UNIVERSITY OF TWENTE.

Faculty of Behavioural, Management & Social Sciences

Are Mental Health Issues more prevalent among the Self-Employed or among the Wage Employed in Europe?

June 29th, 2016

By Tala Forootan
S1614169
t.forootan@student.utwente.nl

1st Supervisor: Dr. Giedo Jansen
2nd Supervisor: Dr. Jorgen Svensson

Table of Contents

1. Declaration of Authorship

All components of this thesis are the result of my own investigations, unless otherwise indicated. The use of literature by other authors, in any form, is properly cited.

Jala Foratan

2. Acknowledgements

First and foremost, I would like to thank Giedo Jansen for enabling me to write this thesis. Thank you Professor Jansen for all your help, support, and guidance. I would also like to thank Jorgen Svensson for his input in making this thesis. Thank you to all the members of my thesis circle (Kevin, Marleen, and Kristiana). Composing this thesis has allowed me to grow academically and personally due to its underlying challenges. Working so ambitiously and knowing how much knowledge I have acquired throughout the process, I feel proud of my work. I could not have done it without my sister, Farah, and my mom, Azar. I would particularly like to thank my parents for enabling me to reach my full potential and inspiring me to investigate this topic through all their diligent and selfless efforts over the years. Finally, I thank the University of Twente.

3. Abstract

This paper investigates whether mental health issues are more prevalent among the self-employed or the wage employed in Europe. Due to theoretical reasoning, two rivaling hypotheses were made. One assumption was that self-employed are generally better off in regards to mental health partially due to their high degree of job autonomy, and another main hypothesis was that the wage employed are better off partially due to a higher degree of work-life balance. Also, rivaling assumptions for the solo self-employed and the employers were made concerning mental health. This was expected by the assumption that the solo self-employed work longer hours due to being on their own and that the employers have less job control due to other underlying responsibilities. Data of the latest wave of the European Social Survey, including 13243 Europeans from fourteen different countries was investigated and led to the findings that self-employed cannot be generalized so easily. It showed that the employers are better off than the wage employed and the solo self-employed in regards to mental health, and it also revealed that solo self-employed and wage employed do not differ significantly from each other on average in their psychological well-being. Furthermore, working hours do not always lead to a weakened mental health, which is evident looking at the employers that work on average 11 hours more than wage employed and 8 hours more than the solo self-employed.

4. Introduction

Self-employment is an important driver of economic growth. The importance has been acknowledged in the EU, as well as in other parts of the world, and policy action, such as favorable credit terms, has been utilized to stimulate self-employment and entrepreneurship. Not long ago, the Great Recession changed the nature of self-employment, which has brought up the question, whether self-employment is something that should be more encouraged for its economic and innovative impact, or questioned for its job insecurity and financial instability characteristics, which could potentially lead to higher mental health risks among the concerning population (Hatfield, 2015).

The purpose of this thesis is to investigate whether mental health problems are more prevalent among the self-employed or the wage-employed in Europe and also to detect differences in that regard between the self-employed with employees (employers) and the self-employed without employees (solo self-employed). According to Stel et al. (2014) self-employment is often falsely identified with employership, even though there are actually more solo self-employed individuals in Europe, which makes the distinction crucial for modern studies (As cited in Jansen, in press, p. 3). Furthermore, this study is not only going to confirm if there is a direct correlation between the type of employment and mental health, but it will also determine to what extent this is caused by the level of job autonomy people experience in particular types of employment and by the extent of time they typically spend working in a week. Eventually, physical health, occupational skill level, and certain socio-demographic factors, like age and gender will be included, to reach a probable conclusion.

Psychological diseases have significantly increased nowadays. More and more people become unemployable due to mental health problems, leading to the most common reason for early retirements, like in Germany, where retirements have grown from 15.4% to 43.1% in the last 21 years. Psychological illnesses have become the most common source of long absences from work, leading to immense costs for employers. Demanding job requirements are one reason for the increase in mental health disorders (PsyGA, 2015). These circumstances seem especially noteworthy in regards to the self-employed, revealing that this group is constantly exposed to job insecurity and financial instability (Hatfield, 2015). Developments in the national and international markets potentially could have severe impacts on not only the profits of the self-

employed, but also on the survival of their invested equity and capital (Lewin-Epstein & Yuchtman-Yaar, 1991). Wage earners, on the other hand, are not as often exposed to job insecurity and financial instability (Hatfield, 2015), which consequently could mean that self-employed people generally suffer from mental health problems more frequently due to stress factors and a lack of work-life balance because of generally higher working hours. Strictly speaking, they put in, on average, seven more hours into work every week (Lechmann & Schnabel, 2014). The effects of long hours of work can be fatigue, stress, and unhealthy behavior (Sparks, Cooper, Fried, & Shirom, 1997). Subsequently, working too long takes away time from leisure and results in an imbalance of work-life ratio, which can result in a weakened health (Pichler, 2009). Inferred from these details, studies have concluded that working hours have adverse effects on one's mental health (Tennant, 2001).

This perspective solely focuses on the negative effects, there are however contradicting views on self-employment, where positive factors such as autonomy are considered and associated with superior well-being and health. The fact that the self-employed enjoy much more freedom in their work is for many people a convincing factor to take up that type of employment (Hatfield, 2015). Having a higher degree of job control and decision-making authority are important sources of utility for an individual, leading to better overall well-being. Indeed, procedural utility is an essential concept within economics, which emphasizes the importance of the procedure that leads to an end result. In that sense, an individual cherishes first and foremost the "means" before the "ends" in their occupation, in other words, not only salary but also decision-making authority is especially of significance, which is often overlooked by economic theories. The self-employed have more influence in the decisions they make at work, which leads to self-determination and gives rise to higher job satisfaction (Benz & Frey, 2008). Consequently, job control leads to higher job satisfaction and therefore a better overall health (Rietveld, Kippersluis, & Thurik, 2015). As we can see, there are two strong perspectives that can lead to rivaling assumptions on the effect of self-employment on mental health.

This study, which is being held in the framework of a bachelor thesis, will respond to multiple issues. On one hand, the study is interested in the relationship between the type of employment and mental health problems in fourteen different European countries, and it would like to examine if the findings hold in different settings and can be generalized. By using data from the latest wave (2014) of the European Social Survey, the study will focus on job-related

and mental health related indicators, and it will additionally check if socio-demographic components strengthen the relationship between self-employment and mental health. Compared to the number of studies that have been conducted in order to make new discoveries about the mental health of wage-earners, there are relatively small amounts of literature about the psychological health of self-employed people. Due to this scarcity and the very conflicting literature, it is essential to explore this poorly understood topic further. Studies have shown that self-employment has both positive and negative effects on mental health. In order to resolve these two contradicting streams of theories, the study will be of value for the topic by investigating it furthermore. Additional insights could be extrapolated about the relationship by investigating whether job control and working hours are significant factors for this effect. This will be done in order to understand which perspective is true or to what degree it accounts for one or both, contributing to scientific relevance.

4.1 Research Question

The exploratory research question in this project is:

Are mental health issues more or less prevalent among the self-employed than among the wage-employed in Europe?

Three sub-questions have been formulated to complement the study:

    1. Are there differences between the self-employed with employees and the self-employed without employees in regards to mental health?

    2. To what extent is the effect of self-employment on mental health explained by the degree of job control?

    3. To what extent is the effect of self-employment on mental health explained by the degree of working hours?

5. Theoretical Framework

The following section presents a general outline about work-related mental health issues in order to shape a general framework of the topic. A differentiation between the employers and the solo self-employed will be given afterwards, supported by the findings of previous research. Then the theoretical background about the negative and the positive impacts in regards to mental health that self-employment encompasses will be discussed and compared with the wage employed. Finally, the causal model will be presented.

5.1 Mental Health and Work

Mental health problems make up internationally 50% of the root causes for disability (WHO, 2000). As the Office for National Statistics in the UK pointed out in 2001, one out of six people in the UK workforce suffers from mental health issues like anxiety and sleep problems. That does not necessarily mean that those people have a diagnosed mental disorder, but those symptoms are nonetheless signs of a hampered mental health, which can make it difficult to perform sufficiently in everyday life (Lelliot, Tulloch, 2008).

Work is generally beneficial to the well-being of a person, for instance it helps people to find their place in society (As cited in WHO, 2000) and gives financial rewards to substantiate one's material longings (Lelliot, Tulloch, 2008). Regardless, it has been predicted that one out of seven absences are due to underlying, work-related, mental health issues. As investigated by several authors like Scheid (2005), people are often under pressure to stay present at work, even when mentally ill, which leads to bad performance because of tiredness or a low degree of concentration (As cited in Lelliot, Tulloch, 2008).

Netterstrøm et al. (2008) investigated the association between work-related psychosocial issues and the formation of depression by reviewing more than a dozen studies. These studies and their underlying questionnaires are often based on models, such as the Job Strain Model, or also known as the Job Demand-Control Model by Karasek et al. (1998) or the Effort-Reward Imbalance Model by Siegriest (1996). The former one has two levels, the demand and the decision level. If one has high decision-making power and also high demands in one's job, he or she is defined as "active." If a worker has high demands and low decision-making authority, the

person is classified as "strained," and if the case is reversed, the worker is referred to as "relaxed". In the case of a low identification on both dimensions, the worker can be classified as "passive" in his or her work environment. The worst scenario regarding stress-related illness would be the case of a job that can be characterized as "strained". The Effort-Reward Imbalance Model by Siegriest (1996) describes the presence, or rather absence of a balance between the subjective amounts of effort that one puts into his or her work and the reward that the person receives in his or her job. An adverse consequence takes place if the reward does not correspond to the effort that has been made. Rewards can come in different forms, like financial compensations or job security. People that tend to overcommit in their jobs are particularly at risk to suffer healthwise (As Cited In Netterstrøm et al., 2008, pp. 119-120).

Other job characteristics, like having difficulties with colleagues and a negative working climate, but also job insecurity, have been proven to have an impact on the psychological well being of a person. Heinisch and Jex (1997), for instance, found a highly significant association between social conflicts at work and depression (As cited in Rau, Gebele, Morling, & Rösler, 2010, p. 28).

Nowadays, industrial developments drift more and more towards automated and rigid work methods, which result in a lack of control for workers. Countless firms worldwide engage in shortenings of permanent employees and seek practices of outsourcing and employing on an interim basis. Job insecurity increases and societies conform to these trends by working harder and much more than before (Faragher, Cass, & Cooper, 2005). Evidence shows these progressions are harmful for the workforce. Several authors like Calnan (2004) and Ferrie et al. (2002) have found a significant, positive relationship between job insecurity and depression. The latter authors also showed that this relationship is especially present when job insecurity is prolonged (As cited in Rau et al., 2010, p. 28). Geishecker (2009) used data from the German-Socio Economic Panel Study to understand the impact job insecurity perception has on the well being of an employee. The author emphasized the underestimation of a previous study to the importance of the perception of job insecurity, instead of just focusing on economic aspects in the labour market. It is often underrated how individual behavior rather stems from what one perceives as reality and not from objective occurrences in reality. The results of the study showed that job insecurity takes an important place for determining a worker's well being, and

people with high perception of job insecurity would be even better off unemployed. Therefore, one can say that the fear can be worse than the outcome in this regard (Geishecker, 2009).

Another factor that can directly influence the physical and psychological health of workers is the level of job satisfaction. Faragher et al., who engaged in a systematic review and meta analysis of almost 500 studies, found clear evidence for the relationship between job satisfaction and mental health (Faragher et al., 2005). Oshagbemi defines job satisfaction as affirmative feelings towards one's job. Souza-Poza studied the determinants of job satisfaction and concluded that finding one's job interesting, well compensated, and socially engaged are important, but autonomy in a job and the possibilities for promotion are relevant as well (As cited in Faragher et al., 2005, p. 106).

The final factor that will be introduced in this literature review about work characteristics and mental health is the impact of working hours on mental health. Sparks et al. (1997) reviewed over twenty studies and found that working hours are associated with physical and mental health symptoms. Certain factors like age or unhealthy behaviour can mediate this relationship additionally (Sparks et al., 1997). Uehata (1991) examined long working hours in Japan and pointed out that there is a correlation between people dying from cardiovascular related issues and long working hours (As cited in Shields, 1999, p. 49). It is predicted that those who work long hours start negative habits like smoking and engaging in no physical activity. The levels of strain and anxiety will also increase. Shields, who studied working hours and mental health for the Canadian population, found that both men and women smoked more commonly when confronted with long working hours, and women who put many hours of work were more prone to depression compared to women who worked the standard number of working hours between 1994 and 1995 (Shields, 1999).

As recent and early research suggests, negative experiences in different domains of work life can lead to psychological problems. The issue of mental health and work is of high relevance nowadays, as all forecasts signal a further rise in psychological health issues globally. Globalization opens new windows for opportunities, however it also undertakes the implementation of information in an expediting pace, resulting in overextension and stress for workers today (WHO, 2000). Due to this future outlook, it is crucial to learn more about work-related psychosocial elements that could lead to a weakened mental health among the working society, in order to potentially detect or prevent harmful developments.

In the following sections of this theoretical framework, solo self-employed and employers will be reviewed in regards to mental health by reviewing previous literature. Moreover, a deeper understanding on how the mental health of an individual can be affected by high workings hours and a lack of autonomy at work will be presented, two characteristics that are typical to differentiate self-employed in general and the wage employed.

5.2 Solo Self-Employment versus Employers

Within the group of the self-employed, it makes sense to distinguish between the ones with employees, the employers, and the ones without, the solo self-employed.

Toivanen highlights that most self-employed work on their own and the remaining has only a very limited amount of employees (As Cited in Johansson Sevä, Vinberg, Nordenmark, & Strandh, 2015, p. 243). When looking at the statistics, it becomes noticeable that most countries have a larger share of solo self-employed than employers. In 2014, for example, the UK had a share of 14.7% of solo self-employed males and only 3.3% of male employers. The share of women in both groups is generally smaller (OECD, 2016). There are, however, vast differences within the group of solo self-employed. On one hand, there are for instance, highly competent freelancers that offer their services to established firms (Burke & Cowling, 2015), and on the other hand de Vries et al. (2013) pointed out, there are the solo self-employed with relatively low productivity levels, who became self-employed out of necessity (As cited invan Stel & de Vries, 2015, p. 78). Examples for typical occupations in the group of the solo self-employed are shop-owners, physicians, ICT experts, or artists (van Stel & de Vries, 2015). The European Foundation for the Improvement of Living and Working Conditions (Eurofound) published a paper in 2010 that focused on the working conditions of the self-employed in particular. With the help of the European Working Conditions Survey, they found out that the solo self-employed show higher levels of health issues that are work-related (45%), compared to the employers (36%), and wage earners (33%). The working hours also tend to be longer for the solo self-employed. In Spain, the solo self-employed work typically almost 6 hours longer than all other employed people, amounting to approximately 41 hours per week compared to an average of 35 hours. Generally, the income of the self-employed is lower than the annual income of a wage earner in several European countries. However, this is even more evident for the solo self-

employed. In Spain, for example, the main share of the solo self-employed fell below the national average with an income between 600 and 2,100 Euros per month (Pedersini & Coletto, 2009). A study focusing on OECD countries by Blanchflower has investigated the attitudes of workers to their jobs and found out that the solo self-employed are less satisfied with their income, while perceiving more job demand and having less job security. Other findings showed that the solo self-employed are worse off than the employers. Nonetheless, the solo self-employed still have a higher levels of job and life satisfaction than wage earners and feel also less stressed with their work and experience less pressure than the employers (Blanchflower, 2004). A recent study that has investigated the relationship between self-employment and subjective well-being in Europe came to the conclusion that the employers attain a higher life satisfaction than the solo self-employed (Johansson Sevä et al., 2015). In a Swedish study, Toivanen found that the mortality rate is at least 8% higher for solo self-employed, it could be that having employees helps reduce the stress levels of employers (As Cited in Johansson Sevä et al., 2015, p. 243). There is plentiful evidence that shows that the solo self-employed are worse off than the employers healthwise and in other different ways. However, there are also findings that indicate that the employers could potentially have more mental health problems afterall. The study will try resolving the often conflicting and scarce literature about the different types of self-employed people and their well-being.

5.3 The Negative Effect of Long Working Hours on Mental Health

To date, studies investigating self-employment and health in general, have produced equivocal results. The evidence that self-employment in general is associated with mental health is weak and inconclusive.

Some studies, like one by Andersson (2008), have shown that self-employed individuals tend to be more prone to mental health problems than wage-employees. As Mann (1965) highlighted, the time spent at work has an effect on the way a person and his family lives (As cited in Sparks, Cooper, Fried, & Shirom, 1997, p. 391). Studies found that the self-employed, on average, work longer than paid employees, and it was also found that working hours correlate with a weakened health (Andersson, 2008). More specifically, working long hours leads to unhealthy conditions, like having less time to exercise, developing a smoking habit, and having a poor diet. This has also been shown in studies in occupational psychology (Sparks et al., 1997).

Grosch et al. made some important findings in their study about working hours in the U.S. and their association with demographic and organizational characteristics, psychosocial working conditions, and health. The main findings were that variables related to higher levels of working hours included self-employment, greater levels of decision making in their jobs, but also higher levels of work stress (Grosch, Caruso, Rosa, & Sauter, 2006). Due to the fact that working hours can be unregulated and very long, self-employed people have to cope with a maladjusted work-life balance (Andersson, 2008). Work-life balance is seen as the accomplishment of a person to combine his or her different life realms in a balanced way (Pichler, 2009). They have less time for leisure and therefore a less balanced work-life ratio. The spillover model assumes that the perception an individual makes in one field, influences other ones. Thus, a transference in the sum of skills and performance in different realms takes place. Under that notion, someone who is exhausted from work, is more likely to also become exhausted in the domain outside work, for instance with family demands (Guest, 2002). As Mauno and Kinnunen (1999) found, one of the consequences that comes with such an imbalance are psychosomatic health problems (As cited in Guest, 2002, p. 274). As studies have concluded, working hours indeed have an adverse effect on one's mental health (Tennant, 2001).

Since there are some good reasons to believe that self-employed are worse off than employees due to their high amounts of working hours and therefore a lack of work-life balance, one could assume that this shows in their mental health levels (Hypothesis I). Moreover, solo self-employed generally work longer and have a higher job demand, because they have no employees to whom they can distribute work. To make a specific assumption for the group of the self-employed based on the literature that was introduced in 5.1, it is predicted that solo self-employed are more commonly affected with stress related conditions at work than the employers (Hypothesis 1.b).

On the basis of these assumptions, the first two sets of hypotheses are stated:

Hypothesis I:

Mental health issues are generally higher among the self-employed than among the wage employed.

This general hypothesis can be broken down to the following specific hypotheses:

a. *Self-employed people generally work longer than the wage employed.*
b. *Long working hours lead to more mental health issues.*
c. *The negative impact of solo self-employment on mental health is partially explained by higher levels of working hours.*

Hypothesis II:

Mental health issues are higher among the solo self-employed than among the employers.

This general hypothesis can be broken down to the following specific hypotheses:

a. *The solo self-employed work longer than the employers.*
b. *Long working hours lead to more mental health issues.*
c. *The negative impact of solo self-employment on mental health is partially explained by higher levels of working hours.*

5.4 The Positive Impact of Job Control on Mental Health

Job control or decision-making authority is important for the utility an individual derives from his or her job (Rietveld et al., 2015). The so called "job-demand-control model," which has been described by Karasek and Theorell, explains two facets of one's job. One of them is job demand and the other one is job control. The former refers to the amount of work and its severity, and the latter refers to the autonomy someone has fulfilling the tasks at work. The imbalance of these two attributes drives the degree of occupational stress, which is an influencing factor for illness (as cited in Rietveld et al., 2015, p. 1303). According to Herbert and Link, self-employed have a higher degree of job control due to the lack of hierarchy, and they can therefore influence tasks and all other aspects of their business (as cited in Rietveld et al., 2015, p. 1303). Benz and Frey show that self-employed people are more satisfied with their work

due to the high level of independence and freedom in decision-making, compared to the wage employed, which is bounded to hierarchical decision-making in an organization. In contrast to the traditional economic viewpoint that income and work time are the sources of utility, they use the procedural utility model to stress the significant role of the actual process that leads to an end result. Since the self-employed enjoy a higher degree of independence than the wage employed, they are happier with their work in general (Benz & Frey, 2008). In addition, according to Williamson (1975) the two most important factors for decision-making are hierarchy and the market. "Hierarchy" describes that decisions in an organization come from some kind of authority, and "market" characterizes that people take their decisions independently by agreeing on something together. This concept presumes that these two factors influence the wellbeing of a worker in a different way than material outcomes like salary does (As cited in Benz & Frey, 2008, p. 363). The authors conclude that self-employed individuals are happier with their work because they are more autonomous in their decision-making (Benz & Frey, 2008). Viewing the other side, it is highlighted that the essential causes of job dissatisfaction are, for instance, low levels of control over the work environment or unsatisfying experiences at the organizational level. Because self-employed are in the better position to determine all aspects of their work, they obtain a higher job satisfaction than paid employees (Lechmann & Schnabel, 2014).

Summarizing the paragraph above, self-employed typically experience much higher job control than the wage employed, which could lead to an overall better mental health. Even though no specific literature about job control for different types of self-employed could be found, it can be assumed that there might be a part of the employers that have less job control than the solo self-employed, because they have to run business operations as well as manage their employees, which could leave them with somewhat less autonomy than the self-employed that work completely independently.

Given these assumptions; it is concluded:

Hypothesis III:

Mental health issues are generally lower among the self-employed than among the wage employed.

This general hypothesis can be broken down to the following specific hypotheses:

a. *Self-employed generally experience more job control than the wage employed.*
b. *Job control leads to a better mental health.*
c. *The positive impact of self-employment on mental health is partially explained by higher levels of job control.*

Hypothesis IV:

Mental Health issues are lower among the solo self-employed than among the employers.

This general hypothesis can be broken down to the following specific hypotheses:

a. *Solo self-employed have more job control than employers.*
b. *Job control leads to a better mental health.*
c. *The positive impact of solo self-employment on mental health is partially explained by higher levels of job control.*
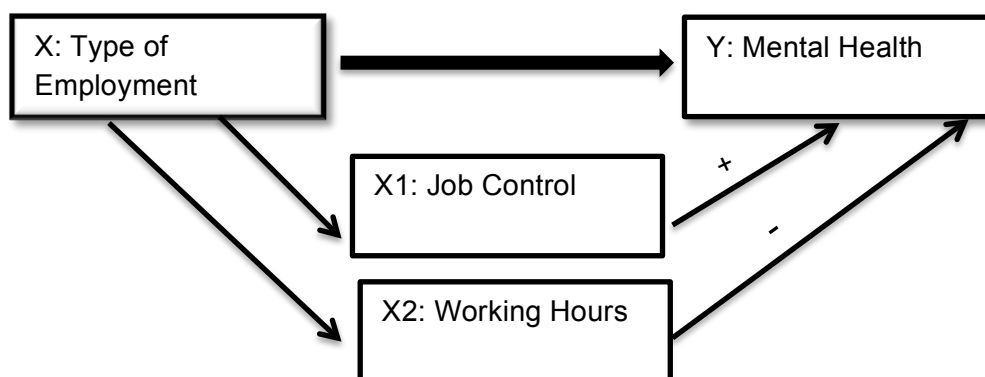
5.5 Causal Model

6. Methodology

In this section of the study, first the research design will be described, followed by the case selection and sampling. Afterwards, the study will explain how the different variables are being measured, proceeded by the descriptive statistics of the data.

6.1 Research Design

For this study, secondary data was used. More specifically, data from the 7th round of the European Social Survey of 2014 was examined. The ESS has three different objectives. One of the goals is to observe and describe changes that occur within societies by asking about values and opinions and to analyse how they interplay with changes within European institutions. Another objective is to enhance research methods in Europe, and finally it aims to establish European adjusted social indicators (O'Shea, Bryson, & Jowell, 2002).

The ESS is a recognized and reliable cross-national survey that has various advantages. First of all, the response rate is pretty high (70%), which leads to a relatively low sampling bias, and therefore it is an important indicator for the quality of the study. Another crucial factor is the strictness with which individuals are selected randomly. This rule is emphasized in every stage of the study and may be done with sampling frames, permitting quota sampling. Interviews are conducted through face-to-face interviews and the study contains almost all age groups, starting from 14 years and does not have an upper age limit (European Social Survey Sampling, 2014). Rigorous methods of surveys and sampling that are being applied by experts promise high quality and accuracy. Especially when wanting to do a cross-sectional study, comparisons are made easy because of the similar data (Ghauri & Grønhaug, 2005), Since the objective of this study is to come to conclusive results about self-employment and mental health in Europe, it made sense to utilize a large dataset like the ESS. Firstly, there is an advantage due to the high number of countries and participants included in the study, and secondly, it has a large range of variables available, which is another beneficial feature. The availability of mental health indicators in this particular round of the ESS was especially a strong reason to use this dataset.

6.2 Case Selection and Sampling

Over 28,000 individuals are included in the 2014 European Social Survey. Those are all over the age of fourteen in the participating European countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Netherlands, Norway, Poland, Slovenia, Sweden and Switzerland. Once all the respondents are subtracted that are not in paid work at the moment of the interview, a total number of 15019 individuals remain. From this number, additionally, the ones that work for a family business and people in armed forces occupations are subtracted[1]. Furthermore, respondents that had at least one missing value for one of the variables were excluded from the study[2]. This leaves me with a data set of 13243 respondents. Out of those, the majority are the wage employees with a total of 11477 individuals (86.7%). Furthermore, there are 1070 self-employed (13.3%), 696 of them currently being solo self-employed (7.8%) and 812 are employers (5.5%).

6.3 Dependent Variable: Mental Health

I am constructing the dependent variable "mental health" from a number of questions respondents answered. This method was chosen due to the fact that certain people might be suffering from an undiagnosed psychological disorder or displaying underlying symptoms that they have overlooked because they do not have the time to seek help or it is perhaps not severe enough. Therefore, it makes sense to ask questions about an individual's state of mental health than about an explicit disorder.

There are eight ordinal-based questions asked in regards to an individual's well being that reflects their mental health within the last seven days. Two out of the eight questions are asked in a positive manner in regards to their scale, so these were reverse coded in order to maintain consistency for an overall scale. The two positive questions were "how much of the time during the past week were you happy?" and "how much time during the past week did you enjoy life?" (European Social Survey Questionnaire, 2015).

---

[1] The armed forces occupations form a very specific group that needs a deeper understanding and cannot be compared with other occupations that easily.
[2] "Don't know", "refusal", "not applicable" and "no answer" answers are not being considered in the analysis.

To have one conclusive indicator for mental health, all eight questions were combined and computed an index variable by taking the mean of all the entries and adding them together. Now the scale shows the most "positive" option (1=none or almost none of the time) in the beginning, descending to the most "negative" (4=all or almost all of the time) option in the end. This exclusion is necessary in order to maintain a meaningful measurement of mental health for each individual.

Table 1. Measuring Mental Health (European Social Survey Questionnaire, 2015)

Question	Scale
How much of the time during the past week....	
1. you felt depressed?	
2. you felt that everything you did was an effort?	1 – none or almost none of the time
3. your sleep was restless?	2 – some of the time
4. you were unhappy?	3 – most of the time
5. you felt lonely?	4 – all or almost all of the time
6. you did not enjoy life?	(8 – don't know)
7. you felt sad?	
8. you could not get going?	

In order to assess how well the underlying construct (mental health) is tested by the different variables, Cronbach's Alpha needs to be analyzed to calculate the internal consistency of the items (Field, 2009). It is important that each item contributes to the scale in the same manner, therefore it was also crucial to reverse code the questions that were negatively coded. This way "more" of each item should mean "more" for the whole scale. The case processing table shows that 100% or 13243 cases were valid.

Cronbach's alpha (α) is **0.777,** which indicates a high level of internal consistency for the mental health scale. The recommended values for internal consistency are 0.7 or higher (Devellis, 2003). Additionally, it was checked if Cronbach's alpha gets larger if one of the items is removed from the scale, which, after consulting the item-total statistics table, can be rejected (Table 2).

6.4 Independent Variable: Type of Employment

Type of employment in this study refers to the distinction between self-employment and wage-employment and additionally there will be distinctions made about the self-employed with employees, the employers, and the self-employed without employees, the solo self-employed (European Social Survey Questionnaire, 2015).

Using the Eurostat Labour Force Survey definition, employers are regarded as people who run their own, for profit business and who employ and pay at least one other person in their business. Solo self-employed are referred to as people who run their own business, which are for profit but without paid employees. However, they can employ their family members or apprentices without pay. The third group, the wage employed, or the employees, are defined as people who work for an employer under a public or private entity. In return for their work, they get wages (The European Union Labour Force Survey, 2001).

Due to the categorical nature of the variable, dummies will be used in the analysis. In the interview, the participants were asked if they were or are an employee, self-employed or work for his or her own family's business. Only people who were currently employed or self-employed were considered, leaving out others who provided answers about positions they held in the past. Additionally, another question was needed to get information about whether someone is solo self-employed or an employer. The interviewer directed this question only to the people who answered that they are self-employed in their main job. To be more specific, it was asked "How many employees (if any) do/did you have?" (European Social Survey Questionnaire, 2015). Once again, the people were excluded that were self-employed in the past and a new variable was constructed that just distinguished between self-employed with or without employees, disregarding the exact number of employees.

6.5 Intervening Variables

Job control in this study refers to the capacity of being able to influence either or both one's own work life balance and policy decisions at the organization one works at. Daniel Ganster, who wrote the entry about "Autonomy and Control" in the International Labour Organization Encyclopaedia of Occupational Health and Safety, explains that job control refers

to multiple different ways that someone can have autonomy and control at their work. This can be done, for example, by having flexibility with the work pace, having freedom when it comes to making decisions about the exact dates of a vacation, or even influencing policies at the workplace (ILO Encyclopaedia, 2011).

In the interview, a question the participants were asked was "how much the management at your work allows you to decide how your own daily work is organised?". This variable is measured with a scale ranging from 0 to 10, 0 being "I have/had no influence" and 10 being "I have/had complete control" (European Social Survey Questionnaire, 2015). This variable was recoded in order to have three categories for low, medium and high job control. Low job control is defined by having a 0-3 on the scale, medium job control is a 4-7 on the scale and high job control is having a 8-10 on the scale.

In the study, the variable working time refers to the hours per week that someone normally worked in a job, including paid and unpaid overtime. In the survey, the participants were asked, "Regardless of your basic or contracted hours, how many hours do you normally work a week (in your main job), including any paid or unpaid overtime?" (European Social Survey Questionnaire, 2015).

The range of hours lies between 0 and 168 hours, which will be categorized in part time, full time including overtime and overtime exceeding work for interpretations purposes. The International Labour Organization defined part time work as work that has less normal hours of work than full-time work. The exact threshold of hours of work for part time jobs cannot be clearly determined, since it depends from country to country, but it is common that it is 30 to 35 hours (ILO Part Time Work, 2004). In the directive 2003/88/EC, the European Parliament and the Council stated that normal working hours cannot go beyond 48 hours a week, including overtime (European Parliament and the Council, 2003). The third category is overtime exceeding work, which includes all respondents that work more than 48 hours a week (including overtime). 0[3]-30 hours refers to part time work, 31-48 hours refers to fulltime work including overtime and everything above 48 hours is considered overtime exceeding work.

---

[3] Also individuals will be included that said they work zero ours typically per week, in order to include people on a zero-hour contract.

6.6 Control Variables

As many studies have shown, different individual factors play a great role in the relationship of certain effects that are linked with self-employment. For instance, in a study about type of employment, work-family conflict and well-being, it has been stressed that women are at higher risk to suffer under longer working hours, since they often still hold the main role for managing the household. In the United States, women showed a higher degree of life stress than men (Parasuraman & Simmers, 2001). Other studies have also highlighted that the work-life balance is lower for self-employed women than self-employed men (Nordenmark, Vinberg, & Strandh, 2012). Furthermore, older and especially male workers are more represented in the group of self-employed people (Hatfield, 2015). All of these findings emphasize the importance to control for age and gender, since there might be gender or age specific conditions connected with the outcomes. Gender is being measured with dummy variables and age with an interval scale. Fortunately, both variables are included in the dataset. Since there is a variable that calculated the age already from the date of birth and it naturally has a metrical scale, it did not have to be recoded. For the gender variable, dummies were constructed.

Another factor that other studies brought attention to is physical health in connection with mental health. Lelliot and Tulloch have also noted that people with pre-existing physical health problems are more prone to develop mental health problems or the other way around. Nonetheless, one has to keep in mind that the relationship between physical and mental health is often hard to conclude because of its relational complexity or obscurity (Lelliott et al., 2008). To measure physical health, a question was used that asked about specific physical health conditions more specifically, "Which of the health problems on this card[4] have you had or experienced in the last 12 months?" An index variable was computed out of 11 binary variables, which tells how many of these conditions an individual has or had in the last 12 months.

Another interesting variable to control for is the occupational skill level. One result, that studies for wage employment have shown, is that occupations with less job control, the lack of remuneration and the feeling of accomplishment, are connected with lower status professions, which lead to a higher degree of psychological suffering (Lelliott et al., 2008). There are general

---

[4] Card 54: Hard or circulation problems, high blood pressure, breathing problems such as asthma attacks, wheezing or whistling breathing, allergies, back or neck pain, muscular or joint pain in hand or arm, musucular or joint pain in foot or leg, problems related to your stomach or digestion, problems related to skin condition, severe headaches, diabetes

studies about the differences of mental health levels among different occupational skill levels for wage employment, which have found out that lower level employment, i.e. shop floor workers, suffer under more stress than for example executives do. Factors like lack of job security, high job requirements, and the expected return of one's work contribution not matching reality, are connected with a poor quality of employment, which is bad for one's mental health (Holttum, 2012). Therefore, it is considered important to incorporate skill level as an important factor in the analysis by controlling for it, in order to explain the role it plays for mental health and work. In the European Social Survey questionnaire, the question about the occupation of the participant was asked. The answers were post-coded by using the International Standard Classification of Occupations - 08 (ESS Data Protocol, 2015. Four different skill levels have been defined to map the ten major groups to the respective skill levels.

Table 2. ISCO-08 Major Groups

ISCO-08 major groups	Original ISCO-08 mapping for skill level	Skill level categorization for study
1 – Managers, senior officials and legislators,	3 + 4	
2 - Professionals	4	
		3
3 - Technicians and associate professionals	3	
4 - Clerks		
5 - Service and sales workers		
6 - Skilled agricultural and fishery workers	2	
7 - Craft and related trades workers		2
8 - Plant and machine operators, and assemblers		
9 - Elementary occupations	1	1
0 – Military occupations	1 + 4	Not included

The table above describes how the major groups are assigned to the different skill levels originally after the ISCO, and it also shows how this study goes about mapping them. Since the focus lies on three major skill groups, skill level 3 and 4 are merged into one category, and military occupations are excluded from the analysis. The measurement is therefore ordinal and will be divided into dummy variables.

6.7 Descriptive Statistics

An important step before the analysis is an in-depth description of the data that is utilized. Table 3 shows the general frequencies of the different groups that are analyzed in this study. The group of wage employed shows an approximately equal distribution of men and women. This is not the case with the self-employed. Within both subgroups, a predominant representation of males can be found. For instance, in the group of the employers, only 27.2% are female versus 72.8% being male.

Table 3. The sample (N=13243)

| | | Gender | | Total |
		Male	Female	
Wage Employed	Count / % of Total	5677 / 42.9%	5800 / 43.8%	11477 / 86.7%
	% within Group	49.5%	55.5%	100%
Solo Self-Employed	Count / % of Total	668 / 5.0 %	402 / 3.0%	1070 / 8.1%
	% within Group	62.4%	37.6%	100%
Employer	Count / % of Total	507 / 3.8%	189 / 1.4%	696 / 5.3%
	% within Group	72.8%	27.2%	100%
Total	Count / % of Total	6852 / 51.7%	6391 / 48.3	13243 / 100%

Table 4 gives an overview of the variables and their minimums, maximums, means and their standard deviations. The table includes both interval variables, like age and physical health, as well as, dummy variables like gender. The means of the dummies can be read as percentages. The average age in the sample is 43.7 years and the distribution of men and women is almost the same. Furthermore, most people (54.9%) have high job control and most people (62.7%) are in full time employment. Almost half of the respondents are employed in high skill level jobs and respondents have between one and two physical health conditions on average. Additionally, the average respondent has a mental health value of 1.56 with a standard deviation of 0.42.

Table 4. Overview of Variables (N = 13243)

	Min	Max	Mean	Std. deviation
Age	14	114	43.60	12.393
Male	0.00	1.00	0.5174	0.49972
Female	0.00	1.00	0.4826	0.49972
Job Control - Low	0.00	1.00	0.1657	0.37180
Job Control - Medium	0.00	1.00	0.2787	0.44838
Job Control - High	0.00	1.00	0.5556	0.49692
Working Hours - Part Time	0.00	1.00	0.1865	0.38954
Working Hours - Full Time	0.00	1.00	0.6249	0.48418
Working Hours - Overtime Exceeding	0.00	1.00	0.1886	0.39123
Skill Level - Low	0.00	1.00	0.0619	0.24102
Skill Level - Medium	0.00	1.00	0.4370	0.49603
Skill Level - High	0.00	1.00	0.5011	0.50002
Physical Health Conditions	0	11.00	1.5813	1.48631
Index Mental Health	1.00	4.00	1.5553	0.42232

Looking at table 5, different means of the mental health index variable for the different employment relations can be inferred. The means do not differ largely, but the employers group has the smallest mean (1.48), which means the best mental health score, and the wage employed have the largest (1.56). Table 1 in the Appendix additionally shows the means for all the items in the index variable and the means of them for each group. The highest numbers (worse mental health outcome) through all the groups were achieved for the questions "how much of the time during the past week (1) have you not felt happy and (2) did you not enjoy life?".

Table 5. Means of Mental Health per groups (N=13243)

	Mean	N	Std. deviation
Wage employed	1.5599	11477	0.42212
Solo self-employed	1.5553	1070	0.44575
Employer	1.4797	696	0.37987

Table 6 shows the distributions of the different types of employment groups within the different categories of job control. General findings include, that the largest share of the sample has high job control (55.6%) and the smallest share (16.6%) has low job control. Especially within the group of self-employed people, most are distributed in the high job control category. This is the case for 90.3% of the solo self-employed and 93.7% for the employers, while only 50% of the wage employed have high job control. The difference between the wage employed and the self-employed is also noticeable in the low job control category, where 18.8% of the wage employed fall but only 0-0.7% of the self-employed. A Kruskal Wallis H test will be run in the next chapter in order to see whether the type of employment groups really statistically significantly differ from each other in regards to mental health.

Table 6. Distributions of groups within job control categories (N=13243)

| | | Job Control | | | Total |
		Low	Medium	High	
Wage Employed	Count / % of Total	2158 / 16.3%	3579 / 27.0%	5740 / 43.3%	11477 / 86.7%
	% within group	18.8%	31.2%	50%	100%
Solo Self-Employed	Count / % of Total	31 / 0.2 %	73 / 0.6%	966 / 7.3%	1070 / 8.1%
	% within group	2.9%	6.8%	90.3%	100%
Employer	Count / % of Total	5 / 0.0%	39 / 0.3%	652 / 4.9%	696 / 5.3%
	% within group	0.7%	5.6%	93.7%	100%
Total	Count / % of Total	2194 / 16.6%	3691 / 27.9%	7358 / 55.6%	13243 / 100%

Table 7 shows the distribution of the different employment types for part time, full time, or overtime exceeding work. Generally most respondents are distributed in the category of full time work. Only 13.8% of the wage employed are in overtime exceeding work, while 44.4% of the solo self-employed work more than full time and 62.9% of the employers do so.

Table 7. Distributions of groups within working hours categories (N=13243)

		Working Hours			
		Part Time	Full Time	Overtime Exceeding	Total
Wage Employed	Count / % of Total	2137 / 16.1%	7755 / 58.6%	1585 / 12.0%	11477 / 86.7%
	% Within Group	18.6%	67.6%	13.8%	100%
Solo Self-Employed	Count / % of Total	257 / 1.9%	338 / 2.6%	475 / 3.6%	1070 / 8.1%
	% Within Group	24.0%	31.6%	44.4%	100%
Employer	Count / % of Total	76 / 0.6%	182 / 1.4%	438 / 3.3%	696 / 5.3%
	% Within Group	10.6%	26.1%	62.9%	100%
Total	Count / % of Total	2470 / 18.7%	8275 / 62.5%	2498 / 18.9%	13243 /100%

Table 8 shows the different means in regards to mental health, job control and working hours for the different European countries included in the study. Looking at the mental health means, the highest mean is from the Czech Republic with 1.76. The lowest mean is from Norway, which has a score of 1.45, indicating that people in Norway are generally the best off regarding their mental health score compared to the other European countries in the study. Looking at the means for job control, scores range from 4.8 in the Czech Republic to 7.8, on average, in Sweden. Also, the working hours' means differ largely in the different countries. For example, people in in the Netherlands work 33.7 hours a week compared to 45.1 hours in Poland.

Table 8. Means for mental health, job control and working hours per country (13243)

Country	N	Mental Health		Job Control		Working Hours	
		Mean	S.d.	Mean	S.d.	Mean	S.d.
Austria	968	1.5476	0.40522	6,1508	3,32643	39,56	13,025
Belgium	881	1.5725	0.41987	7,0375	2,98933	39,86	14,463
Switzerland	890	1.4941	0.39759	7,1449	2,98182	36,15	16,928
Czech Republic	1098	1.7547	0.51079	4,8953	3,33662	42,39	7,588
Germany	1639	1.6377	0.40698	7,4106	2,83948	39,10	13,816
Denmark	823	1.5190	0.39864	7,7667	2,28696	37,92	13,030
Finland	989	1.4942	0.33870	7,6997	2,28616	39,43	10,155
France	904	1.6056	0.43114	7,2533	2,88483	39,62	12,091
Ireland	1004	1.4641	0.40466	5,9602	3,35479	37,90	15,059
Netherlands	942	1.4926	0.37237	7,1741	2,70267	33,72	13,339
Norway	882	1.4575	0.33336	7,7789	2,31265	38,00	11,866
Poland	786	1.5512	0.52815	5,6654	3,70109	45,19	13,974
Sweden	988	1.5516	0.42663	7,8654	2,25818	40,28	10,933
Slovenia	449	1.5145	0.36606	6,9020	3,09438	43,49	10,055
Total	13243	1.5553	0.42232	6,9111	3,04014	39,27	13,116

7. Analysis

The following section introduces different tests and models in order to come to meaningful findings for the study and above all, retain or reject the hypotheses. In the first part, the study will examine whether the different employment types are truly statistically significantly different from each other in terms of mental health. Afterwards, the main regression model will be introduced, which will be systematically built up with the to be included variables in four steps. This method is not only useful for showing how much of the variance of the outcome variable, mental health, is explained by the included variables, the relative effect of the individual variables in the model (holding all other variables constant), but it also reveals whether type of employment is mediated by the intervening variables, job control and working hours, in the different models. Adding variables after each other, gives also an overview of the additional variability of the outcome variable, which can be explained by the inclusion of certain

new predicting variables (Field, 2009). This knowledge will be used to answer major assumptions of this study[5]. In the step thereafter, assumptions of linear regression will be considered in order to make sure that the data is suitable for regression analysis and can therefore be properly interpreted. Furthermore, in order to answer hypotheses Ia, IIa, IIIa and IVa, which are hypotheses regarding job control and working hours, in the last section, two more regression models will be built in order to come to conclusions.

7.1 Kruskal Wallis H Test

As a first step of the analysis, non-parametric methods will be used, as well as graphical techniques, to asseess whether the different types of employments that are investigated in this study, differ significantly in terms of mental health but also in terms of job control and working hours. Since a t-Test or a ANOVA both require that the dependent variable is approximately normally distrubuted for the different categories of the independent variables, a test of normal distribution will be conducted first. Most commonly, this is done by assessing the Shapiro Wilk Test. Additionally, a closer look at normality will be taken by constructing histograms and a normal Q-Q plots as well as taking a closer look at skewness and kurtosis values (Field, 2009).

A deeper look at the table with the skewness values, their standard errors, and a simple division of the skewness value through the standard error, results in z-scores that lie outside the normal score that is ± 2.58 (Field, 2009). The solo self-employed, as well as the employers, have high z-scores for positive kurtosis, and the wage employed additionally also have high scores for positive skewness. The kurtosis value for the solo self-employed was 2.497 (standard error=.149), and the kurtosis value for the employers was 1.809 (standard error=.185). Furthermore, the skewness value for the wage employed was 1.216 (standard error=.023), and the kurtosis value was 2.039 (standard error=.046). Inspecting the histograms, no valid normal distribution pattern could be found (Figures 1-3). Additionally, a Shapiro-Wilk test was considered and gave more evidence that all three groups had no normal distribution for mental health ($p<.05$).

---

[5] It should be noted that the scale of the dependent variable is coded in such a way, that a positive effect actually leads a worse mental health score and a negative effect would lead to a better mental health score

Since the data has failed the assumptions of an ANOVA or an independent t-Test, the Kruskal-Wallis H test will be used instead, which is a nonparametric alternative to the previously mentioned tests and can be used with more than two categories of independent variables.

The first step is to check whether the distributions of the different types of employment are similarly shaped. Mental health scores were similar for all groups, as assessed by visual inspection of a boxplot (Figure 4). In the next step, the medians are investigated. Median scores are 1.50 for the wage employed and the solo self-employed, and they are 1.37 for the employers. Looking at the results of the Kruskal-Wallis Test, median mental health scores were statistically different between the three categories[6]. Since the Kruskal-Wallis test does not specify which categories are different from each other (Bühl, 2016), three Mann-Whitney tests were ran, to see which subgroups differ statistically from each other. Median mental health scores were not statistically significant between the wage employed and the solo self-employed[7]. However, median mental health scores were statistically significant between the wage employed and the employers[8], and they were also significant between the solo self-employed and the employers[9].

7.2 Multivariate Regression Analysis

This section presents the results of the multivariate regression analysis. All models include the independent variable (type of employment), which is measured by including dummies for the solo self-employed and the employers, while having the wage employed as the reference category. Also, the control variables will be present in all four models. These include age, gender, physical health, skill level, and the country dummies. The latter will not be presented in the tables, but notable results will be reported. In the second model, dummies for job control will be added, and in the third model, job control will be replaced with working hours. The last model includes all variables. As a matter of fact, age is insignificant in all four models and its value will therefore be disregarded.

---

[6] H(2)=24.099, p=.000
[7] . U=6035182.000, z=-.932, p=.351.
[8] U =3556470,000, z=-4.888, p=.000
[9] U= 339658,000, z=-3.141 and p=.002.

Looking at the first regression model, the overall fit of the model is 11.8% with an adjusted R^2 of 11.7%, which means that 11.8% of the total variance of mental health is explained by the variables in the model. Solo self-employment (b=.003) is insignificant and being an employer has a positive impact on mental health (b=-.042), which means that it lowers the mental health index (outcome variable). All other variables have a negative impact on the mental health, in other words leading to higher mental health index. Regarding the countries, the Czech Republic has the largest negative impact on the mental health index (b=.216) in relation to Austria, which is the reference category, indicating that people from the Czech Republic have worse mental health scores. In contrast people from Finland have the largest positive impact on mental health (b=-.120), meaning a lower mental health index, in relation to Austria.

The next model includes high and medium job control (low job control is the reference category). It has a slightly higher R^2 of 12.4% and an adjusted R^2 of 12.3%. Medium job control is insignificant in the model. High job control is good for one's mental health relative to low job control and has a *b* coefficient of -.083. All other variables, including being solo self-employed (b=.033), have negative impacts on mental health. The impact of solo self-employment on the mental health index increases from model one (b=.003) to model two (b=.033) and the coefficient for the employers becomes smaller (-.013) and insignificant.

In the third model, the R^2 decreases to 11.8%. Job control variables are removed from the model and replaced by part time and overtime exceeding working hour variables (full time is the reference category), which are both insignificant. In this model, the solo self-employment variables is again insignificant (b=.003) but being an employer remains significant and has a positive impact (b=-.048) on mental health. Furthermore, being a women, having low or medium skill level and having at least one physical health condition are particularly bad for one's mental health.

The fourth model, which includes all variables, has an R^2 with 12.4%. Besides being an employer (b=-.022), medium job control and working part time, all variables are significant and have a small negative impact on the dependent variable, mental health index. Solo self-employment increases (b=.026), and it is slightly significant. Working overtime in this model is significant and has a *b* coefficient of .022.

Generally, as the model indicates, being an employer is good for one's mental health relative to being wage employed. However, being solo self-employed has a negative impact on mental health throughout the models. Therefore both main hypothesis I, stating that *mental health issues are generally higher among the self-employed than among the wage employed,* and hypothesis III stating the opposite, can be rejected. An underlying finding here is that self-employment cannot be generalized and should be divided into subgroups like employers and solo self-employed in order to derive more valid findings. Hypothesis Ia, IIa, IIIa and IVa will be investigated in the course of the analysis, by running two more regression models at a later stage. In regards to hypothesis Ib and IIb, *long working hours lead to more mental health issues,* further steps needed to be taken to come to more conclusive results. Working hour dummies were insignificant in model 3, but overtime exceeding work became significant once it was added to the model with job control dummies. After observing these dynamics, several Chi-Square tests were run in order to get a better sense of the correlations between the independent variables. Running this test for correlations, looking at the count, and the expected count values between job control and working hours, it can be observed that being in high job control correlates with working overtime exceedingly. Pearson's Chi Square has a value of 319.323 and is highly significant and Cramer's V has a strength of .110 while being highly significant. Also, correlations could be noticed between job control and type of employment. This indicates that high job control and overtime exceeding work correlate with each other, which explains why overtime exceeding work becomes larger and significant with the presence of job control in the model at the same time. Looking at the correlation matrix that the regression model produced, no multicollinearity was present. Looking at Pearson's Correlations for mental health and being solo self-employed or being an employer while splitting the findings into the working hour categories, it became clear that solo self-employed with overtime exceeding work have a negative impact, therefore increasing the mental health index (Pearson=.039, p=.052) (Table 3). However, this is not the case for the employers, shown by a negative coefficient between employers and mental health when working overtime (Pearson= -.096, p=.000) (Table 4).

Therefore, it can be concluded that long working hours lead to more mental health issues for the solo self-employed. With these findings, hypothesis Ic and IIc can be answered, Ic stating that *the negative impact of self-employment on mental health is partially explained by higher*

levels of working hours and IIc stating that *the negative impact of solo self-employment on mental health is partially explained by higher levels of working hours.* The former hypothesis can be rejected, since self-employment cannot be treated in a general way due to the differences between the subgroups revealed in the model. The latter hypothesis can be retained, due to the previously mentioned results.

Moving on to to hypotheses IIIb and IVb, stating that *job control leads to a better mental health,* it can be detected as true. High job control was in both model 2 and model 4 highly significant and had a positive impact on the outcome, leading to a better mental health.

Hypothesis IIIc, which stated that *the positive impact of self-employment on mental health is partially explained by higher levels of job control,* can be rejected, since the sub groups showed different impacts on mental health. Furthermore hypothesis IVc can be rejected as well, claiming that *the positive impact of solo self-employment on mental health is partially explained by higher levels of job control.* However, it was detected that the coefficient for the employers had become smaller and insignificant compared to the first model, reinforcing the mediator effect job control has on the employers. Intervening variables, as described by Allison, mediate other variables, by changing the effect of other variables in such a way that they might disappear (Allison, 1999). In this case, job control mediates the relationship between employers and mental health, therefore one can say that the positive impact employers have on mental health is partially explained by higher levels of job control. Observing the models, the effect solo self-employment has on mental health increased from model one (b=.003) to model two (b=.033), indicating a suppressor effect. This means that the variable solo self-employment was suppressed before and had a small and insignificant beta coefficient before job control was added. Suppressor variables are defined as variables that improve the effect another variable has on the outcome variable (Thompson & Levine, 1997). Therefore, it can be concluded that adding job control to the model has "unsuppressed" the effect solo self-employment has on mental health. In regards to the control variables, it can be summarized that being a woman relative to being a man has a negative impact on one's mental health throughout the models. Especially low skill level showed high coefficients relative to high skill level occupations and validated the expectation that low skill level occupations have a positive relationship with the mental health index. Additionally, physical health conditions increase mental health issues.

Table 9. Regression model for type of employment on mental health (N=13243)

	Model 1		Model 2		Model 3		Model 4	
	b	s.e.	b	s.e.	b	s.e.	b	s.e.
Constant	1,409***	,019	1,449***	,020	1,405***	,019	1,445***	,020
Employment Relation (wage empl.=reference)								
Solo self-employment	,003	,013	,033**	,013	-,003	,013	,026*	,014
Employer	-,042***	,016	-,013	,016	-,048***	,016	-,022	,016
Age	-8,030E-5	,000	,000	,000	-8,927E-5	,000	,000	,000
Gender (male=reference)								
Female	,054***	,007	,051***	,007	,054***	,007	,053***	,007
Skill Level (high=reference)								
Medium	,051***	,007	,036***	,007	,051***	,007	,036***	,007
Low	,140***	,015	,119***	,015	,139***	,015	,119***	,015
Physical Health	,076***	,002	,077***	,002	,076***	,002	,077***	,002
Job Control (high=reference)								
High			-,083***	,011			-,084***	,011
Medium			-,017	,011			-,017	,011
Working Hours (full time=reference)								
Overtime					,015	,010	,022**	,010
Exceeding					,011	,010	,009	,010
Part Time								
R^2	**,118**		**,124**		**,118**		**,124**	

*p<0.1; **p<0.05; ***p<0.01

7.3 Assumptions of Linear Regression

Linear regression models have certain prerequisites or assumptions that need to be met in order to make valid inferences. The validity of these assumptions need to be considered in order to justify the meaning of the model.

Assumption #1: Independence of Observations

The first assumption deals with autocorrelation of observations, which means that the observations (and especially their errors) should not be related. The Durbin-Watson statistic is often used for checking this assumption. Durbin-Watson reveals a value of .000. Ideally, the value should be 2 or as close to 2 as possible in order to confirm this assumption confidently (Field, 2009). Since this thesis involves a cross-national study design, this assumption is violated. Naturally, it is possible that people from the same countries have very similar values. Due to this reasoning and the Durbin-Watson value, the first assumption is violated.

Assumption #2: Linearity

The second assumption deals with the necessity of linearity, both between the dependent variable and each independent variable individually and the dependent variable and all of the independent variables collectively (Field, 2009). Since almost all variables in the regression model, except for age and physical health, are dummies, looking at the partial plots does not really make sense and will therefore be ignored. A scatterplot is being observed in order to find out if a linear relationship exists between the dependent variable and the independent variables altogether, which is done with the studentized residuals against the unstandardized predicted values. Looking at the scatterplot, a somewhat linear relationship can be established (Figure 5).

Assumption #3: Homoscedasticity of Residuals

The next assumption deals with the errors and their equal variances. To check whether there is homoscedasticity of residuals, the plot of the studentized residuals against the

unstandardized predicted value was consulted (Figure 5) (Allison, 1999). Since the spread of the residuals is increasing as transitioning across the predicted values, the residuals are not evenly spread and rather have a funnel shape. Therefore heteroscedasticity and a violation of the third assumption can be accepted.

Assumption #4: Multicollinearity

Multicollinearity occurs when independent variables show correlations among each other. These are being examined by looking at the correlation coefficients and the Tolerance/VIF values that are being generated as part of the regression procedure (Allison, 1999). The correlation values are smaller than 0.7 and also the VIF values are smaller than 10, indicating no multicollinearity. Also looking at the tolerance values for the several independent variables, it can be concluded that no tolerance value is below 0.1, therefore it can be safely assumed that there is no multicollinearity problem (Table 5).

Assumption #5: Outliers

Data points that do not follow a consistent pattern relative to the predicted values can be referred as "outliers", These points can be detected using different types of residuals. Casewise diagnostics is a method that reveals any points whose standardized residual is greater than a given standard deviation, which is typically $\pm$ 3 SDs. Studentized deleted residuals can also be examined to determine potential outliers. By looking at the studentized deleted residuals (Bühl, 2016), 169 potential outliers are found. This is a very small number, which only accounts to 1.27% of the whole data set (13243). Having said that, it is assumed that the impact of this would be minimal in the first place. Nonetheless, a multivariate regression was conducted and excluded the outliers out of the data set. The results were the same in terms of the direction of the coefficients and their significance, values changed only slightly if at all. This validated the previously mentioned expectations. Moving on, looking at the leverage values, no cases exhibiting high leverage could be found. Generally, points that show values of greater than 0.02 are considered as high leverage (Field, 2009). Also, looking at the Cook's distance values generated by SPSS, it could be concluded that nothing was above 1.

Assumption #6: Normal Distribution of Residuals

The last assumption deals with the normal distribution of errors. This can be checked by consulting a histogram with a superimposed normal curve and also a P-P Plot (Bühl, 2016). For the latter, it can be stated that the residuals are approximately normally distributed along the diagonal line (Figure 6). The histogram (Figure 7) shows approximately normally distributed standardized residuals. Therefore the normal distribution of residuals can be confirmed.

In conclusion, a linear relationship could be established between the dependent variable and the predictor variables collectively. There was no multicollinearity and cases did not show high leverage values and cook's distance showed no values of concern. Even though there are outliers in the study, they did not influence the outcome, which was assessed after running the multivariate regression once without them. Also, the residuals were normally distributed. Since the independence of errors is not given, the heteroscedasticity of residuals are might be due to the differences in the subpopulations.

7.4 Regression Models for Job Control and Working Hours

To investigate the correlation coefficients for job control and working hours, in order to answer the previously mentioned hypotheses, two more regression models were built. In both models wage employment is the reference category.

Model 1 shows the correlation coefficients and standard deviations when working hours is the dependent variable. In this model, R^2 is 16.4%, meaning that 16.4% of the total variance in working hours can be explained by the included variables. However, age and physical health are not significant for the interpretation of the outcome variable. One finding is that, in relation to being wage employed, being solo self-employed increases the time spent at work by 3.284 hours per week and being an employer does so by 11.140 hours. Being a woman, compared to being a man, leads to a decrease in working hours by 6.526 hours, if all other variables are kept constant. Both medium and low skill level have a negative effect on working hours. In relation to high skill level, medium skill level decreases the outcome variable by 1.622 hours and being in a low skill level occupation, decreases working hours by 6.104 hours. Regarding the country dummies,

which were controlled for, several observations can be made. A person in the Netherlands works in average 6.126 hours less per week than a person in Austria (reference category). People from Poland on the other hand work almost 5 hours more on average per week than people in Austria. As seen, there are large differences throughout the different European countries and working hours.

In order to see whether also the employers and the solo self-employed are statistically significantly different in their effects on working hours, the regression model was ran again and the reference category was changed to solo self-employed. Results showed now that being an employer has an effect of 7.856 hours of more work per week than being solo self-employed. Also, the effect was statistically significant. In conclusion, the self-employed generally work longer than the wage employed, as indicated by hypothesis Ia. However, substantial differences in the subgroups could be found. As the regression model and the comparison of the means showed, employers work longer than the other two categories. In regards to hypothesis IIa, *the solo self-employed work longer than the employers*, the opposite finding was made.

Table 10. Regression analysis for working hours (N=13243)

	Model 5	
	b	s.e.
Constant	43.468***	.565
Type of Employment (wage employment=reference)		
Solo self-employed	3.284***	.403
Employer	11.140***	.483
Age	.002	,009
Gender (male=reference)		
Female	-6.526***	.214
Physical Health	.021	.075
Skill Level (high=reference)		
Medium	-1.622***	.221
Low	-6.104***	.451
R^2	**.167**	

*p<0.1; **p<0.05; ***p<0.01

Looking at job control as the dependent variable, in the next step the effect the type of employment has on the level of job control will be investigated. In this model, job control is used by its metrical scale in order to come to conclusive findings. R^2 is 25.9% and all variables are of high significance, including the country dummies, which are not presented in the table. Relative to being wage employed, being solo self-employed increases one's job control by a score of 2.798, if all other variables are held constant. Being an employer has a similar effect in relation to being wage employed (b=2.641). Furthermore, a unit increase in age increases job control by .016, and relative to being a man, being a woman decreases the level of job control by .216. Both medium (b=-1.331) and low skill level (b=-2.127) decrease job control relative to being in a high skill level job. One unit increase in physical health conditions leads to an increase in job control

by .089. Looking at the country dummy coefficients in the model, it seems like the countries are more or less similar, since the coefficients differ only in their effects on job control at a value between -1.4 and +1.2 relative to Austria. In order to find out whether the solo self-employed and the employers have statistically significantly different effects from each other, another regression model was conducted with a different reference category. Results showed that the employers have a slightly more negative effect on job control (b=-.158), but this effect showed no significance in its p value.

In conclusion, it can be claimed that self-employed people generally experience more job control than wage earners, validating hypothesis IIIa. The difference between the employers and the solo self-employed is not statistically significant, as shown by the Mann Whitney test. Therefore, hypothesis IVa can be rejected, stating that *solo self-employed have more job control than employers*.

Table 11. Regression analysis for job control (N=13243)

	Model 6	
	b	s.e.
Constant	6.142***	.123
Type of Employment (wage employment=reference**)**		
Solo self-employed	2.798***	.085
Employer	2.641***	.104
Age	.016***	.002
Gender (male=reference)		
Female	-.216***	.046
Physical Health	.089***	.016
Skill Level (high=reference)		
Medium	-1.331***	,048
Low	-2.127***	,098
R^2	,259	

*p<0.1; **p<0.05; ***p<0.01

8. Conclusion and Discussion

The primary aim of this study was to use multivariate regression to gain a better understanding of the implications of employment type on mental health using data from the European Social Survey 2014. The objective was, among others, to shed some light on the conflicting streams of theory that were encountered.

As it is often emphasized, self-employment and entrepreneurship are two crucial drivers for economic growth and innovation, and therefore a valuable tool for national markets. However, there are different factors like job insecurity and financial instability that self-employment brings with it (Hatfield, 2015). Unfortunately, little and sometimes-conflicting research about self-employment has contributed to great uncertainty about this type of employment. One reasons for that is the great amount of studies that have ignored and overlooked the fact that self-employment comes with great heterogeneity, and therefore it is necessary to make distinctions in terms of subgroups. Another reason is the generally conflicting streams of theory, which on one hand found self-employment associated with a weakened mental health, for instance Andersson (2008), and the other hand, literature emphasized the positive effect that job autonomy has on the well-being of a person, such as Lechmann and Schnabel (2014), potentially leading to a better mental health. The topic of mental health is certainly a very current issue since upward trends in psychological diseases have been reported, and it has been forecasted that these will even rise in the future due to global problems in modern societies (WHO, 2000). The aim was therefore to investigate different types of employment in regards to their mental health, in order to make insights of scientific and societal relevance.

In this study, wage employment, solo self-employment, and employers were sampled and analysed. Moreover, various different variables were also taken into consideration to better predict the outcome of one's mental health. A closer look was especially given to job control and working hours, which were expected to mediate the relationship between the type of employment and mental health. Using different statistical methods, including bivariate and multivariate regression analysis, some findings were made. The research question of this study was "*Are mental health issues more or less prevalent among the self-employed than within the wage-employed in Europe?"*. Mental health issues are not more prevalent among the self-employed in general. Having said that, a subset of the self-employed, the employers, have less mental health

issues relative to the wage employed (and the solo self-employed). Also, the solo self-employed and the wage employed do not differ from each other regarding mental health problems.

Even though effects in the regression model were mostly marginal, there were still some insightful findings. Although the employers work much longer than the solo self-employed and the wage employed, their mental health status proved to be the best in comparison to the other two groups. Therefore, it can be summarized that working great amount of hours does not necessarily lead to mental health problems.

Furthermore, job control proved to be a mediator variable for the employers, saying that their high levels of job control were partially an explanation for their better mental health scores. On the other hand, it cannot be generalized that job control leads to a better mental health, since the solo self-employed are not necessarily better off than the wage employed. Additionally, it was not clear to determine whether the mental health status of the solo self-employed could be partially explained because of their high working hours. Having said that, this study recommends researchers to look at other determinants than working hours and job control to make further insights about work-related psychological issues.

As it was expected, both physical health problems and being in a low skill level occupation is not beneficial for one's mental health. One would suggest, that further research should look more closely at the interaction effect skill level might have on type of employment, in order to make findings about skill level and self-employment and how people in high skill level occupations might have completely different experiences than people in low skill level occupations within self-employment. Yet, this angle of research, focusing on particularly self-employment and occupational skill level, is undertheorized, which could motivate further research. Jansen pointed out the necessity to treat the self-employed people as a heterogenous group, rather than perceiving them with an outdated notion and limiting self-employed to occupations like farming and being the owner of a shop. It is important to draw distinctions in order to take account of the growth of different types of occupations within self-employment and their skill levels, which has often been ignored by previous studies leading to limitations (Jansen, in press).

Even though the study led to some valuable insights, there are certain limitations to it. When critically reflecting the entire procedure of this project, firstly, a more comprehensive questionnaire could be conducted to further establish mental health issues. Although the

European Social Survey is a very useful dataset to assess all kinds of different data for a large sample, it does not really capture psychological problems. Working with experts from psychological fields, in order to come up with the right metrics to assess mental health completely, would be a way to improve studies like this in the future. This can be done, by finding out more about specific underlying symptoms of a wide of range of mental health disorders and incorporating these in the form of questions in an interview. This could indicate more reliably whether someone suffers from mental health problems.

Furthermore, the countries included at the time when this study was started, were not entirely representative of the European contitent, since countries like Greece, Spain, Italy and Portugal were missing among others. Also, when countries were investigated in regards to mental health, job control and working hours, small to large differences could be noticed. It is also suggested, that future research takes more into account how different these countries can be concerning their political and cultural underlying structures, which can shape the outcomes of a study like this. Even though only countries from the same contitent were considered, it is important to keep in mind that there are large socio-economic differences between them (e.g. policies regarding pensions) in order to make objective interpretations. Moreover, the design of the study, does not allow making significant inferences concerning changes that happen on an individual level that could be helpful in explaining cause and effect relationships. Repeated observations on the same sample could lead to further insights about how people's mental health progressed because of potential changes in their employment type, but it could also control for conditions that are otherwise difficult to assess. An example of such a case includes the discovery of whether individuals choose to become an employer obecause they can afford it due to their well-being, or whether their well-being is consequence of their type of employment. Knowing relationships like this could lead to a better knowledge of mental health issues in various work forces accross Europe.

9. Appendix

Table 1. Individual items of mental health and their means for employment categories

	Wage Employed (N=11477)		Solo Self Employed (N=1070)		Employers (N=696)	
	Mean	Std. Deviation	**Mean**	Std. Deviation	**Mean**	Std. Deviation
Felt Depressed	**1.32**	0.571	**1.34**	0.596	**1.24**	0.484
Felt Everything Did As Effort	**1.51**	0.676	**1.51**	0.710	**1.45**	0.621
Sleep Was Restless	**1.67**	0.778	**1.58**	0.746	**1.56**	0.727
Felt Lonely	**1.27**	0.572	**1.28**	0.603	**1.17**	0.471
Felt Sad	**1.39**	0.587	**1.41**	0.601	**1.33**	0.539
Could Not Get Going	**1.43**	0.635	**1.43**	0.646	**1.33**	0.572
Felt Happy	**1.94**	0.792	**1.95**	0.818	**1.90**	0.784
Enjoyed Life	**1.94**	0.58	**1.94**	0.778	**1.86**	0.749

Table 2. Item-Scale Statitics for Index Variable

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Felt depressed, how often past week	11,13	8,992	,615	,412	,735
Felt everything did as effort, how often past week	10,93	8,943	,498	,296	,750
Sleep was restless, how often past week	10,78	8,980	,396	,180	,770
Felt lonely, how often past week	11,17	9,573	,430	,231	,761
Felt sad, how often past week	11,05	9,133	,548	,360	,744
Could not get going, how often past week	11,01	9,343	,432	,212	,760
Enjoyed life reversed	10,51	8,540	,484	,366	,754
Happy reversed	10,51	8,637	,494	,375	,751

Table 3. Correlations between solo self-employed and mental health grouped by job control categories

Job Control Categories			Index Mental Health	Solo Self-employed
Low	Index Mental Health	Pearson Correlation	1	,021
		Sig. (2-tailed)		,328
		N	2194	2194
	Solo Self-employed	Pearson Correlation	,021	1
		Sig. (2-tailed)	,328	
		N	2194	2194
Medium	Index Mental Health	Pearson Correlation	1	,038[*]
		Sig. (2-tailed)		,020
		N	3691	3691
	Solo Self-employed	Pearson Correlation	,038[*]	1
		Sig. (2-tailed)	,020	
		N	3691	3691
High	Index Mental Health	Pearson Correlation	1	,022
		Sig. (2-tailed)		,057
		N	7358	7358
	Solo Self-employed	Pearson Correlation	,022	1
		Sig. (2-tailed)	,057	
		N	7358	7358

Table 4. Correlations between solo self-employed and mental health grouped by working categories

Workinghours Categories			Index Mental Health	So en
Part Time	Index Mental Health	Pearson Correlation	1	
		Sig. (2-tailed)		
		N	2470	
	Solo Self-employed	Pearson Correlation	-,046	
		Sig. (2-tailed)	,023	
		N	2470	
Full Time	Index Mental Health	Pearson Correlation	1	
		Sig. (2-tailed)		
		N	8275	
	Solo Self-employed	Pearson Correlation	-,005	
		Sig. (2-tailed)	,657	
		N	8275	
Overtime Exceeding	Index Mental Health	Pearson Correlation	1	
		Sig. (2-tailed)		
		N	2498	
	Solo Self-employed	Pearson Correlation	,039	
		Sig. (2-tailed)	,052	
		N	2498	

Table 5. Multicollinearity Values

Modell		Toleranz	VIF
1	(Konstante)		
	Solo Self-employed	,870	1,150
	Employers	,873	1,146
	Age of respondent, calculated	,954	1,048
	skilllevel=Low Skill Level	,888	1,127
	skilllevel=Medium Skill Level	,868	1,152
	Physical Health Conditions	,893	1,120
	gndr=Female	,890	1,124
	cntry=Belgium	,549	1,820
	cntry=Switzerland	,548	1,825
	cntry=Czech Republic	,502	1,992
	cntry=Germany	,408	2,452
	cntry=Denmark	,560	1,784
	cntry=Finland	,514	1,947
	cntry=France	,542	1,846
	cntry=Ireland	,526	1,901
	cntry=Netherlands	,532	1,879
	cntry=Norway	,545	1,835
	cntry=Poland	,578	1,732
	cntry=Sweden	,520	1,924
	cntry=Slovenia	,701	1,426
	jobcontrol_new=Medium	,494	2,025
	jobcontrol_new=High	,413	2,422
	wkhtot_1=Overtime Exceeding	,803	1,245
	wkhtot_1=Part Time	,834	1,199

Figure 1. Histogram of the distribution of mental health for the wage employed

Histogram
for emptypes= Wage Employed

Mean = 1,56
Std. Dev. = ,422
N = 11.477
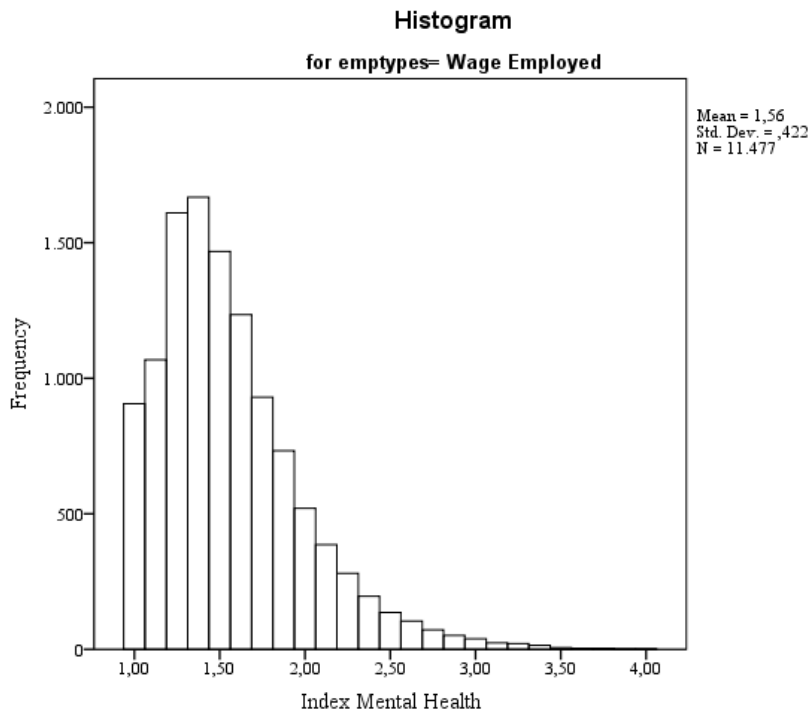
Figure 2. Histogram of the distribution of mental health for the solo self-employed

Histogram
for emptypes= Solo Self-employed

Mean = 1,56
Std. Dev. = ,446
N = 1.070
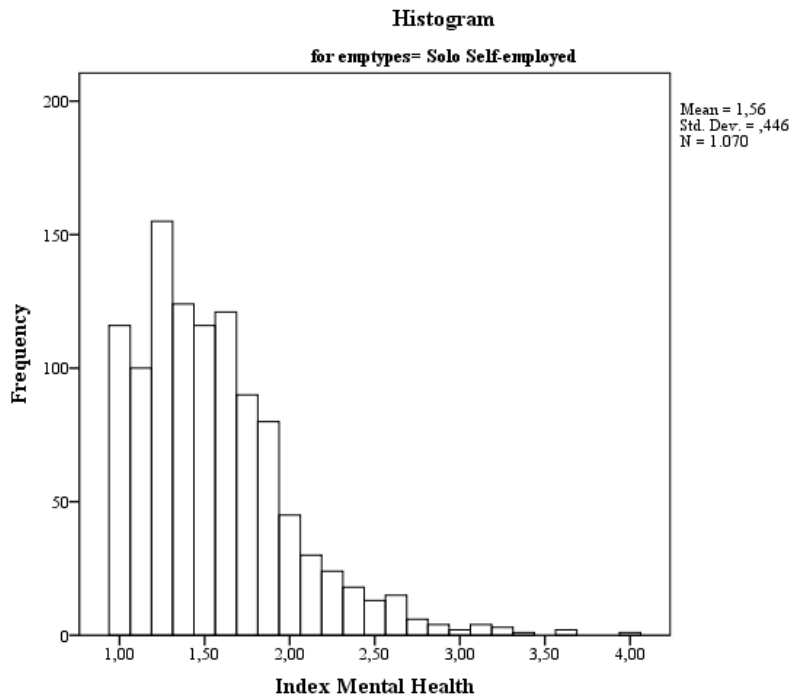
Figure 3. Histogram of the distribution of mental health for employers
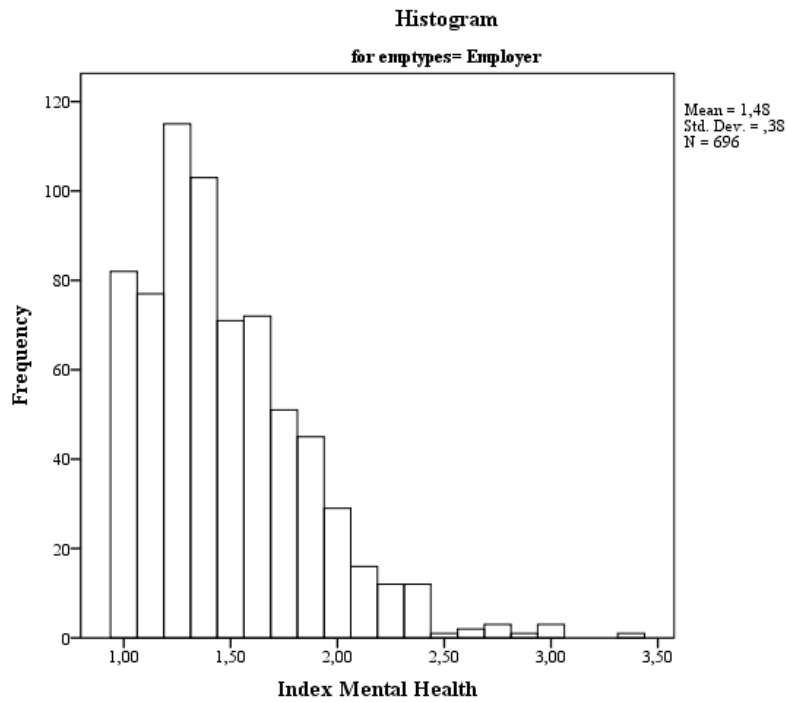
Figure 4. Boxplot of mental health score medians for different employment categories
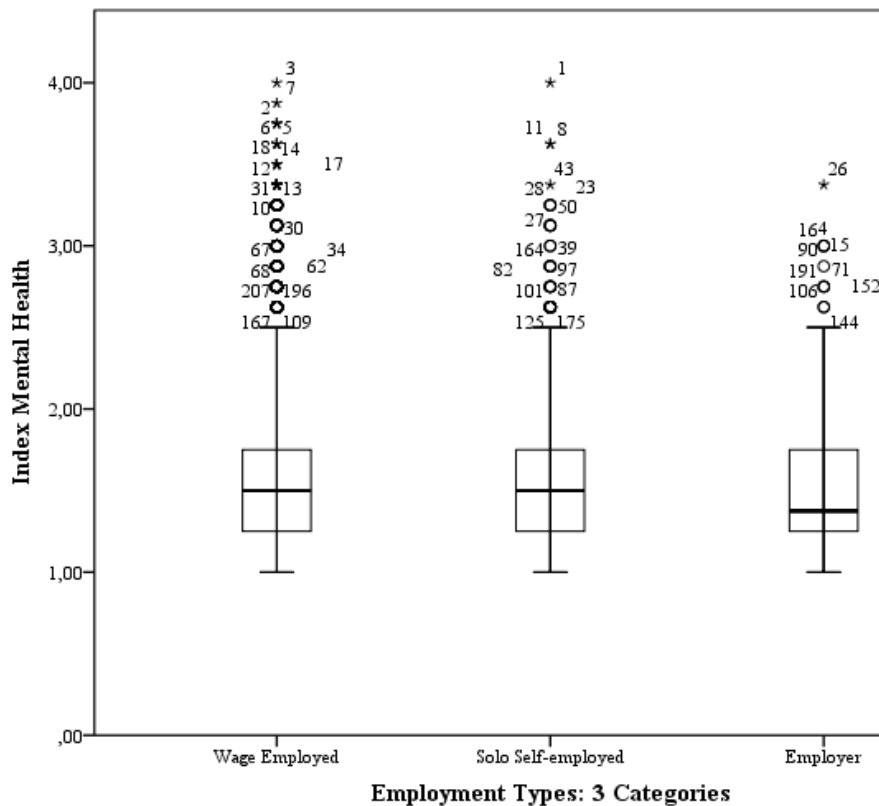
Figure 5. Scatterplot with studentized residuals against the unstandardized predicted values
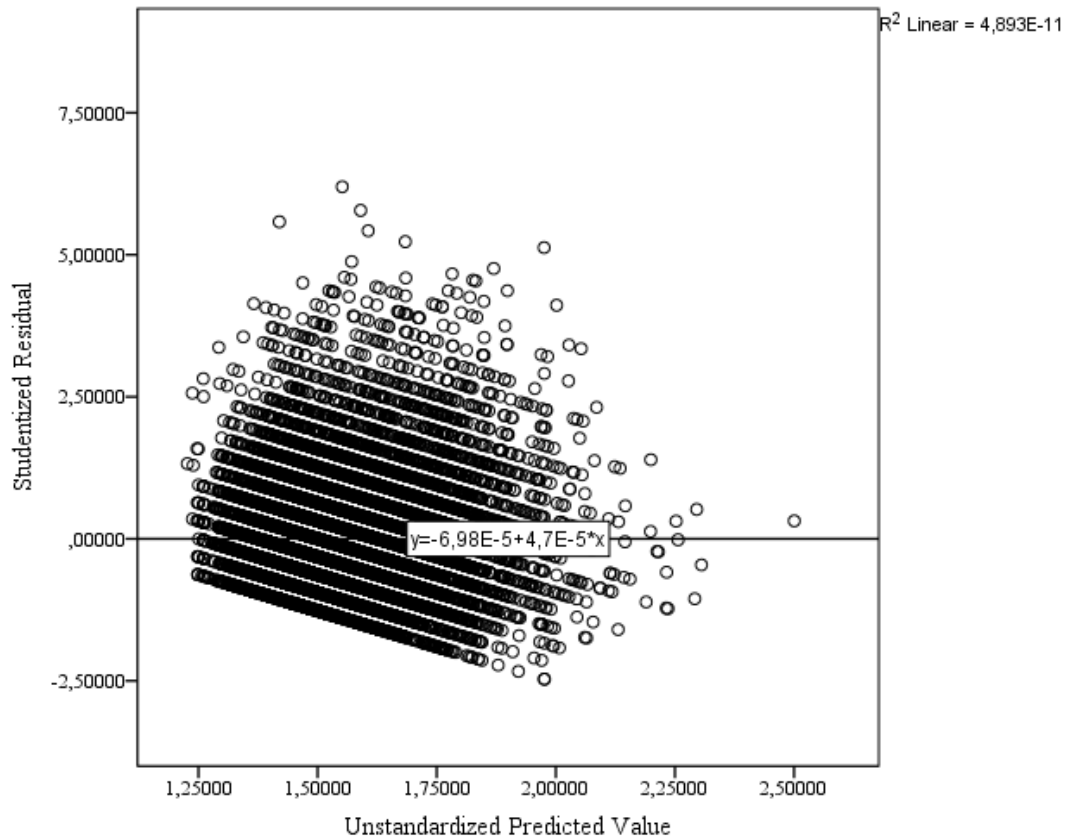
Figure 6. P-P plot to check assumption of normal distribution of outliers
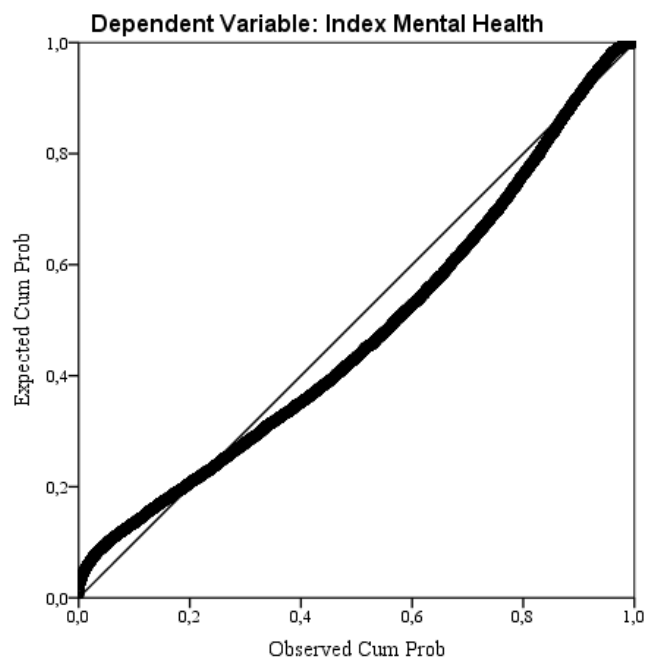
Figure 7. Histogram with standardized residuals

Histogram

Dependent Variable: Index Mental Health

Mean = -1,40E-15
Std. Dev. = 0,999
N = 13.243
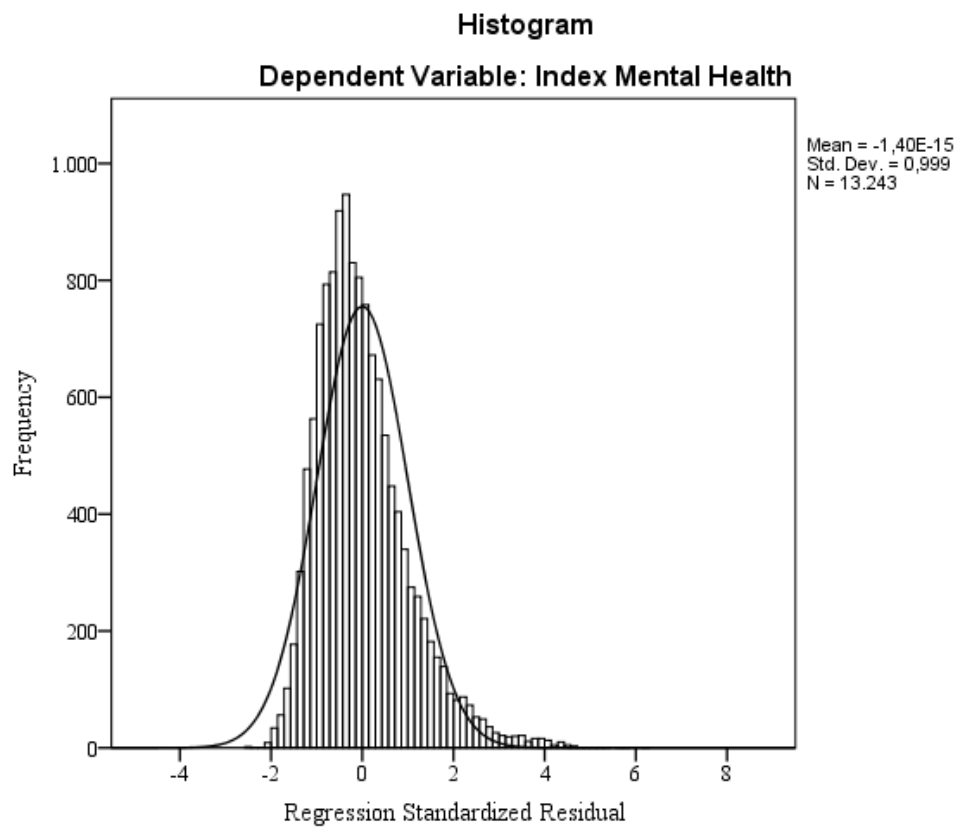
Figure 8. Boxplot of Level of Job Control Scores for different employment categories
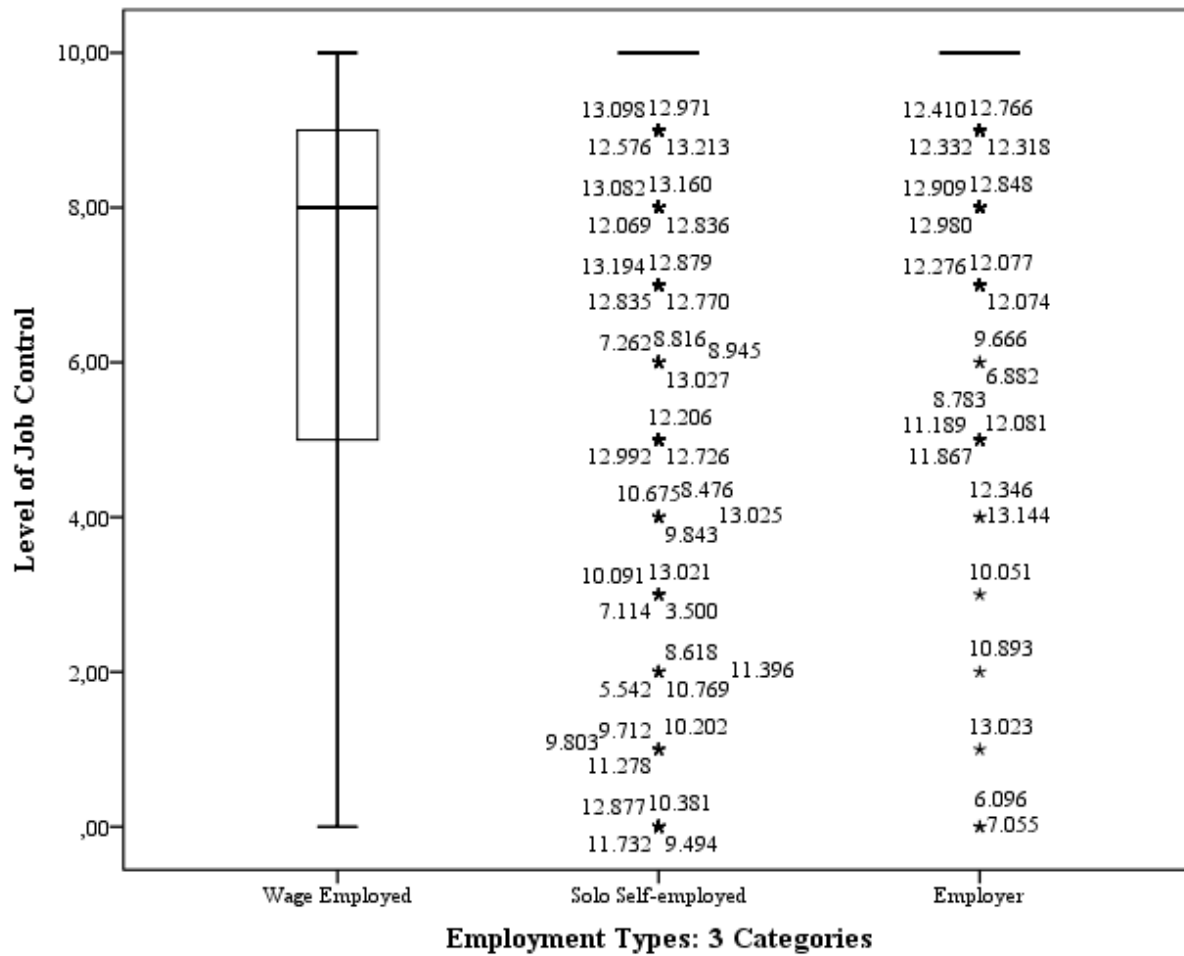
Figure 9. Boxplot of Working Hours for different employment categories
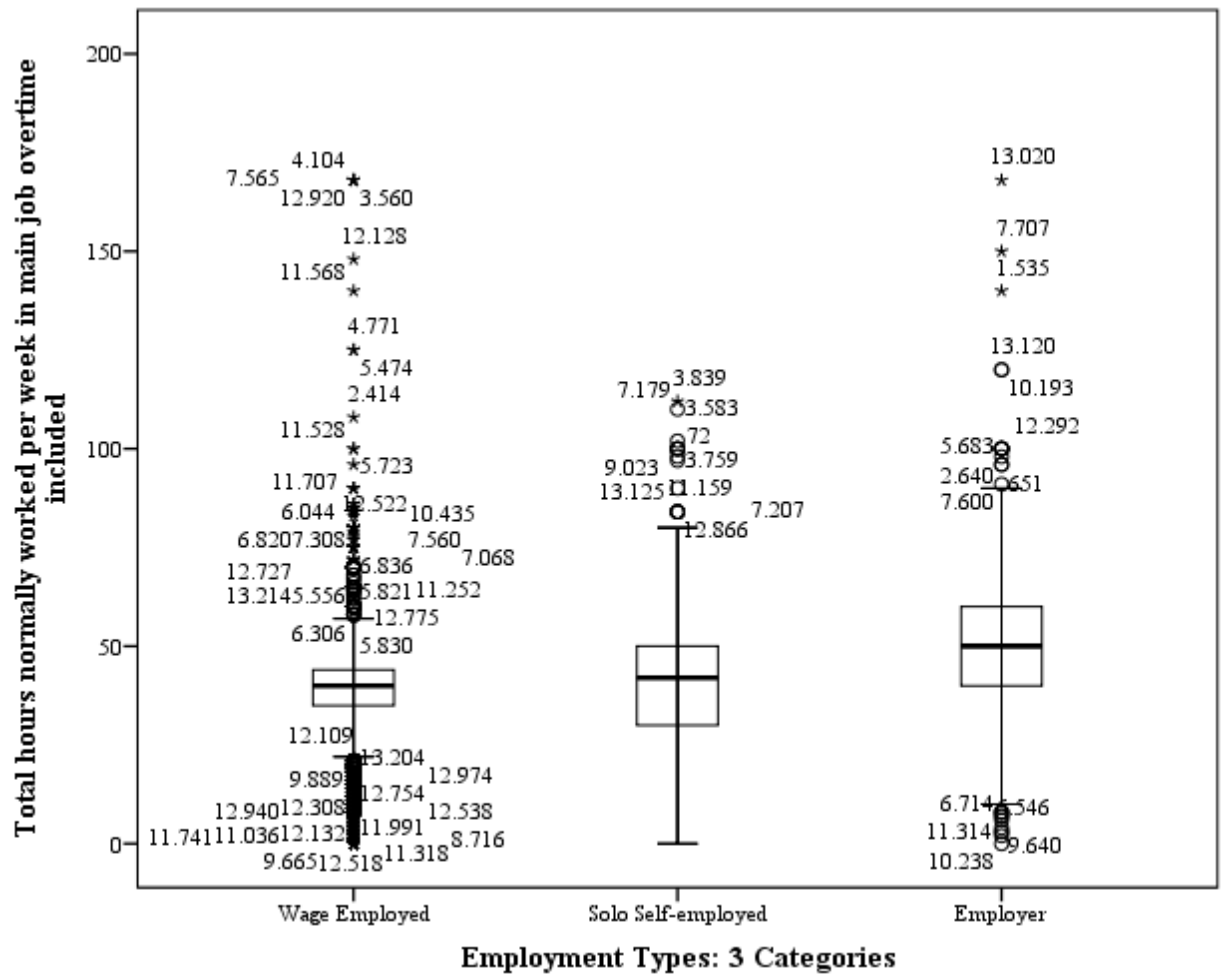
Figure 10. Histogram of distribution of Job Control for wage employed
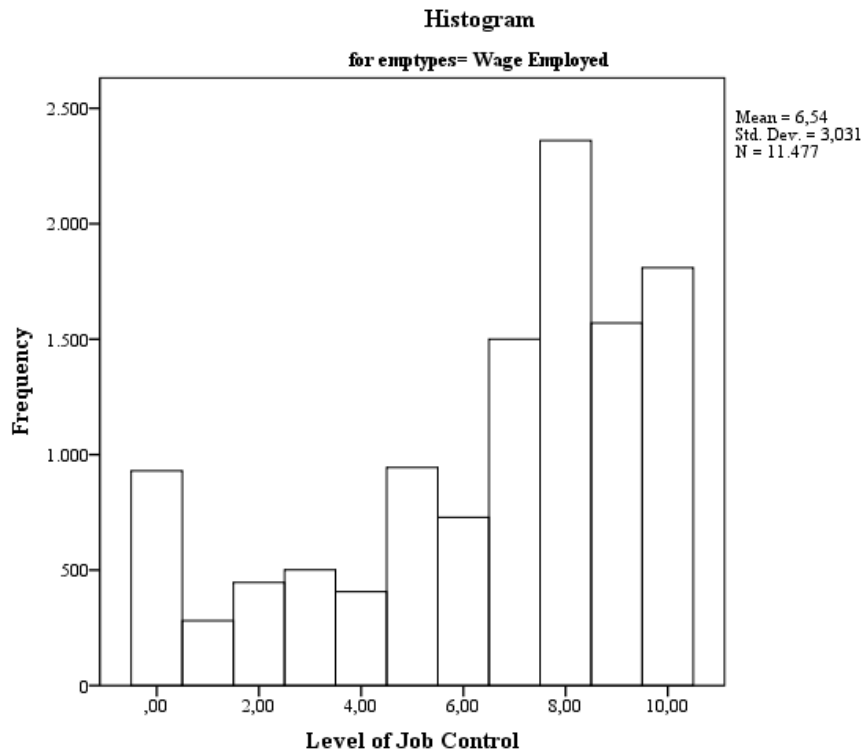

Histogram

for emptypes= Wage Employed

Mean = 6,54
Std. Dev. = 3,031
N = 11.477

Figure 11. Histogram of distribution of Job Control for solo self-employed

Histogram

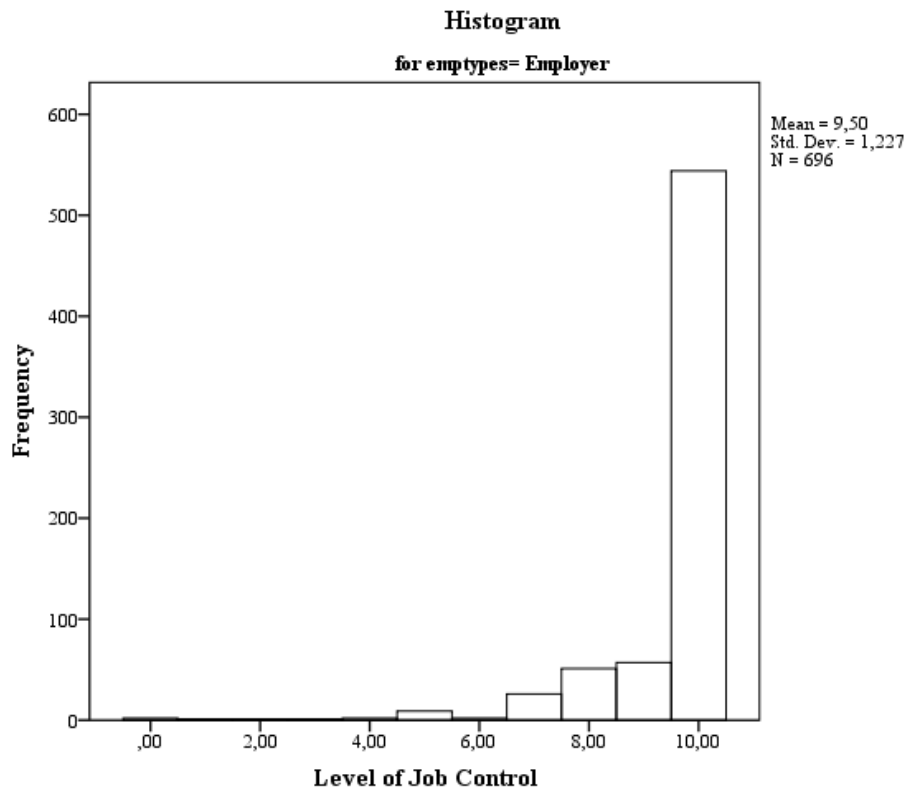for emptypes= Solo Self-employed

Mean = 9,26
Std. Dev. = 1,858
N = 1.070
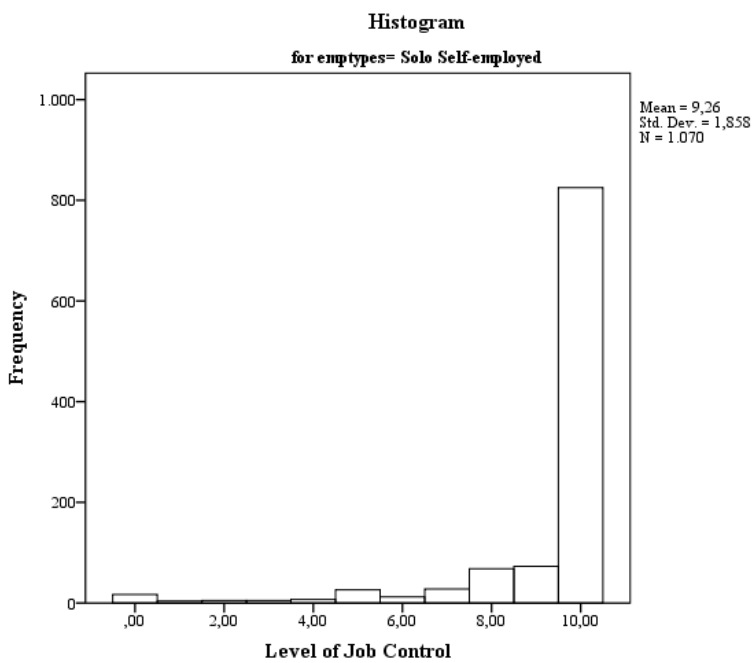
Figure 12. Histogram of distribution of Job Control for employers

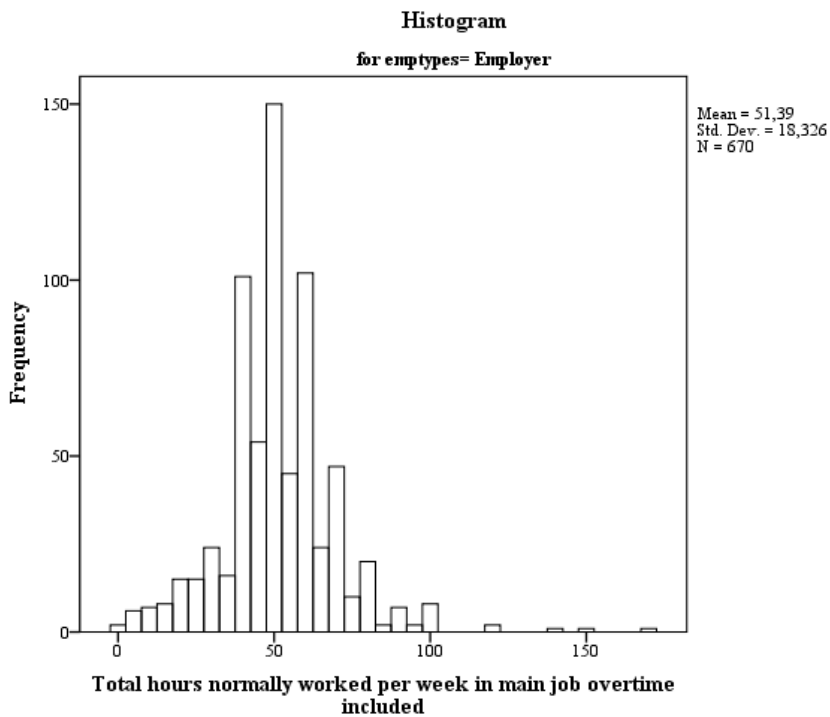*Figure 13.* Histogram of distribution of Working Hours for employers

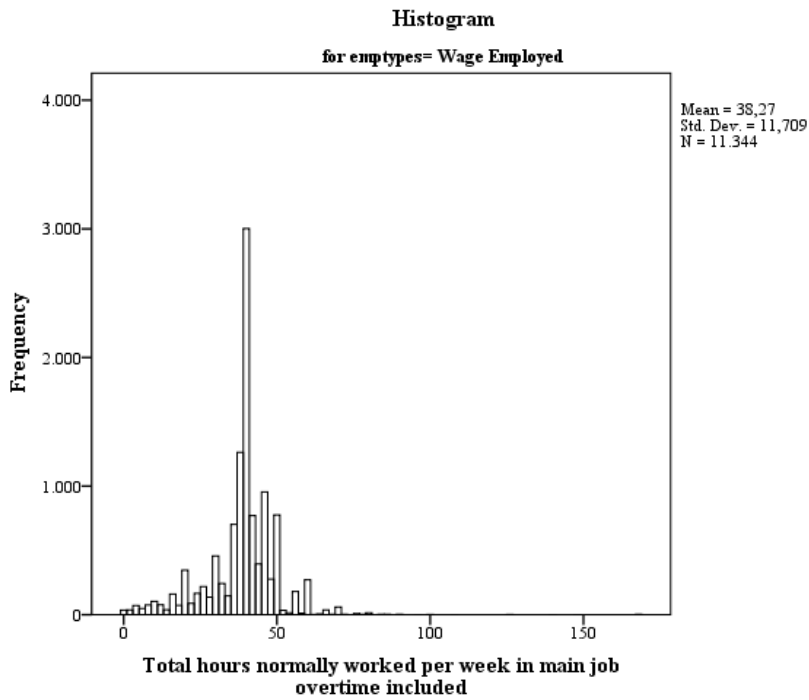*Figure 14.* Histogram of distribution of Working Hours for wage employed

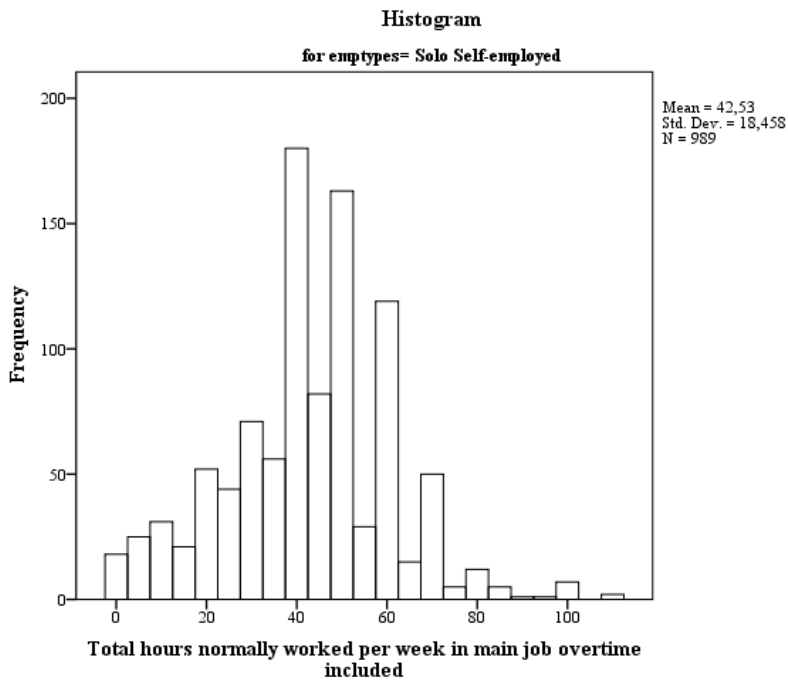**Histogram**

for emptypes= Wage Employed

Mean = 38,27
Std. Dev. = 11,709
N = 11.344

Total hours normally worked per week in main job overtime included

Figure 15. Histogram of distribution of Working Hours for solo self-employed

Histogram

for emptypes= Solo Self-employed

Mean = 42,53
Std. Dev. = 18,458
N = 989

Total hours normally worked per week in main job overtime included

10. Literature

Allison, P. D. (1999). *Multiple regression: A primer*: Pine Forge Press.

Andersson, P. (2008). Happiness and health: Well-being among the self-employed. *The Journal of Socio-Economics, 37*(1), 213-236.

Benz, M., & Frey, B. S. (2008). Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica, 75*(298), 362-383.

Blanchflower, D. G. (2004). *Self-employment: More may not be better*. Retrieved from

Burke, A., & Cowling, M. (2015). The Use and Value of Freelancers: The Perspective of Managers. *The Handbook of Research on Freelancing and Self-Employment*, 1.

Faragher, E. B., Cass, M., & Cooper, C. L. (2005). The relationship between job satisfaction and health: a meta-analysis. *Occupational and environmental medicine, 62*(2), 105-112.

Field, A. (2009). *Discovering statistics using SPSS*: Sage publications.

Geishecker, I. (2009). Perceived job insecurity and well-being revisited: Towards conceptual clarity. *Available at SSRN 1520366*.

Ghauri, P. N., & Grønhaug, K. (2005). *Research methods in business studies: A practical guide*: Pearson Education.

Grosch, J. W., Caruso, C. C., Rosa, R. R., & Sauter, S. L. (2006). Long hours of work in the US: associations with demographic and organizational characteristics, psychosocial working conditions, and health. *American journal of industrial medicine, 49*(11), 943-952.

Guest, D. E. (2002). Perspectives on the study of work-life balance. *Social Science Information, 41*(2), 255-279.

Hatfield, I. (2015). Self-employment in Europe. *London: Institute for Public Policy Research*.

Holttum, S. (2012). Poor quality employment is worse for mental health than no job at all and contributes to mental distress in new mothers. *Mental Health and Social Inclusion, 16*(2), 66-71.

Johansson Sevä, I., Vinberg, S., Nordenmark, M., & Strandh, M. (2015). Subjective well-being among the self-employed in Europe: macroeconomy, gender and immigrant status. *Small business economics, 46*(2), 239-253. doi:10.1007/s11187-015-9682-9

Lechmann, D. S., & Schnabel, C. (2014). Absence from Work of the Self-Employed: A Comparison with Paid Employees. *Kyklos, 67*(3), 368-390.

Lelliott, P., Boardman, J., Harvey, S., Henderson, M., Knapp, M., & Tulloch, S. (2008). Mental health and work.

Lewin-Epstein, N., & Yuchtman-Yaar, E. (1991). Health risks of self-employment. *Work and Occupations, 18*(3), 291-312.

Netterstrøm, B., Conrad, N., Bech, P., Fink, P., Olsen, O., Rugulies, R., & Stansfeld, S. (2008). The relation between work-related psychosocial factors and the development of depression. *Epidemiologic reviews, 30*(1), 118-132.

Nordenmark, M., Vinberg, S., & Strandh, M. (2012). Job control and demands, work-life balance and wellbeing among selfemployed men and women in Europe. *Society, Health & Vulnerability, 3*.

O'Shea, R., Bryson, C., & Jowell, R. (2002). Comparative Attitudinal Research in Europe. *Written on behalf of the Central Coordinating Team of the ESS. Available at www. europeansocialsurvey. org*.

Parasuraman, S., & Simmers, C. A. (2001). Type of employment, work–family conflict and well-being: a comparative study. *Journal of Organizational Behavior, 22*(5), 551-568.

Pedersini, R., & Coletto, D. (2009). Self-employed workers: industrial relations and working conditions.

Pichler, F. (2009). Determinants of work-life balance: Shortcomings in the contemporary measurement of WLB in large-scale surveys. *Social Indicators Research, 92*(3), 449-469.

Rau, R., Gebele, N., Morling, K., & Rösler, U. (2010). Untersuchung arbeitsbedingter Ursachen für das Auftreten von depressiven Störungen. *Dortmund, Berlin, Dresden: Bundesanstalt für Arbeitsschutz und Arbeitsmedizin*.

Rietveld, C. A., Kippersluis, H., & Thurik, A. R. (2015). Self-employment and health: Barriers or benefits? *Health economics, 24*(10), 1302-1313.

Shields, M. (1999). Long working hours and health [1994-1997 data]. *Health Reports, 11*(2), 33.

Sparks, K., Cooper, C., Fried, Y., & Shirom, A. (1997). The effects of hours of work on health: a meta-analytic review. *Journal of occupational and organizational psychology, 70*(4), 391-408.

Tennant, C. (2001). Work-related stress and depressive disorders. *Journal of Psychosomatic Research, 51*(5), 697-704. doi:http://dx.doi.org/10.1016/S0022-3999(01)00255-0

Thompson, F. T., & Levine, D. U. (1997). Examples of easily explainable suppressor variables in multiple regression research. *Multiple Linear Regression Viewpoints, 24*(1), 11-13.

van Stel, A., & de Vries, N. (2015). The Economic Value of Different Types of Solo Self-Employed: A Review. *The Handbook of Research on Freelancing and Self-Employment*, 77.