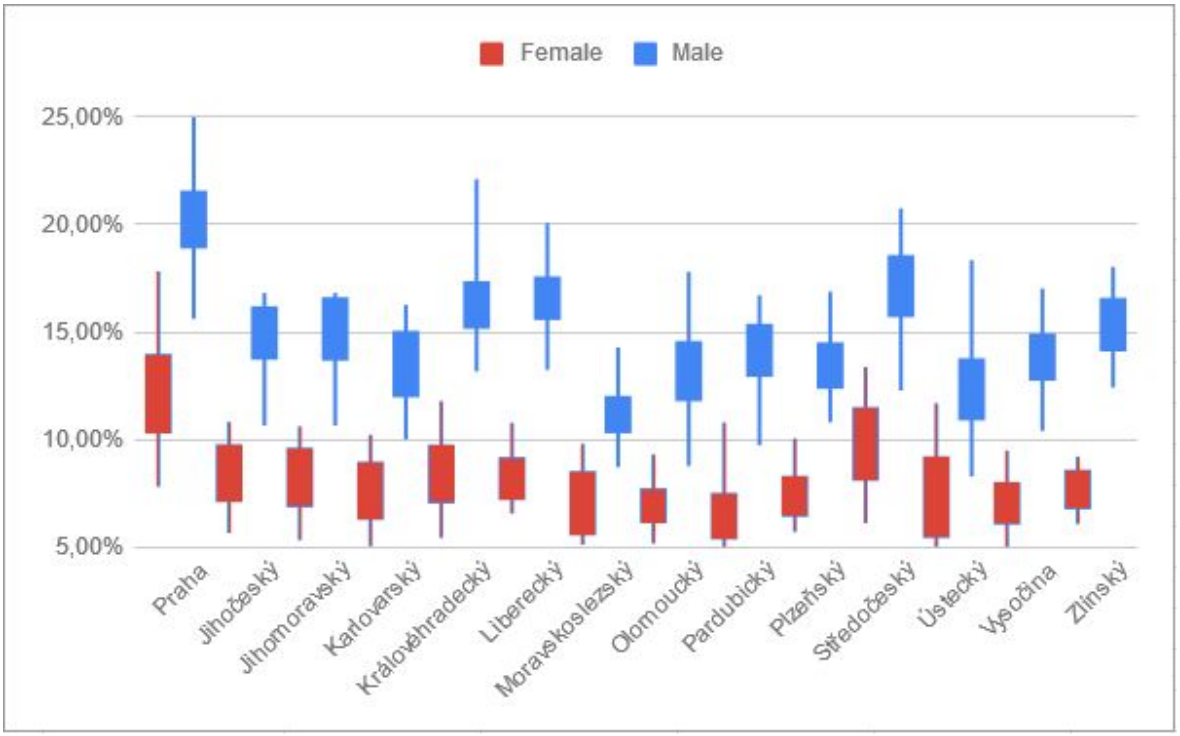
Next, the study aims to examine whether there is a space limitation to the gender difference in self-employment growth. It does so on the data of Czech Statistical Bureau (CSB) instead of Eurostat (previous sections), since the degree of geographical division on EU level is not sufficient (EU identifies 8 NUTS 2 regions, Czechia distinguishes 14 regions) and regional self-employment data is not available. However, since the data is used only to compare men and women within the data set, it causes no discrepancies. In

addition, at the time of research 2018 data is not yet available, thus the studied period is limited to 1998-2017.

From the preliminary analysis, it is evident that there are significant differences among regions in both male and female self-employment rates with clear primacy of the capital city. (see Graph 3) Moreover, brief correlation analysis shows, that the vast majority of regions demonstrates strong or very strong positive relationship between male and female share of self-employment on total gender specific employment (with the exception of Karlovarský (r= 0,14) and Zlínský region (r= 0,08)). However, when analyzing the absolute number of self-employed, all regions demonstrate strong or very strong correlation (r = 0,50 - 0,95) between gender specific values, including Karlovarský and Zlínský. Detail descriptive statistics is provided in Tables 14 & 15 (in Appendix).

Graph 3

Self-employment as % of total employment by region



Correspondingly to the analysis conducted in previous section, to explore whether there are regional differences in self-employment rate it is necessary to compare annual

differences in each region between the two genders. With regards to the change of self-employment share on total gender specific employment, all regions demonstrate mean growth for both men and women and in only 3 of 14 regions (Jihočeský, Karlovarský and Praha) the reported average annual change in self-employment is higher in case of women. With regards to the development of absolute numbers of self-employed men and women, all regions also demonstrate positive mean annual change for both men and women with only Prague reporting higher average annual growth in absolute number of women as opposed to men.

Next, the relative annual changes in female and male self-employment rate for each region are compared. (See Table 16 in Appendix for detailed heatmap) Majority of regions demonstrate average relative annual change in SE rate to be higher in case of women than men (with the exception of Karlovarský and Zlínský). Furthermore, 8 of 14 regions demonstrate moderate or stronger positive relationship between relative annual change in self-employment between men and women. Next, 7 of 14 regions report higher number of years when female growth preceded male growth (vice versa case is reported in 3 cases, 4 regions report a tie). Given these three statistics (average relative annual SE rate change difference, correlation coefficient and absolute number of years of change rate primacy) there are only three regions that do not report prevalence of women over men:

- Karlovarský ($MEAN_{DIF}$ = -1,5%; r = 0,21; $DIF_{FE} > DIF_{FE}$: 10 of 20)
- Olomoucký ($MEAN_{DIF}$ = 1,5%; r = -0,06; $DIF_{FE} > DIF_{FE}$: 9 of 20)
- Zlínský ($MEAN_{DIF}$ = -0,1%; r = 0,16; $DIF_{FE} > DIF_{FE}$: 11 of 20)

In summary, detailed analysis of regional development suggested that there is a strong correlation between female and male self-employment in majority of the regions. However, there are noticeable yet miniscule differences between men and women. Given

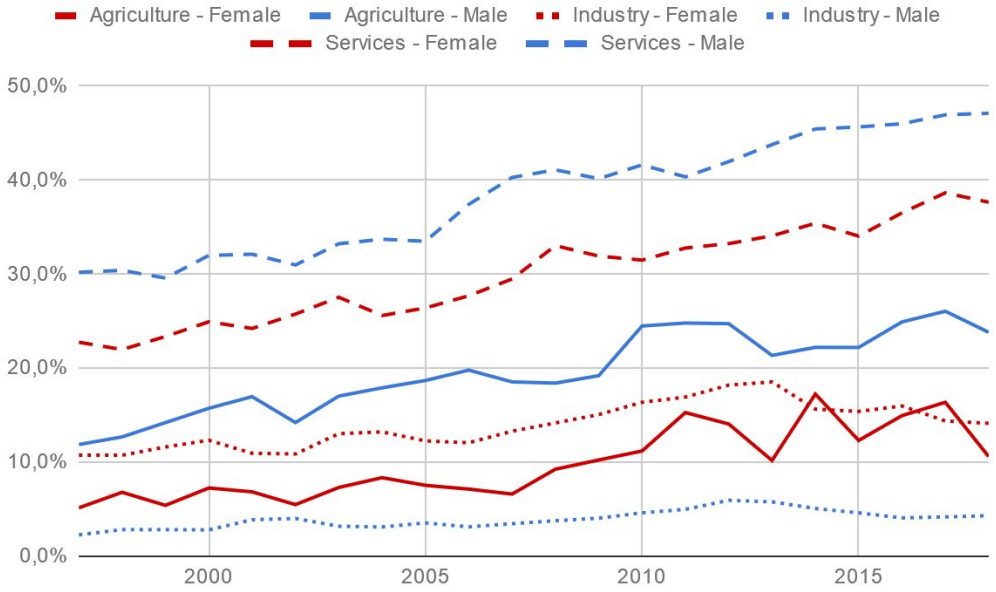
low significance of correlation analyses and high deviation in all conducted calculations, no significant difference in regional development between male and female self-employment can be sustained.

4.3.5 Gender differences in self-employment by sector

Last, the study examines whether the gender difference is present across all industries or if it only applies to specific sectors. For this purpose Eurostat data classifying economic activities into "NACE" categories is used. Given that NACE methodology underwent a significant change in 2007, it is important to acknowledge that data collected from Eurostat for periods 1998-2007 and 2008+ needed to be harmonized (see Table 17 in Appendix). Afterwards, development of sectoral share of self-employment and its difference between men and women is studied. Finally, it needs to be noted that sectoral data for mining sector is not available every year and thus could slightly manipulate the overall results (however it only accounts for app. 0,21% of self-employment, thus the manipulation is of minor significance).

Graph 4

Self-employment as % of total employment by sector



With regards to the change of self-employment share on total gender specific employment, situation varies across sectors. In primary sector, there is strong positive relationship between male and female rate change in both absolute (r=0,49) and relative numbers (r=0,43). In secondary sector, there is a negligible relationship in absolute annual changes (r=0,06) and weak negative relationship in relative (r= -0,2). In tertiary, weak positive relationship is observed for both metrics (r_{ABS}=0,25; r_{REL}=0,25). Moreover, both agriculture and services demonstrate mean difference in absolute change in favour of men, while also reporting higher number of years when male absolute change preceded female. In terms of mean difference in relative change, women dominate in agriculture and services. However all three sectors report higher number of years when male growth rate preceded female.

With regards to the change of numbers of self-employed men and women, all sectors exhibit non-negative relationships between male and female annual changes in both relative and absolute metrics - ranging from negligible in industry (r_{ABS}=0,12; r_{REL}=0,12) to negligible or weak positive in agriculture (r_{ABS}=0,24; r_{REL}=0,19) and strong positive in services (r_{ABS}=0,54; r_{REL}=0,53). Furthermore, all sectors demonstrate mean difference in absolute annual change to be in favor of men as well as relative annual change in industry and services. In all cases (both metrics, all sectors) number of years when male growth precedes female is higher than vice-versa. (See Tables 18 and 19 for detail information)

In summary, analysis of sectoral development suggested that female and male self-employment rates show very strong positive correlation in all sectors. However, detailed examination discovered that in case of annual changes, strong correlation between genders can be universally observed only in the tertiary sector. On the contrary, no notable

relationship was detected in the industry sector. In addition, mildly positive relationship was detected between male and female annual changes in self-employment. Nevertheless, in majority of sectors, male growth manifested more often and/or to greater extent than female. To conclude, given low significance of correlation analyses and considerable deviation in all conducted calculations, no significant difference in sectoral development between male and female self-employment can be sustained.

To summarize, this chapter first brought light to the reasons behind case selection of the Czech Republic. In subchapter 4.1 it described the historical and legislative background of self-employment in Czechia as well as sources of statistical data. Upon that, it reviewed the academic debate regarding self-employment factors' specifics in the country. To follow, the brief self-employment analysis confirmed that on the national level with the annual data view female employment growth rates are higher than male. Next, Pearson correlation analysis showed that male and female employment is related to other types on in/activity in the same way. It demonstrated positive relationship to full-time and part-time employment as opposed to negative relationship to unemployment. This suggests that Czech self-employment is possibly more likely driven by the "push domain" and might be more likely affected by macro-environmental factors.

First, seasonal (quartal) dimension of male and female self-employment differences was examined. Although differences between genders are present, variances altogether are of such a minor scope that significant difference in seasonality between male and female self-employment cannot be supported. Next, regional dimension was examined. Despite slight dominance of female self-employment growth over male, not enough evidence was reported to assume significant difference in gender specific self-employment across regions. Finally, sectoral dimension was explored. It concluded that there is a very strong

positive relationship between gender specific self-employment rate across sectors. Moreover, given negligible differences among sectors' development no sector specificity in terms of female self-employment development can be sustained.

To conclude, the analysis confirmed that on national level with the annual perspective female employment growth rates are higher than male. Furthermore, it did not find any limitation to when and where the phenomenon occurs. It neglected that seasonality, regionality or sectorality would play a significant role and rather supported that the event exists throughout the whole labour market. Provided that, it is relevant to study the phenomenon in the society as a whole (from the macro-level perspective) and the analysis in the following chapter shall proceed correspondingly.

5 Factor changes as possible causes

Given the nation-wide character of the issue, further research is focused on macro-level of the phenomenon. In this chapter, first, correlation analysis is performed for each factor individually comparing the factor and gender specific self-employment rate. Second, multiple regression analysis is undergone to study factors jointly and to assess their compound effect. Eurostat data is used unless mentioned otherwise. The objective of this chapter lies in provisionally supporting or rejecting the hypotheses outlined in chapter 3 and to finally answer the research question *How does influence of factors on self-employment differ between genders?*

5.1 Influence of micro-environmental factors

The subchapter on influence of micro-environmental factors includes all factors mentioned in the model with the exception of social-psychological factors. It is due to the complex nature of this category, lack of reliable macro-level data and lastly due to author´s lack of conviction that individual's social-psychological factors can be affected on macro level. Furthermore, with regards to social capital, while relevant proxy variables are recognized (Andriani & Karyampas, 2009, Durkin, 2001), macro level data is only available on bi-annual or less frequent basis, thus not allowing for time-series analysis. Therefore, the study omits the factor's influence instead of data imputation to avoid possibly manipulating the outcome.

5.1.1 Age

According to academic literature, age is likely to influence both genders to the same extent. According to Dvouletý (2019), share of self-employed (without employees) is greatest in the age bracket 35-44 years (31,3% of total self-employment). Therefore as a proxy variable for age, the total population share of the specified age group is used for both genders respectively (since higher share of population in self-employment strong age bracket should result in higher share of self-employment). The correlation between female self-employment rate and population share of the 35-44 age group demonstrates very strong positive relationship (r=0,84) while for men the relationship is moderately positive (r=0,39). Overall it is possible to conclude that women are more likely to be influenced by age.

Table 20

Correlation of age group share in population to self-employment rate

Age group	Female		Male	
	r	**p value**	**r**	**p value**
15-24	-0,88	0,25	-0,62	< 0,001
25-34	-0,39	< 0,001	0,19	< 0,001
35-44	**0,84**	**< 0,001**	**0,39**	**< 0,001**
45-54	-0,85	< 0,001	-0,62	< 0,001
55-64	0,63	0,002	0,81	< 0,001
65+	0,81	< 0,001	0,40	< 0,001

5.1.2 Marital status

According to academic literature, women are more likely to be influenced by marital/divorced status. As variables, crude marriage and divorce rates are considered. At the time of research, rates for 2018 are not yet available and thus research is limited to 1998-2017. The correlation of female self-employment rates is stronger than male in both

cases of crude marriage and divorce rates. Marriage rates demonstrate very strong negative relationship for both men (r= -0,72) and women (r= -0,84), while divorce rates exhibit strong negative correlation for women (r= -0,48) and no correlation for men (r= -0,02). It can be concluded that women are more likely to be influenced by marital status (both in case of marriage and divorce).

5.1.3 Family background

According to academic literature, women are more likely to be influenced by family background. As variable, fertility rates are considered. At the time of research, rates for 2018 are not yet available and thus research is limited to 1998-2017. The correlation of female self-employment rates to fertility rates demonstrates very strong positive relationship (r=0,76) as opposed to male (strong positive relationship, r=0,51). It can be concluded that women are more likely to be influenced by family background (specifically by having children).

5.1.4 Education

According to academic literature, women are more likely to be influenced by (higher) obtained level of education. As variable, the share of tertiary education level among total population (aged 15-64) is considered. Upon analysis, female self-employment demonstrates very strong positive relationship to the share of people educated on tertiary level (r=0,88) as opposed to strong positive relationship of male (r=0,5). Likewise, there is an existing negative correlation with primary and secondary education level share of very strong relationship for women (r_{PRI}= -0,9; r_{SEC}= -0,71) and moderate to strong for men

(r_{PRI}= -0,61, r_{SEC}= -0,32). It can be concluded that women are more likely to be influenced by obtained level of education.[4]

5.1.5 Work experience

According to academic literature, women are more likely to be influenced by level of work experience. As a corresponding variable, total years of schooling are often considered. However, since education is considered as a separate factor in this study, duration of working life by gender is used instead. Nevertheless, this statistical data is only available since 2000, thus the analysis is limited to 2000-2018. As expected, female self-employment rate demonstrates strong positive relationship to the duration of working life (r=0,69), while male reports none to negligible relationship (r=0,12). To complement, average number of hours worked by year (OECD, 2019) is analysed, demonstrating very strong negative relationship for both women (r= -0,76) and men (r= -0,72). It can be concluded that women are more likely to be influenced by level of work experience.

5.1.6 Nationality and ethnicity

According to academic literature, men and women are equally likely to be influenced by foreign nationality status. As proxy variable, the self-employment rate as % of employment (aged 15-64) of persons holding foreign citizenship is considered.[5] Nevertheless, only data since 1999 is available thus the analysis is limited to 1999-2018. While analysis of female self-employment demonstrates negligible correlation (r=0,13), male self-employment demonstrates weak positive relationship (r=0,22) which is however

[4] However, given the significant deviations, female correlation of tertiary education population share is marked as statistically non-significant at the standard level of significance (p=0,075) which should be taken into consideration.

[5] Null hypothesis presumes that women and men are influenced by being nationals or foreigners to the same extent, thus correlation between nationals deciding to become self-employed (SE rate) and foreigners deciding to become self-employed (foreign SE rate) are equivalent for both genders

considered statistically non-significant (p=0,17). It can be concluded that women and men are equally likely to be influenced by foreign nationality status.

5.1.7 Personal Net Worth

According to academic literature, men are more likely to be influenced by personal net worth. As proxy variable, median equivalised net annual income is considered. However, gender specific data is only available since 2005, thus the analysis is limited to 2005-2018. The correlation of female self-employment rate to median net income demonstrate strong positivity (r=0,77) aligned with relationship to the mean net income (r=0,78). On the contrary, male self-employment rate shows weak correlation to both median (r=0,23) and mean (r= 0,24) net incomes. Similar trend can be observed using total mean income as reported by Czech Statistical Bureau (years 2000-2018) (r_{FEM}=0,8; r_{MAL}=0,4).[6]

To investigate the phenomenon further, another perspective on personal net worth is reviewed. Household disposable income as well as household net worth are analysed (both reported by OECD). At the time of research data for 2018 is not yet available, thus the scope is limited to 1998-2017. Correlation analysis further confirms previous findings. Household disposable income demonstrates positive relationship for both women (r=0,89) and men (r=0,63) and household net worth exhibits positive relationship for women (r=0,59) and negligible for men (r=0,05). Altogether, it can be concluded that women are more equally likely to be influenced by personal net worth.

[6] However, it is notable that disparity with the expected outcome can be caused by ill choice of the variable (increasing income can represent e.g. increasing attractiveness of dependent employment instead of personal net worth).

5.1.8 Health

According to academic literature, men and women are equally likely to be influenced by health. As proxy variable, the total population share of disabled persons was considered, however such data is only available since 2014 (Ministry of labour and social affairs) providing rather unreliable results (r_{FEM}= -0,12; r_{MAL}= -0,85). Instead, gender specific life expectancy at birth (CSB) is used, resulting in very strong positive correlation for women (r=0,88) and strong for men (r=0,61). Furthermore, frequently used macro-level proxy variable of government spendings on health (as % of GDP) is analyzed, reporting very strong positive correlation for both women (r=0,85) and men (0,81). From conducted analysis, clear gender difference in influence of health on self-employment rate cannot be sustained.

In summary, this subchapter reviewed gender differences in micro-environmental factors' influence. (For overall table of key factors used in the analysis see Table 21 in Appendix) After clarifying omission of particular factors, each factor is studied individually with regards to gender specific self-employment rate. Based on literature review, the study presumed, that gender does not play role in influence of age, nationality and health. For most of the remaining factors (marital status, family background, level of education and work experience it expected increased sensitivity of women. Men were only expected to be more influenced by factor of personal net worth. However not all assumptions were supported by the data analysis. See the table below for overview of factor influence.

Table 22

Micro-environmental factors influencing self-employment rate: Analysis results

Category	Factor	Gender of higher influence	
		Expected	**Demonstrated**
Basic characteristics	Age	equally likely	women
	Marital status	women	women
	Family background	women	women
Human Capital	Education	women	women
	Work experience	women	women
	Social capital	*not included in analysis*	
Nationality and ethnicity		equally likely	equally likely
Personal net worth		men	women
Social-psychological factors		*not included in analysis*	
Health		equally likely	equally likely

5.2 Influence of macro-environmental factors

The subchapter on influence of macro-environmental factors includes all factors mentioned in the contested model.

5.2.1 Cultural factors

According to academic literature, men are more likely to be influenced by entrepreneurial culture in the society. In line with "aggregate psychological trait" theory, share of self-employed (both with and without employees) on total labour force is used as a proxy variable for culture. Unsurprisingly, correlation with culture (represented in this manner) is very strong for both women (r=0,92) and men (r=0,91) alike. However, a variable more closely reflecting the entrepreneurship culture is e.g. "Percentage of 18-64 population who agree with the statement that in their country, successful entrepreneurs

receive high status." as reported by Global Entrepreneurship Monitor. (OECD, 2017) Such data is unfortunately available only for years 2006, 2011 and 2013, nevertheless preliminary analysis shows, that with use of this variable, female SE rates demonstrate strong positive relationship (r=0,51) and men exhibit very strong relationship (r=0,93). From conducted analysis, clear gender difference in influence of culture on self-employment rate cannot be supported. Furthermore, to avoid manipulation, used variable will be excluded from the multiple regression model due to lack of relevant data.

5.2.2 Economic factors

According to academic literature, influence of economic factors varies notably. First, men and women are equally likely to be influenced by the nature of economic system. Proxy variable for market economy (level of privatization) is domestic credit to the private sector as a percentage of GDP (World Bank). (Breen & Doyle, 2013) Given that, while female rates demonstrate moderate positive relationship (r=0,36), male rates exhibit negative yet negligible relationship (r=-0,18). It can be concluded that economic system is slightly more likely to influence women.

Next, on one hand, factors as economic growth, aggravated access to outside capital and economic inequality are expected to more likely influence women. Economic growth (represented by GDP per capita in CZK in current prices) reports very strong positive relationship to female SE rate (r=0,81) and strong relationship to male (r=0,57). Access to capital (represented by real interest rates) demonstrates negligible correlation to both women (r= -0,14) and men (r=0,1). Economic inequality between men and women (represented by gender wage gap, only reported between 1998-2017) shows negligible

correlation to both female (r=0,02) and male (r= -0,16) SE rate.[7] It can be concluded that women are more likely to be influenced by economic growth, however access to capital and economic inequality influence both genders equivalently.

On the other hand, men are more likely to be influenced by the economy structure. As appropriate variable sector share on GDP is selected. In case of agriculture and industry, both genders demonstrate negative relationship of SE rate to share on GDP. On the contrary, both males and females report positive relationship to service sector share on GDP. All relationships across sectors and genders are reported as strong. Difference in industry and service correlations are rather negligible - with industry share female demonstrate strong correlation (r= -0,41) similar to men (r= -0,45) while with service share, correlation coefficients are slightly higher for both female (r=0,49) as well as male (r=0,52) SE rate. The only noticeable difference is in terms of agriculture share with male correlation coefficient (r= - 0,68) is higher than the female (r= -0,5). In summary, it can be concluded that men are slightly more likely to be influenced by economy structure, especially by the agriculture sector share, however the difference is rather negligible.

In terms of self-employment as an alternative to other forms of labour force's (in)activity, men are presumed to be more likely to be influenced by full-time employment rates and unemployment rates, while women are more likely to be influenced by part-time employment rates. As opposed to other factors, employment correlation analysis provides relatively clear results. In terms of unemployment, women show strong negative correlation to self-employment rate (r= -0,47) while men demonstrate no correlation at all (r=0,0). The situation is reversed when it comes to correlation to full-time employment. Women report negligible relationship (r=0,07) while men exhibit moderately positive

[7] Interestingly, OECD reports differing data, however leads to a similar conclusion (negligible gender difference) by reporting negative relationship for both women (r= -0,41) and men (r= -0,33).

relationship (r=0,37). Lastly, both genders demonstrate positive relationship between part-time employment rate and self-employment rate to the extent of strong correlation for women (r=0,55) and weak correlation for men (r=0,28). In summary, it can be concluded, that male self-employment rates are more likely to be influenced by full-time employment rates, while women are more likely to be influenced by unemployment rates and slightly more likely to be influenced by part-time employment rates.[8]

5.2.3 Political and institutional factors

According to academic literature, influence of political and institutional factors varies notably. First, men and women are equally likely to be influenced by level of taxation and social security policy. Level of taxation is represented by tax and social security contribution as percentage of income (based on 100% average wage as reported by OECD). Data is only available since 2000, thus analysis is limited. Given that social security contribution rate remained very stable (only one change in 2009), the correlation coefficients are fairly misleading and arguably provide little insight when reporting very strong negative relationship for female SE rates (r= -0,9) and strong for male (r= -0,52). However the same difference in strength can also be observed when analysing the employee income tax rate. It demonstrates very strong positive correlation to female SE rate (r=0,78) as well as strong correlation to male (r=0,41). Thus, it can be concluded, that women are more likely to be influenced by level of taxation.

Secondly, social security policy is represented by unemployment benefits to income ratio (described by Net replacement rates reported by OECD[9]). Data is only available since 2001, thus analysis is limited. Nevertheless, variable reports negative relationship to

[8] Correspondingly, it can be estimated that self-employment is likely a replacement alternative to unemployment for women as opposed to alternative to full-time employment for men

[9] defined for a single person with previous work earnings of 100% of average wage, unemployment duration of 6 months and excluding housing benefits.

self-employment rate of different strength - very strong correlation to female (r= -0,89) and strong correlation to male (r= -0,46). When other family circumstances are considered, results remain equivalent. In a situation of a couple with no children, female relationship remains very strong negative (r= - 0,9) and male strong negative (r= -0,48). In a situation of a couple with two underage children correlation coefficients for men remains the same, for women demonstrates slight increase (r= -0,92). Therefore, it can be concluded that women are more likely to be influenced by social security policy.

On one hand, factors as government political ideology and level of corruption are expected to more likely influence women. Political ideology is represented by median voters index (calculated by weighted average of left-right scale of party representation in the lower house of parliament according to ParlGov database (Döring & Manow, 2019)).[10] Analysis concludes that both genders demonstrate negligible to weak relationship to political ideology - positive for women (r=0,20) and negative for men (r= -0,17). It can be concluded that both genders are equally likely to be influenced by political ideology.

Next, corruption is represented by Corruption Perceptions Index (The Transparency International) expressed by percentage of maximal value (due to change in scaling in 2012). In case of female self-employment rate, strong positive relationship (r=0,47) is demonstrated while male rates demonstrate no relationship (r=0,06). It can be concluded that women are more likely to be influenced by (perceived) level of corruption.

On the other hand, men are more likely to be influenced by extent of legislative measures. It is represented by Fraser index of economic freedom. Nevertheless, since data is only available in 2000-2016, analysis is limited to this time frame. With correlation to overall index, female self-employment rate demonstrates very strong positive relationship

[10] However, two parties (STAN and Czech Pirate Party) cannot be indexed within used methodology thus they are excluded from calculations to limit manipulation.

(r=0,84) as opposed to male's strong relationship (r=0,49). Likewise, specifically with regards to the sub-index of regulation, very strong positive correlation is found for women (r=0,82) and strong for men (r=0,64). It can be concluded, that women are more likely to be influenced by extent of legislative measures.

5.2.4 Technological factors

According to academic literature, men and women are equally likely to be influenced by technological factors. Proxy variable for technology is considered access to internet (share of population using the internet reported by The World Bank). At the time of research, data for 2018 is not yet available, thus analysis is limited. Use of internet demonstrates very strong positive correlation to self-employment rate for both women (r=0,89) and men (r=0,74). Complementarily, data from CBS regarding household access to computer and internet is examined. However the later is only available since 2001, thus analysis is limited. Accessibility of a computer is strongly positively related to self-employment rate for both women (r=0,92) and men (r=0,63). Aligned, access to internet in household demonstrates very strong relationship to female rates (r=0,87) and moderate to male (r=0,34). Conclusively, while technology strongly influences both genders, women are slightly more likely to be influenced by technological factors.

5.2.5 Geographical factors

According to academic literature, women are more likely to be influenced by geographical factors. Proxy variable for geography is considered share of urban on total population as reported by The World Bank. Analysis discovered, that there is a very strong negative relationship between level of urbanisation and self-employment for both women

(r= -0,7) as well as men (r= -0,84). Conclusively, men are slightly more likely to be influenced by degree of urbanisation than women.

5.2.6 Security

According to academic literature, men and women are equally likely to be influenced by security factors. Proxy variables for security are considered criminality (physical security) and level of individual property protection (material security). Criminality (number of crimes as reported by CSB) demonstrates negative correlation to self-employment - exhibiting very strong relationship for women (r= -0,79) and strong for men (r= -0,48). Property protection is represented by property rights index (World Economic Forum, 2019) that is however only available since 2008, thus analysis is limited. Property rights protection shows negative correlation to self-employment rate - moderate for women (r= -0,37) and strong for men (r= -0,56). In conclusion, (lack of) security has influence on self-employment however gender differences vary based on the type of security.

In summary, this subchapter reviewed gender differences in macro-environmental factors' influence. (For overall table of key factors used in the analysis see Tables 23 and 24 in Appendix) Each factor is studied individually with regards to gender specific self-employment rate. Based on literature review, the study presumed, that gender does not play role in influence of economic system, level of taxation, social security policy, technological and security factors. For economic growth and inequality, access to capital, part-time employment rates, political ideology, corruption and geographical factors it expected increased sensitivity of women. Men were only expected to be more influenced by cultural factors, economy structure, unemployment and full-time employment rates and

extent of legislative measures. However only four assumptions were supported by the data analysis. See the table below for overview of factor influence.

Table 25

Macro-environmental factors influencing self-employment rate: Analysis results

Category	Factor	Gender of higher influence	
		Expected	**Demonstrated**
Cultural		men	equally likely
Economic	Economic system	equally likely	women
	Economic growth	women	women
	Access to capital	women	equally likely
	Economic inequality	women	equally likely
	Economy structure	men	men
	Unemployment	men	women
	Full-time employment	men	men
	Part-time employment	women	women
Political and Institutional	Taxation	equally likely	women
	Social security policy	equally likely	women
	Political ideology	women	equally likely
	Corruption	women	women
	Legislative measures	men	women
Technological		equally likely	women
Geographical		women	men
Security		equally likely	women/men

5.3 Compound influence - multiple regression models

After analyzing each factor's influence individually, it needs to be taken into consideration that factors do not exist in insulation, however they interact and create compound effects and influences. Multiple regression model is created separately for men and women to discover, which factors play most important role in each gender specific

self-employment. For overall table of key factors used in the analysis see Tables 21, 23 and 24 (in Appendix).

First male self-employment is analyzed. Before the test, multiple linear regression assumptions (normal distribution of residuals and existence of linear relationships between independent and dependent variables) were tested to ensure that the results are credible. (see Graph 8 in Appendix) From the stepwise multiple linear regression marital status and full-time employment rates are reported significant (with approximately 62% of the self-employment rates variations explained). The model is reported statistically significant (*F(2,13) = 13,498, p= 0,001).*

When controlling for marriage rates and full-time employment, government spending on health as % of GDP is next to demonstrate significance. Conclusively, marital status, full-time employment rate and health are the factors most likely to influence male self employment. In summary, H_3*: Men are more likely to be influenced by macro-environment factors.* is rejected for lack of evidence.

Table 25

Male self-employment rates ANOVA output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,713[a]	,508	,473	0,6309%
2	,822[b]	,675	,625	0,5322%

a. Predictors: (Constant), Marriage rates

b. Predictors: (Constant), Marriage rates, Full-time employment M

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,758	1	5,758	14,467	,002[b]
	Residual	5,572	14	,398		
	Total	11,330	15			
2	Regression	7,647	2	3,824	13,498	,001[c]
	Residual	3,683	13	,283		
	Total	11,330	15			

a. Dependent Variable: SE Rate M

b. Predictors: (Constant), Marriage rates

c. Predictors: (Constant), Marriage rates, Full-time employment M

Table 26

Male self-employment rates coefficient table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	28,146	1,905		14,775	,000		
	Marriage rates	-15,103	3,971	-,713	-3,804	,002	1,000	1,000
2	(Constant)	-103,573	51,027		-2,030	,063		
	Marriage rates	-22,443	4,393	-1,059	-5,109	,000	,581	1,720
	Full-time employment M	1,380	,534	,536	2,583	,023	,581	1,720

a. Dependent Variable: SE Rate M

Moreover, female self-employment is analysed. Before the test, assumptions were tested (see Graph 9 in Appendix). From the stepwise multiple linear regression marital status and education show significance (with approximately 92% of the self-employment rates variations explained). The model is reported statistically significant (*F(2,14) = 88,148, p < 0,001).*

Table 27

Female self-employment rates ANOVA output (SPSS)

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,907[a]	,822	,810	0,5334%
2	,963[b]	,926	,916	0,3547%

a. Predictors: (Constant), Tertiary F

b. Predictors: (Constant), Tertiary F, Marriage rates

c. Dependent Variable: SE Rate F

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19,675	1	19,675	69,153	,000[b]
	Residual	4,268	15	,285		
	Total	23,943	16			
2	Regression	22,182	2	11,091	88,148	,000[c]
	Residual	1,761	14	,126		
	Total	23,943	16			

a. Dependent Variable: SE Rate F

b. Predictors: (Constant), Tertiary F

c. Predictors: (Constant), Tertiary F, Marriage rates

Table 28

Female self-employment rates coefficient table (SPSS)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	8,556	,394		21,689	,000		
	Tertiary F	,230	,028	,907	8,316	,000	1,000	1,000
2	(Constant)	16,400	1,777		9,229	,000		
	Tertiary F	,140	,027	,554	5,171	,000	,457	2,186
	Marriage rates	-13,781	3,088	-,478	-4,463	,001	,457	2,186

a. Dependent Variable: SE Rate F

When controlling for marriage rates and tertiary education share, age is next to demonstrate significance. Conclusively, education, marital status and age are the factors most likely to influence female self employment. In summary, *H_2: Women are more likely to be influenced by micro-environment factors.* is provisionally supported.

Conclusion

Self-employment has been considered an important part of recovering and growing economy as well as an area of interest of current governing bodies on national and supranational level. Therefore, this study attempted to provide deeper understanding, what influences self-employment and how does such influence differ between men and women. Purpose of the study was threefold. First, to synthesize a model of influential factors based on current academic debate. Second, to analyze the case of the Czech Republic (exceptional in higher self-employment growth rates for women than men) to understand whether gender difference phenomenon is universal or only limited to time/space/industry. And third, to analyze what are factors driving the self-employment rate.

In the first place, the thesis introduced self-employment as a labour force activity and defined its place among other types of employment. Self-employment is introduced as an answer to labour market development (seeking higher flexibility in times of demographic and technological changes) as well as voluntary of forced unemployment. After defining the legal and administrative dimensions of the term and differentiating from entrepreneurship, the chapter explored the decision to become self-employed. It concluded that such decision is taken insulated neither in time nor in "space", yet is influenced by number of factors.

Before discussing factors in detail, chapter 2 focused on describing two opposing opinions present in the academia - the push and the pull approaches. The push theory suspects self-employment to rise out of necessity, to be "the only way out". It often emphasizes the influence of factors beyond individual's control such as loss of employment. On the contrary, the pull theory expects self-employment to rise regardless of

circumstances from one's own initiative. It occurs due to individual's specific abilities that urge him/her to pursue an opportunity. Factors specific to a person are often emphasized, e.g. education, personal characteristics or work experience.

In detail, individual factors (i.e. internal) were described and classified. Study reviewed that age is a key factor in the decision making as well as marital status, family background or education, personal wealth and work experience. It briefly reviewed that minorities, e.g. immigrants or disabled, tend to be more likely to enter self-employment. It also mentioned the importance of social-psychological factors (motivation, values, personal characteristics). However these have been excluded from the study since their complexity deserves an analysis on its own.

Correspondingly, collective factors (i.e. external) were described and classified. First, different theories of cultural factors were introduced together with explanation why culture is exceptionally difficult to consider. Next, economic factors showed positive impact on self-employment of increased capital (own and outside), economic growth and service sector share, while imports indicated negative relationship. Third, political factors indicated that higher regulation may promote self-employment, especially in field of taxation as opposed to the effects of strengthening social security policy. To follow, technology was described to carry positive influence by improving conditions for small enterprises and individuals as opposed to large companies. Moreover, geography (urban vs rural settlement) was assessed to provide differences in opportunities as well as costs, bringing ambiguous influence. Last, security (both material and physical) presented a positive influence on self-employment.

Finally, academic opinions on gender differences of both micro- and macro-environmental factors were outlined. In general, women were reported to be more

influenced by individual factors (marital status, family background, education and work experience) and lead by "pull" motivations. On the contrary, men were reported to be more influenced by collective factors (self-employment culture, industry structure, employment rate, level of regulation) and driven by "push" motivations.

As a result, in chapter 3 thesis fulfilled the first objective and introduced a compound model of influential factors (Table 1, p. 25). It classified factors first as micro-environmental, divided further into basic characteristics (age, gender, marital status, family background), human capital (education, work experience, social capital) and other (nationality, personal net worth, social-psychological factors and health). And second as macro-environmental, categorized as cultural, economic, political and institutional, technological, geographical and security. From there, three hypotheses were formulated to answer the research question *How does influence of factors on self-employment differ between genders?*:

H_1 Influence of factors on self-employment rate varies between genders.

H_2 Women are more likely to be influenced by micro-environment factors.

H_3 Men are more likely to be influenced by macro-environment factors.

Consequently, Czech labour market development was analyzed to discover the scope of the phenomenon. Literature review showed conflicting results of previous studies mostly expecting czech self-employed to be influenced by push domain factors. Also, it showed discrepancies in expectations and reality - despite the decline of factors associated with higher influence on female self-employment entry (marriage rates, child births, sector share on economy, etc.), the share of czech female self-employment has been rising recently.

To follow, chapter 4.3 examined czech labour market development to see when and where gender differences occur. Conclusively, analysis showed that men and women alike show the same polarity in correlation to other forms of employment - framing self-employment to rather be an alternative to unemployment and driven by "push factors". Analysis has confirmed neither seasonality (both genders undergo similar seasonal changes with minor differences) nor regionality (11 of 14 regions report higher female self-employment rate growth than male) of gender differences. In the same fashion, analysis of sectorality described that female and male self-employment rates show very strong positive correlation in all sectors and given low significance of correlation analyses and considerable deviations no significant difference in sectoral development could be sustained.

Upon learning that the phenomenon exists across regions, seasons and sectors, macro-level correlation analysis of contested model was conducted. It concluded that there are several gender differences in factor influence. First, micro-environmental factors were analyzed. After explaining omittance of psycho-sociological factors and social capital due to lack of reliable data, the study concluded that gender differences are present in all factors except for nationality and health. In all cases (age, marital status, family background, education, work experience and personal net worth), women are reported to be more likely influenced than men.

Likewise, macro-environmental factors were analyzed. After explaining the low reliability of cultural factors influence findings, it explained that only factors of access to (outside) capital, economic inequality and political ideology demonstrate no or negligible differences between genders. As a matter of fact, men are reported to be more likely influenced by economy structure, full-time employment rates and geographical factors. On

the contrary, women are reported to be more likely influenced by economic system and growth, unemployment and part-time employment rates, level of taxation, social security policy, corruption, extent of legislative measures and technological factors. Different types of security have demonstrated different influence - physical security demonstrates stronger influence on women, while material exhibits stronger influence on men.

Correspondingly provided all evidence, *H_1: Influence of factors on self-employment rate varies between genders.* was provisionally supported.

Lastly, compound influence of factors on self-employment rate was examined. Multiple regression models were constructed for men and women separately. Male self-employment rate analysis discovered marital status, full-time employment rate and health to be primary influencers, thus leading to the rejection of *H_3: Men are more likely to be influenced by macro-environment factors.* Female self-employment rate analysis discovered marital status, education and age to be primary influencers, thus provisionally supporting *H_2: Women are more likely to be influenced by micro-environment factors.*

At the same time, it is necessary to mention limitations of the study. Firstly, some (valuable) resources were not included due to troublesome and/or paid access. Secondly, the study is limited to self-employed without employees and possibly provides incomplete results by excluding e.g. unpaid family workers, volunteers, self-employed with employees. And most importantly, due to lack of available data some factors were excluded from the (multiple regression) analysis and less than sufficient number of samples could result in incomplete or skewed findings.

Ultimately, despite meeting the three objectives outlined in the introduction, the thesis opens a new opportunity to examine the question *How does influence of factors on self-employment differ between genders?* rather than closing with a clear definite answer.

The space for possible future research lies foremost in replication of the study on a larger sample (e.g. across multiple countries). In addition, self-reported data could be used to assess possible differences in "objective and subjective" perspectives. Furthermore, the topic could benefit from qualitative approach to the problem e.g. by analysing the social-psychological and cultural factors.

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Appendix no. 19: Summary of key macro-environmental factors' variables between 1998 - 2018 - other (Table 24)

Appendix no. 20: Male self-employment rates: Multiple linear regression assumptions test (Graph 8)

Appendix no. 21: Female self-employment rates: Multiple linear regression assumptions test (Graph 9)

Table 3

Absolute annual change in number of self-employed

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Czechia	**total**	46,3	32,1	19,2	10,1	41,4	52,8	-12,6	-22,8	-1,2	28,8	11,4	14,1	43,8	20,2	27,6	-40,6	23,7	-30,6	24	8,3	0,2
	male	33,2	22,3	15,4	4,6	37,5	31,1	-3,3	-9,5	-6,8	22,8	8,8	2,9	26,3	4,2	15,5	-30	19,7	-27,6	1,6	10,8	8,4
	female	13,2	9,7	3,8	5,5	3,9	21,7	-9,4	-13,2	5,6	6	2,6	11,2	17,5	15,9	12,2	-10,6	4,1	-3,2	22,5	-2,5	-8,1
EU-28	**total**						249,8	1394,1	427	215,7	188,2	-144,7	-68,2	294	-87,8	210,4	-217,4	284,4	-94,9	75	-143,8	-30,5
	male						210,6	910,2	192,2	88,3	109,1	-181,8	-98,4	218	-74,6	108,3	-198,2	93,7	-138,1	5,9	-130,5	-56
	female						39,1	484	234,7	127,5	79,2	37	30,2	76	-13,2	102,1	-19,2	190,7	43,2	69	-13,2	25,5

Table 4

Relative annual change in number of self-employed

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Czechia	**total**	12,4%	7,7%	4,3%	2,2%	8,6%	10,1%	-2,2%	-4,1%	-0,2%	5,4%	2,0%	2,4%	7,4%	3,2%	4,2%	-5,9%	3,7%	-4,6%	3,8%	1,3%	0,0%
	male	12,7%	7,6%	4,9%	1,4%	11,1%	8,3%	-0,8%	-2,4%	-1,7%	5,9%	2,2%	0,7%	6,3%	0,9%	3,4%	-6,4%	4,5%	-6,0%	0,4%	2,5%	1,9%
	female	12,0%	7,9%	2,9%	4,0%	2,7%	14,8%	-5,6%	-8,3%	3,8%	4,0%	1,7%	7,0%	10,2%	8,4%	6,0%	-4,9%	2,0%	-1,5%	10,9%	-1,1%	-3,6%
EU-28	**total**						1,3%	7,2%	2,1%	1,0%	0,9%	-0,7%	-0,3%	1,4%	-0,4%	1,0%	-1,0%	1,3%	-0,4%	0,3%	-0,7%	-0,1%
	male						1,6%	6,9%	1,4%	0,6%	0,8%	-1,2%	-0,7%	1,5%	-0,5%	0,8%	-1,4%	0,7%	-1,0%	0,0%	-0,9%	-0,4%
	female						0,6%	7,9%	3,5%	1,9%	1,1%	0,5%	0,4%	1,1%	-0,2%	1,4%	-0,3%	2,6%	0,6%	0,9%	-0,2%	0,3%

Table 5

Gender difference in relative annual change in number of self-employed (female-male)

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Difference in % points	**Czechia**	-0,71	0,29	-2,00	2,63	-8,38	6,52	-4,78	-5,96	5,58	-1,93	-0,50	6,32	3,99	7,50	2,54	1,53	-2,52	4,52	10,51	-3,60	-5,47
	EU-28	-11,97	-7,85	-2,85	-4,01	-2,74	-13,52	12,77	10,37	-2,83	-3,09	-2,32	-7,33	-8,87	-8,84	-5,00	3,90	-0,68	1,09	-10,54	0,43	3,43

Table 10

Absolute quarterly difference in self-employment as % of total employment

Gender	Quarter	Mean	Min	Max	St. Dev.
Male	Q1	0,08%	-0,87%	0,57%	0,38%
	Q2	0,06%	-0,54%	0,60%	0,31%
	Q3	0,08%	-0,66%	0,70%	0,29%
	Q4	0,04%	-0,35%	0,42%	0,25%
Female	Q1	0,08%	-0,53%	0,50%	0,24%
	Q2	0,09%	-0,34%	0,64%	0,25%
	Q3	-0,03%	-0,41%	0,32%	0,21%
	Q4	0,03%	-0,39%	0,34%	0,22%

Table 11

Relative quarterly difference in number of self-employed

Gender	Quarter	Mean	Min	Max	St. Dev.
Male	Q1	-0,28%	-6,11%	3,56%	2,37%
	Q2	1,16%	-2,64%	4,87%	2,11%
	Q3	1,18%	-3,05%	6,20%	1,92%
	Q4	0,29%	-2,80%	2,17%	1,58%
Female	Q1	0,49%	-5,53%	4,17%	2,38%
	Q2	1,65%	-5,00%	7,67%	3,16%
	Q3	-0,16%	-5,59%	4,64%	2,66%
	Q4	0,96%	-4,92%	5,79%	2,89%

Table 12

Female - Male Comparison: Quarterly difference in SE as % of Employed

Year	Q1	Q2	Q3	Q4
1998		-0,0029	-0,0056	0,0000
1999	0,0010	-0,0009	-0,0045	0,0004
2000	0,0007	-0,0012	0,0022	0,0001
2001	-0,0015	0,0002	-0,0021	-0,0059
2002	-0,0045	0,0015	-0,0005	0,0017
2003	-0,0038	0,0010	-0,0042	-0,0003
2004	-0,0022	0,0029	-0,0021	0,0011
2005	-0,0021	0,0024	0,0014	0,0044
2006	0,0014	-0,0006	0,0001	0,0026
2007	-0,0032	-0,0007	-0,0022	-0,0007
2008	-0,0005	0,0025	0,0000	0,0022
2009	-0,0017	0,0028	0,0012	0,0001
2010	-0,0023	-0,0012	-0,0013	0,0042
2011	0,0059	-0,0026	-0,0014	-0,0030
2012	-0,0012	0,0007	0,0065	0,0015
2013	0,0005	0,0040	-0,0027	-0,0053
2014	-0,0002	0,0019	0,0005	-0,0068
2015	0,0072	0,0045	0,0009	0,0030
2016	0,0063	0,0004	-0,0017	-0,0021
2017	0,0008	-0,0023	-0,0035	0,0009
2018	0,0004	-0,0049	-0,0040	-0,0001
M	11	9	14	9
F	9	12	7	12

Table 13

Female - Male Comparison: Quarterly relative difference in number of SE

Year	Q1	Q2	Q3	Q4
1998		-0,0170	-0,0475	0,0319
1999	0,0286	-0,0109	-0,0607	0,0387
2000	0,0224	-0,0175	0,0349	0,0133
2001	0,0060	-0,0263	-0,0139	-0,0709
2002	-0,0298	0,0379	0,0136	0,0364
2003	-0,0206	0,0315	-0,0601	0,0150
2004	-0,0042	0,0018	-0,0411	-0,0092
2005	-0,0287	0,0057	0,0006	0,0501
2006	0,0188	-0,0060	-0,0053	0,0203
2007	-0,0276	0,0162	-0,0202	-0,0153
2008	-0,0025	0,0283	-0,0213	0,0172
2009	0,0134	0,0368	0,0196	0,0066
2010	0,0067	0,0021	-0,0158	0,0528
2011	0,0684	-0,0353	0,0028	-0,0070
2012	0,0113	0,0070	0,0355	0,0107
2013	-0,0132	0,0261	-0,0188	-0,0333
2014	0,0069	0,0112	-0,0037	-0,0398
2015	0,0412	0,0359	0,0012	0,0241
2016	0,0582	0,0313	-0,0186	0,0020
2017	-0,0050	-0,0197	-0,0317	0,0043
2018	0,0052	-0,0343	-0,0321	-0,0060
M	8	8	14	7
F	12	13	7	14

Table 14

Descriptive statistics of self-employment as % of employment 1998-2017 by region

Region	MEAN		MIN		MAX		ST. DEV		r	p-value
	Female	Male	Female	Male	Female	Male	Female	Male		
Praha	12,36%	20,08%	7,79%	15,62%	17,83%	25,34%	2,58%	2,19%	0,680512	0,484357
Jihočeský	8,18%	14,63%	5,65%	10,64%	10,82%	16,81%	1,68%	1,71%	0,762252	0,938742
Jihomoravský	8,17%	14,82%	5,30%	10,64%	10,62%	16,82%	1,58%	2,03%	0,662179	0,281924
Karlovarský	7,40%	13,26%	5,02%	10,00%	10,22%	16,26%	1,42%	1,95%	0,142787	0,177466
Královéhradecký	8,32%	16,37%	5,42%	13,15%	11,79%	22,12%	1,80%	2,12%	0,459206	0,476703
Liberecký	8,18%	16,52%	6,54%	13,22%	10,79%	20,07%	1,22%	1,70%	0,423877	0,156782
Moravskoslezský	7,06%	11,24%	5,10%	8,71%	9,81%	14,29%	1,56%	1,56%	0,701792	0,988616
Olomoucký	7,00%	13,10%	5,15%	8,76%	9,31%	17,80%	1,25%	2,46%	0,422428	0,004975
Pardubický	6,62%	14,17%	4,14%	9,72%	10,80%	16,71%	1,55%	1,75%	0,594176	0,596638
Plzeňský	7,46%	13,69%	5,68%	10,79%	10,06%	16,88%	1,21%	1,41%	0,420254	0,506280
Středočeský	9,73%	16,93%	6,10%	12,27%	13,38%	20,76%	2,21%	2,46%	0,919986	0,645086
Ústecký	7,46%	12,74%	4,49%	8,27%	11,70%	18,35%	2,46%	2,46%	0,903673	0,992347
Vysočina	6,99%	13,62%	4,58%	10,39%	9,49%	17,02%	1,27%	1,72%	0,814660	0,196571
Zlínský	7,55%	15,51%	6,06%	12,41%	9,21%	18,03%	1,05%	1,62%	0,081271	0,066168

Table 15

Descriptive statistics of number of self-employed (in thousands) 1998-2017 by region

Region	MEAN		MIN		MAX		ST. DEV		r	p-value
	Female	Male	Female	Male	Female	Male	Female	Male		
Praha	35,69	69,91	22,80	51,80	51,00	91,60	7,76	9,76	0,804147	0,327142
Jihočeský	10,65	25,23	7,30	18,20	14,30	28,60	2,23	2,96	0,730802	0,227041
Jihomoravský	19,08	44,80	12,20	32,30	27,00	51,40	4,30	6,76	0,701662	0,055752
Karlovarský	4,72	10,79	3,30	8,30	6,50	12,90	0,86	1,53	0,025703	0,016786
Královéhradecký	9,46	23,82	6,00	19,50	13,90	31,10	2,07	2,79	0,405183	0,204592
Liberecký	7,05	18,99	5,50	14,90	9,00	22,30	1,03	1,95	0,310884	0,007581
Moravskoslezský	16,79	34,83	11,70	26,90	24,70	44,30	4,17	4,90	0,726448	0,488309
Olomoucký	8,64	21,54	6,10	14,60	12,10	30,00	1,66	4,07	0,452251	0,000262
Pardubický	6,82	19,41	4,40	13,40	11,20	23,60	1,61	2,54	0,597181	0,053773
Plzeňský	8,85	21,32	6,50	16,60	12,20	26,80	1,64	2,36	0,527234	0,119221
Středočeský	24,78	57,29	13,90	37,80	37,60	76,40	7,74	11,84	0,940770	0,071829
Ústecký	11,44	26,95	6,50	17,70	19,60	39,10	4,15	5,38	0,908197	0,265602
Vysočina	7,09	18,79	4,50	14,50	9,70	23,20	1,34	2,34	0,810466	0,018977
Zlínský	8,89	24,01	6,80	19,90	11,00	29,00	1,38	2,47	0,106958	0,014119

Table 16

FEMALE - MALE Differences in relative annual change in self-employment as % of total employment

Region	MEAN	ST.DEV	r	M > F	F > M	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Praha	*2,4%*	10,3%	0,38	10	10	*0,9%*	*5,1%*	*12,5%*	*-8,5%*	*-11,0%*	*10,2%*	*-12,4%*	*5,3%*	*24,8%*	*-2,7%*	*-4,1%*	*9,4%*	*-3,2%*	*14,9%*	*-2,1%*	*-5,4%*	*-6,3%*	*15,0%*	*11,9%*	*-7,5%*
Jihočeský	*2,0%*	15,3%	0,08	9	11	*12,7%*	*-1,4%*	*-2,7%*	*11,4%*	*-32,6%*	*25,2%*	*14,3%*	*-13,0%*	*5,0%*	*-12,4%*	*-13,5%*	*31,1%*	*-12,8%*	*17,4%*	*6,4%*	*-3,0%*	*2,6%*	*1,8%*	*-9,9%*	*14,1%*
Jihomoravský	*1,3%*	13,1%	0,36	12	8	*-9,3%*	*-10,7%*	*18,5%*	*17,7%*	*-17,7%*	*-4,2%*	*-6,6%*	*-6,9%*	*-9,5%*	*-3,8%*	*27,0%*	*5,4%*	*14,2%*	*-7,1%*	*0,7%*	*6,2%*	*-9,8%*	*-3,6%*	*27,5%*	*-1,6%*
Karlovarský	*-1,5%*	21,3%	0,21	10	10	*-32,2%*	*3,5%*	*1,1%*	*4,7%*	*-4,1%*	*16,1%*	*-9,6%*	*25,5%*	*-37,2%*	*-0,9%*	*26,1%*	*-48,0%*	*11,3%*	*24,2%*	*-9,9%*	*-14,9%*	*29,3%*	*-0,8%*	*-18,0%*	*3,5%*
Královéhradecký	*1,3%*	22,7%	-0,05	9	11	*-7,6%*	*-4,0%*	*14,3%*	*-36,3%*	*29,1%*	*-10,0%*	*1,4%*	*-27,0%*	*31,5%*	*19,5%*	*4,0%*	*6,5%*	*-9,7%*	*-31,3%*	*30,3%*	*22,3%*	*-25,0%*	*13,8%*	*31,8%*	*-28,5%*
Liberecký	*0,4%*	13,1%	0,47	11	9	*16,0%*	*-8,6%*	*-21,7%*	*7,4%*	*6,9%*	*-3,8%*	*-8,7%*	*-10,3%*	*-11,6%*	*9,7%*	*-2,0%*	*-0,5%*	*5,7%*	*35,1%*	*-19,6%*	*9,0%*	*-0,5%*	*8,6%*	*-9,5%*	*5,5%*
Moravskoslezský	*1,7%*	15,9%	0,32	10	10	*19,4%*	*-1,3%*	*-4,8%*	*5,6%*	*-19,7%*	*6,2%*	*13,5%*	*-13,5%*	*-8,8%*	*17,9%*	*-0,4%*	*31,3%*	*-14,2%*	*17,9%*	*-18,8%*	*-8,3%*	*14,8%*	*9,6%*	*15,3%*	*-27,5%*
Olomoucký	*1,5%*	26,0%	-0,06	11	9	*30,2%*	*30,9%*	*-11,8%*	*-10,7%*	*-33,6%*	*-9,3%*	*-6,4%*	*37,7%*	*-12,2%*	*3,4%*	*12,2%*	*-56,5%*	*62,2%*	*-10,1%*	*-4,6%*	*8,2%*	*-3,5%*	*12,2%*	*-16,2%*	*8,0%*
Pardubický	*1,9%*	16,5%	0,56	10	10	*-4,2%*	*3,8%*	*17,4%*	*2,0%*	*1,9%*	*-20,7%*	*-9,8%*	*-9,7%*	*14,4%*	*3,2%*	*-3,4%*	*-1,0%*	*38,6%*	*30,0%*	*-17,9%*	*-10,5%*	*-17,4%*	*-15,7%*	*22,6%*	*13,5%*
Plzeňský	*1,7%*	15,1%	0,36	9	11	*2,5%*	*-13,7%*	*-4,5%*	*-14,3%*	*21,4%*	*3,6%*	*-12,1%*	*12,4%*	*26,4%*	*-16,1%*	*-24,0%*	*15,1%*	*4,9%*	*-6,4%*	*27,4%*	*2,8%*	*-7,0%*	*-11,9%*	*7,7%*	*18,8%*
Středočeský	*1,9%*	5,8%	0,78	7	13	*3,6%*	*7,6%*	*4,6%*	*-3,1%*	*5,5%*	*9,6%*	*-9,1%*	*-6,0%*	*-2,2%*	*-5,9%*	*5,4%*	*-2,9%*	*1,8%*	*5,4%*	*14,8%*	*3,8%*	*2,3%*	*-1,5%*	*0,6%*	*3,5%*
Ústecký	*1,8%*	13,2%	0,44	6	14	*4,2%*	*4,0%*	*-28,3%*	*7,7%*	*31,0%*	*-21,0%*	*-12,1%*	*11,5%*	*-1,6%*	*3,4%*	*8,5%*	*14,8%*	*-7,1%*	*6,8%*	*5,6%*	*7,4%*	*-14,8%*	*3,1%*	*9,2%*	*3,7%*
Vysočina	*0,1%*	16,2%	0,24	9	11	*-19,3%*	*-24,7%*	*32,6%*	*-3,4%*	*10,9%*	*-7,3%*	*-13,0%*	*10,6%*	*5,9%*	*-23,8%*	*-6,1%*	*21,1%*	*18,1%*	*6,7%*	*-25,8%*	*5,8%*	*13,1%*	*-9,5%*	*7,2%*	*2,3%*
Zlínský	*-0,1%*	17,1%	0,16	9	11	*14,5%*	*-12,6%*	*-23,3%*	*12,9%*	*-8,9%*	*22,3%*	*0,0%*	*-26,2%*	*19,8%*	*5,6%*	*-22,4%*	*9,0%*	*-1,2%*	*22,6%*	*19,2%*	*-15,8%*	*3,9%*	*12,5%*	*-4,0%*	*-30,0%*

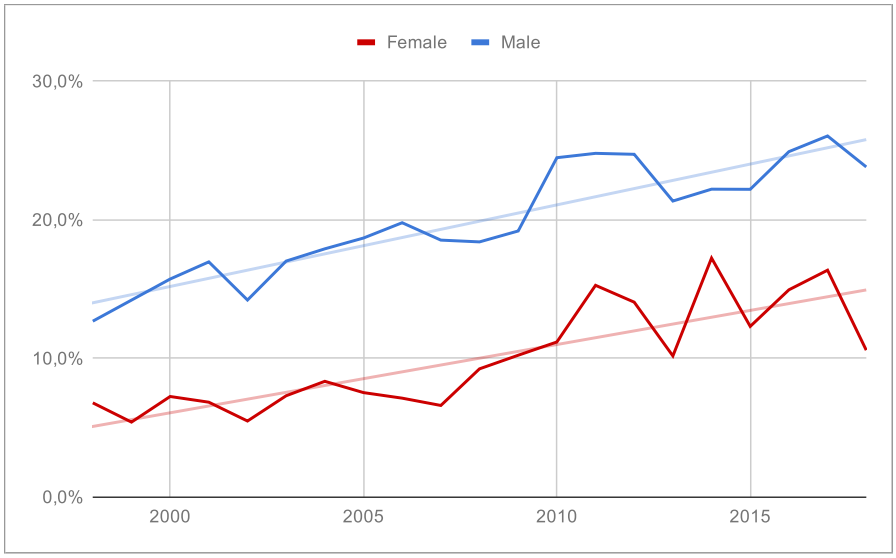
Table 17

Harmonization of sectors of economic activity

NACE R1		NACE R2		THIS STUDY	SECTOR
A	Agriculture, hunting and forestry	**A**	Agriculture, forestry and fishing	**Agriculture**	**PRIMARY**
B	Fishing				
C	Mining and quarrying	**B**	Mining and quarrying	**Mining**	**SECONDARY**
D	Manufacturing	**C**	Manufacturing	**Manufacturing**	
E	Electricity, gas and water supply	**D**	Electricity, gas, steam and air conditioning supply	**Energy**	
		E	Water supply; sewerage, waste management and remediation activi		
F	Construction	**F**	Construction	**Construction**	
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	**G**	Wholesale and retail trade; repair of motor vehicles and motorcycle	**Wholesale and retail**	**TERTIARY**
H	Hotels and restaurants	**I**	Accommodation and food service activities	**Accommodation and food**	
I	Transport, storage and communication	**H**	Transportation and storage	**Transportation and communication**	
		J	Information and communication		
J	Financial intermediation	**K**	Financial and insurance activities	**Financial activities**	
K	Real estate, renting and business activities	**L**	Real estate activities	**Real estate and business**	
		M	Professional, scientific and technical activities		
		N	Administrative and support service activities		
L	Public administration and defence; compulsory social security	**O**	Public administration and defence; compulsory social security	**Public administration**	**OTHER**
M	Education	**P**	Education	**Education**	
N	Health and social work	**Q**	Human health and social work activities	**Health and social work**	
O	Other community, social and personal service activities	**R**	Arts, entertainment and recreation	**Community, social and personal activities**	
		S	Other service activities		
P	Activities of households	**T**	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	**Activities of households**	
Q	Extra-territorial organizations and bodies	**U**	Activities of extraterritorial organisations and bodies	**Extra-territorial organizations**	

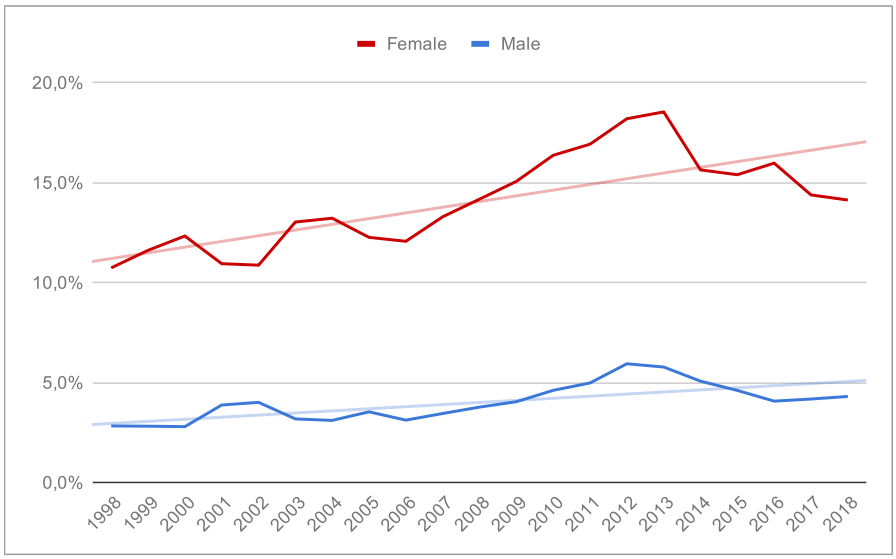
Graph 5

Agriculture: Self-employment as % of total employment between 1998 - 2018



Graph 6

Industry: Self-employment as % of total employment between 1998 - 2018



Graph 7

Services: Self-employment as % of total employment between 1998 - 2018

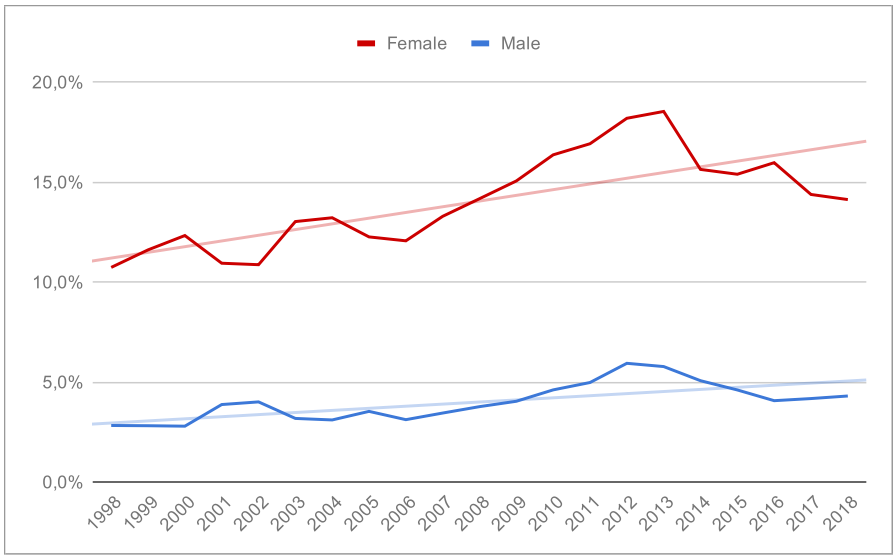


Table 18

Female - Male Differences in annual changes of number of self-employed (in thousands) 1998-2018 by sector

Indicator	Sector	Activity	r	MEAN	MIN	MAX	ST.DEV	M > F	F > M
Absolute annual change	1	**Agriculture**	**0,238**	**-0,1**	**-6,6**	**3,4**	**2,3**	**12**	**9**
		Construction	0,210	-3,1	-21,2	19,6	9,6	13	8
		Energy	-	-0,1	-1,8	1,7	1,0	9	10
	2	Manufacturing	0,295	-1,8	-10,1	9,3	4,4	13	8
		Mining	-	0,0	-1,0	1,0	0,5	5	3
		Industry	**0,123**	**-5,0**	**-25,0**	**23,2**	**11,5**	**15**	**6**
		Accommodation and food	0,248	0,0	-3,7	5,8	2,0	12	9
		Financial activities	0,081	0,0	-4,1	5,3	2,6	13	8
	3	Real estate and business	-0,346	-0,2	-11,0	15,5	7,5	13	8
		Transportation and communicati	0,334	-1,0	-12,9	4,9	4,1	12	9
		Wholesale and retail	0,479	0,3	-11,3	7,0	5,1	9	12
		Services	**0,535**	**-5,3**	**-31,4**	**17,3**	**12,6**	**14**	**7**
Relative annual change	1	**Agriculture**	**0,185**	**1,3%**	**-37,4%**	**39,4%**	**24,2%**	**11**	**10**
		Construction	0,256	4,0%	-60,5%	89,8%	38,4%	9	12
		Energy	-	0,0%	0,0%	0,0%	0,0%	0	0
	2	Manufacturing	0,245	-4,2%	-37,3%	27,1%	14,4%	13	8
		Mining	-	0,0%	0,0%	0,0%	0,0%	0	0
		Industry	**0,124**	**-3,7%**	**-27,3%**	**21,5%**	**14,0%**	**12**	**9**
		Accommodation and food	0,311	2,7%	-49,3%	78,3%	26,9%	11	10
		Financial activities	0,406	-2,5%	-87,0%	40,5%	29,8%	12	8
	3	Real estate and business	-0,259	0,1%	-26,7%	32,2%	16,3%	13	8
		Transportation and communicati	0,137	4,4%	-42,4%	73,8%	31,8%	9	12
		Wholesale and retail	0,449	0,2%	-17,8%	15,2%	8,4%	11	10
		Services	**0,528**	**-0,8%**	**-8,9%**	**6,2%**	**4,3%**	**14**	**7**

Table 19

Female - Male Differences in annual changes of self-employment as % of total employment 1998-2018 by sector

Indicator	Sector	Activity	r	MEAN	MIN	MAX	ST.DEV	M > F	F > M
Absolute annual change	1	**Agriculture**	**0,490**	**-0,3%**	**-4,9%**	**6,2%**	**2,6%**	**11**	**10**
		Construction	0,310	-1,0%	-6,0%	4,6%	2,4%	13	8
		Energy	-	-0,1%	-2,2%	2,5%	1,4%	10	11
	2	Manufacturing	0,281	-0,2%	-1,4%	1,0%	0,5%	13	8
		Mining	-	0,0%	-2,3%	2,5%	1,1%	6	4
		Industry	**0,059**	**0,1%**	**-2,5%**	**3,0%**	**1,2%**	**7**	**14**
		Accommodation and food	0,231	0,0%	-3,1%	6,3%	2,3%	13	8
		Financial activities	0,434	-0,1%	-5,6%	5,8%	3,3%	13	8
	3	Real estate and business	-0,173	0,2%	-5,5%	8,7%	4,1%	13	8
		Transportation and communicati	0,238	-0,1%	-2,4%	2,3%	1,3%	11	10
		Wholesale and retail	0,481	0,1%	-3,4%	1,9%	1,3%	8	13
		Services	**0,259**	**-0,1%**	**-2,6%**	**2,7%**	**1,7%**	**14**	**7**
Relative annual change	1	**Agriculture**	**0,425**	**3,0%**	**-32,4%**	**65,3%**	**24,8%**	**11**	**10**
		Construction	0,236	4,6%	-60,5%	118,1%	40,3%	10	11
		Energy	-	-8,4%	-90,8%	47,5%	40,6%	10	11
	2	Manufacturing	0,181	-2,9%	-36,6%	34,9%	15,2%	12	9
		Mining	-	11,2%	-36,0%	100,0%	38,1%	3	4
		Industry	**-0,200**	**-2,3%**	**-49,8%**	**40,4%**	**17,3%**	**13**	**8**
		Accommodation and food	0,241	1,6%	-33,0%	74,0%	25,3%	11	10
		Financial activities	0,625	1,7%	-51,7%	34,2%	18,7%	9	12
	3	Real estate and business	-0,173	0,6%	-19,7%	29,9%	15,1%	12	9
		Transportation and communicati	0,186	6,4%	-32,8%	65,6%	28,9%	9	12
		Wholesale and retail	0,468	0,8%	-16,1%	15,1%	7,4%	8	13
		Services	**0,250**	**0,3%**	**-8,5%**	**10,0%**	**5,5%**	**13**	**8**

Table 21

Summary of key micro-environmental factors' variables between 1998 - 2018

Year	SELF EMPLOYMENT		AGE		MARITAL STATUS		FAMILY BACKGROUND	EDUCATION		WORK EXPERIENCE		NATIONALITY		PERS. NET WORTH	HEALTH
	Rate F	Rate M	Age 35-44 F	Age 35-44 M	Marriage rates	Divorce rates	Fertility rates	Tertiary F	Tertiary M	Duration of work life F	Duration of work life M	Foreign SE rate F	Foreign SE rate M	Household net income (USD)	Gov't spendings on health (% GDP)
1998	9,1%	17,3%	13,20%	14,22%	0,53%	0,31%	1,16	7,1%	9,9%					10 506	6,6
1999	9,6%	18,4%	13,04%	14,07%	0,52%	0,23%	1,13	7,7%	10,3%			10,9%	20,5%	10 920	6,7
2000	10,2%	19,0%	12,95%	14,02%	0,54%	0,29%	1,15	8,3%	10,7%	30,30	36,70	14,0%	33,1%	11 882	6,8
2001	10,2%	19,1%	12,85%	13,94%	0,51%	0,31%	1,15	8,4%	10,9%	30,20	36,50	13,0%	21,1%	12 913	7,1
2002	10,7%	20,3%	12,68%	13,77%	0,52%	0,31%	1,17	8,5%	11,1%	30,10	36,50	10,4%	22,0%	13 616	7,3
2003	11,5%	21,7%	12,56%	13,65%	0,48%	0,38%	1,18	8,8%	11,0%	30,30	36,20	16,98%	22,2%	14 147	7,4
2004	10,9%	21,5%	12,55%	13,68%	0,50%	0,32%	1,23	9,2%	11,5%	30,20	36,40	20,44%	25,2%	14 771	7,2
2005	10,4%	20,3%	12,70%	13,86%	0,51%	0,31%	1,29	10,0%	12,0%	30,40	36,80	19,01%	22,2%	15 113	6,9
2006	10,9%	20,2%	12,90%	14,10%	0,52%	0,31%	1,34	10,5%	12,3%	30,60	37,00	17,84%	18,3%	15 800	7
2007	10,6%	20,4%	13,13%	14,36%	0,55%	0,30%	1,45	10,9%	12,4%	30,30	37,10	11,06%	13,2%	16 857	6,8
2008	10,6%	20,2%	13,41%	14,71%	0,51%	0,30%	1,51	12,0%	12,9%	30,10	37,10	13,03%	12,3%	17 812	6,9
2009	11,4%	20,8%	13,70%	15,07%	0,46%	0,28%	1,51	13,1%	13,7%	30,40	37,30	14,29%	24,4%	18 555	7,8
2010	12,2%	21,9%	14,05%	15,44%	0,45%	0,29%	1,51	14,4%	14,7%	30,40	37,30	8,63%	29,0%	19 040	7,8
2011	12,9%	21,9%	14,45%	15,84%	0,43%	0,27%	1,43	16,0%	15,7%	30,50	37,20	12,55%	20,4%	19 144	7,7
2012	13,4%	22,2%	14,88%	16,31%	0,43%	0,25%	1,45	17,5%	16,5%	30,90	37,50	15,52%	23,9%	19 511	7,7
2013	13,5%	21,2%	15,29%	16,74%	0,41%	0,27%	1,46	18,9%	17,4%	31,50	37,80	17,39%	26,0%	20 476	7,6
2014	12,8%	21,9%	15,66%	17,14%	0,43%	0,25%	1,53	20,1%	18,1%	31,60	38,10	13,37%	29,6%	21 513	7,6
2015	12,8%	20,9%	15,93%	17,42%	0,46%	0,25%	1,57	21,1%	18,5%	32,00	38,20	15,26%	22,9%	22 031	7,6
2016	13,2%	20,3%	15,99%	17,50%	0,48%	0,24%	1,63	21,7%	19,4%	32,40	38,70	13,73%	16,3%	23 063	7,4
2017	12,9%	20,5%	15,92%	17,43%	0,50%	0,24%	1,69	23,1%	19,8%	32,80	38,90	16,51%	18,9%	24 441	7,5
2018	12,4%	20,6%	15,78%	17,27%				23,6%	19,9%	33,20	39,20	15,52%	24,4%		

Table 23

Summary of key macro-environmental factors' variables between 1998 - 2018 - economic

Year	ECONOMIC SYSTEM	ECONOMIC GROWTH	ACCESS TO CAPITAL	ECONOMIC INEQUALITY	ECONOMY STRUCTURE	EMPLOYMENT					
	Domestic credit to private sector (% of GDP)	GDP per capita	Real interest rate (%)	Wage Gap (%)	Service share on GDP	Unemployment F	Unemployment M	Full-time employment F	Full-time employment M	Part-time employment F	Part-time employment M
1998	57,06	208500	2,61	25,0	41,13%	7,5%	4,6%	88,1%	97,2%	9,2%	2,1%
1999	51,71	218100	5,52	22,0	42,25%	10,2%	7,2%	88,6%	97,5%	9,0%	1,9%
2000	45,07	231600	5,30	22,0	43,01%	10,6%	7,4%	89,0%	97,6%	8,7%	1,6%
2001	37,27	251200	2,20	20,0	42,74%	9,6%	6,7%	89,7%	97,5%	7,9%	1,6%
2002	23,75	262900	3,90	19,0	43,15%	8,6%	5,8%	92,2%	98,4%	7,7%	1,6%
2003	24,45	275500	4,74	19,0	43,58%	9,7%	5,9%	92,0%	98,2%	8,0%	1,8%
2004	25,82	300000	2,07	19,0	42,40%	9,7%	7,1%	92,1%	98,3%	7,9%	1,7%
2005	29,41	319000	5,70	19,0	42,35%	9,9%	6,5%	92,0%	98,4%	8,0%	1,6%
2006	34,01	342200	4,87	18,0	42,40%	8,9%	5,9%	91,9%	98,3%	8,0%	1,7%
2007	38,88	372000	2,19	23,6	43,01%	6,8%	4,3%	92,1%	98,3%	7,9%	1,7%
2008	43,43	385800	4,11	26,2	43,68%	5,7%	3,5%	92,2%	98,4%	7,8%	1,6%
2009	45,25	374600	3,31	25,9	43,88%	7,8%	5,9%	91,5%	98,0%	8,5%	2,0%
2010	46,69	376800	7,42	21,6	44,11%	8,5%	6,5%	90,9%	97,8%	9,1%	2,2%
2011	48,67	384300	5,70	22,6	43,34%	8,0%	5,9%	91,5%	98,2%	8,5%	1,8%
2012	49,76	386300	3,89	22,5	43,12%	8,3%	6,1%	91,4%	97,8%	8,6%	2,2%
2013	51,16	389900	3,49	22,3	43,13%	8,4%	6,0%	90,0%	97,5%	10,0%	2,5%
2014	49,82	409900	2,11	22,5	42,20%	7,5%	5,2%	90,5%	97,5%	9,5%	2,5%
2015	49,86	435900	3,08	22,5	42,88%	6,2%	4,3%	90,7%	97,8%	9,3%	2,2%
2016	51,37	451300	2,61	21,5	43,31%	4,8%	3,4%	90,0%	97,7%	10,0%	2,3%
2017	51,55	476600	2,12	21,1	43,54%	3,6%	2,4%	89,1%	97,6%	10,9%	2,4%
2018	52,36	501500	1,37		44,35%	2,8%	1,8%	89,1%	97,4%	10,9%	2,6%

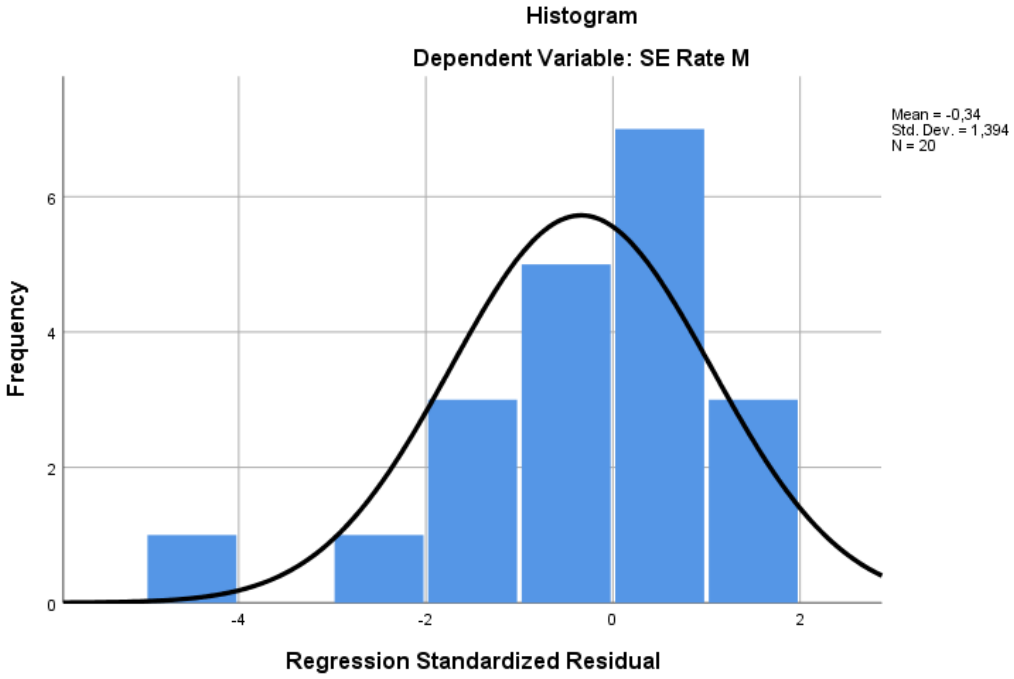
Table 24

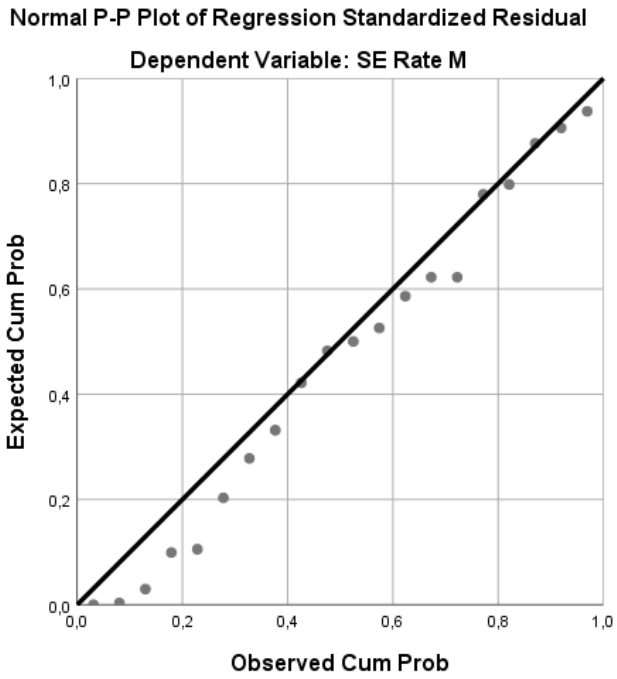
Summary of key macro-environmental factors' variables between 1998 - 2018 - other

Year	TAXATION	SOCIAL SECURITY POLICY	POLITICAL IDEOLOGY	CORRUPTION	LEGISLATIVE MEASURES	TECHNOLOGY	GEOGRAPHICAL	SECURITY
	Employee tax (% of income)	Uemployment net replacement rate	Median voters index	Corruption Index	Fraser index	Individuals using Internet (% of population)	Urban population (% of total)	Total crimes
1998			5,38	0,48		3,90%	74,25%	425930
1999			4,80	0,46		6,83%	74,12%	426626
2000	9,99		4,80	0,43	6,74	9,78%	73,99%	391310
2001	9,99	40%	4,80	0,39	6,82	14,70%	73,88%	358362
2002	10,52	40%	4,80	0,37	6,87	23,93%	73,81%	372341
2003	10,84	40%	4,32	0,39	6,82	34,30%	73,74%	357740
2004	11,25	40%	4,32	0,42	6,94	35,50%	73,67%	351629
2005	11,53	45%	4,32	0,43	6,98	35,27%	73,60%	344060
2006	9,91	45%	4,32	0,48	7,03	47,93%	73,53%	336446
2007	10,39	45%	4,71	0,52	7,17	51,93%	73,46%	357391
2008	11,14	45%	4,71	0,52	7,21	62,97%	73,39%	343799
2009	11,29	17%	4,71	0,49	7,17	64,43%	73,32%	332829
2010	11,45	17%	4,71	0,46	7,22	68,82%	73,26%	313387
2011	12,09	17%	5,10	0,44	7,26	70,49%	73,19%	317177
2012	11,89	18%	5,14	0,49	7,42	73,43%	73,20%	304528
2013	11,87	18%	5,14	0,48	7,37	74,11%	73,29%	325366
2014	12,10	17%	4,70	0,51	7,46	74,23%	73,38%	288660
2015	12,35	17%	4,70	0,56	7,49	75,67%	73,48%	247628
2016	12,63	16%	4,70	0,55	7,56	76,48%	73,57%	218162
2017	13,12	15%	4,70	0,57		78,72%	73,68%	203303
2018	13,62	14%	5,89	0,59			73,79%	192405

Graph 8

Male self-employment rates: Multiple linear regression assumptions test





Graph 9

Female self-employment rates: Multiple linear regression assumptions test